

Prerequisites

Before you attempt to use your SDM to define or modify data, you should have at least a basic knowledge of

- The SINAUT **Spectrum** data model and its application for your network
This is an unconditional prerequisite for your data entry work with SDM. Only the knowledge of the SINAUT **Spectrum** data model and its application for your individual network (this is what we call “network data analysis”) which will guarantee that you are fully aware of the consequences of your data entry.
We strongly recommend that you read the *Base Applications Data Analysis* user guide for this purpose and that you perform the network data analysis described in this document before you start working with SDM.
- The principles, features and basic procedures of SDM
To achieve this knowledge, we recommend that you complete the SDM class before you start working with SDM. This class will help you to understand what comprises SDM and how to use it. In addition to that you may use this user guide as a reference if you need specific information on SDM forms and procedures.
- SDM forms
Before you can go into the details of the SDM forms, it is necessary to know the basic principles, features and operation procedures that are common to all SDM forms. The knowledge of these basics will help you to improve your understanding of the following chapters.
For a comprehensive description of these topics, please refer to the appropriate chapter in this document which will provide the necessary knowledge.

SDM Basics

This chapter deals with basic SDM principles. It describes the following major aspects of SDM:

- Basic concepts and operation procedures that apply to all SDM forms
- The basic structure of the SDM forms

SDM Basics

Before you can go into the details of specific SDM forms, it is necessary to know the basic principles, features and operation procedures that are common to all SDM forms. The knowledge of these basics will help you to improve your understanding of the following chapters dealing with details of specific SDM forms.

 **Note:**

The following detailed SDM form descriptions will presuppose knowledge of the basic SDM principles, features and operation procedures.

Job Management

The method by which database changes are grouped and controlled is called *Job Management*. It applies to SDM forms just as it would to any other data changing process. In order to modify data, you must be connected to a legitimate job that is in status Ready.

To connect to a job, i.e., to resume an existing job or to create a new job, enter the job name into the text field of the attribute **Job Name** in the Job Management Form. Other actions related with job management are performed via the Job Log Form. For further details on

these forms, refer to the sections 'Job Management Form' on page 34 and 'Job Log Form' on page 50.

You will not be able to insert, update and delete data via a SDM form, if you are not connected to a job or if you are connected to an unavailable job. In this case, the rights to insert, update and delete data will be disabled for the respective SDM form. In other words, you will solely have a read-only access to the concerned data.

Job Interlocks

Job interlocks prevent different jobs from modifying the same data by locking the data the jobs uses. This means that you cannot modify data which are locked by another job and other jobs cannot modify data your job has locked.

Job interlocks are enforced in two ways depending on the hierarchical level of the data to be modified:

- For entire forms

This type of job interlock is enforced for data entities on a lower hierarchical level of a data hierarchy (for example: Elem is the 4th hierarchical level of the SCADA data hierarchy B1/B2/B3/Elem/Info, etc.). A job interlock may exist for all attributes of all data records shown in the respective form. The job interlock information is shown in the display field of the attribute **Job Interlock** in the Job Block of the respective form.

For example: if you intend to modify an element record (identified by a particular technological identifier composed of B1, B2, B3 and Element Names) and another operator already modifies a B1, B2 or B3 data record involved in the technological identifier of your element record, a job interlock on your Element Form will exist. You will not be able to apply modifications on any attribute of your element record as long as the job interlock exists.

- For individual data records shown in a form

This type of job interlock is enforced for top-level data entities (for example: B1 is the top-level data entity of the SCADA data hierarchy B1/B2/B3/Elem/Info, etc.). Different job interlocks may exist for different data records shown in the respective form. The job interlock information is associated with the concerned data record. Usually, the respective form contains a tabular list that shows the available data records. In this case, the job interlock information is shown in a separate column of this list.

For example: if you intend to modify B1 blocks via the B1 Form, you might notice, that the tabular list contains a column **Job Interlock** that shows the job interlocks for the available B1 records.

In either case, the following rule applies:

If the value in the job interlock field is zero (blank), you can perform your data modification. If the concerned data are locked by another job, the name of the job that "holds" the interlock will appear in the job interlock field.

To view a job's interlock history and other pertinent job interlock information, use the Job Interlock Form. For more details on this form, refer to the section 'Job Interlock Form' on page 57.

Validation

Every attempt is made to validate data at the earliest possible moment. If a data entity can be verified at the item level, it is automatically verified. If data can only be verified within the context of an entire record, the validation will occur at the record level. If verification of data requires that a number of records be completed or that an entire set of data be in place, validation will occur during Global Validation.

Item Level Validation

Simple data checks of single attributes will occur at the item level. If you modify an attribute so that its new value exceeds the attribute's value range or if you enter a value that is not in the attribute's list of valid values, SDM will notify you that the attribute value is not valid.

If validation fails, the cursor is moved back into the input field of the invalid attribute and an error message will appear in the window message line of the respective SDM form. It is recommended that you correct the error before you continue. However, if this is one of those cases where the entered value shall violate the validation rule, you may ignore the error message and continue. The error will not be indicated a second time. Although SDM will not bother you with error messages beyond the first message, an error message for each uncorrected attribute will be stored in the error message table when you finally commit your changes (for further information on this topic, refer to the section 'Error Messages' on page 6 in this chapter).

Record Level Validation

Data checks that require the comparison of two or more attributes within a data record will be performed at the record level. Errors will be indicated if you move the cursor out of the modified data record.

If validation fails, an alert window will appear. This alert window offers you the following options: "Fix Data Errors" or "Skip Validation". It is recommended that you correct the error before you continue. However, if this is one of those cases where the entered value shall violate the validation rule, you may ignore the error message and continue. The error will not be indicated a second time.

Although SDM will not bother you with error messages beyond the first message, an error message for each uncorrected attribute will be stored in the error message table when you finally commit your changes (for further information on this topic, refer to the section 'Error Messages' on page 6 in this chapter).

Global Validation

Global Validation compares data between similar data records, between different types of data records, and between data records of various data hierarchies. By its nature, Global Validation requires that you have the data in a stable state before you perform it. Global Validation can be performed whenever you complete a data editing session and is enforced before you attempt to perform a job transfer.

Hints

Hints are short messages describing data attributes. They will appear in the window message line of an SDM form after a mouseclick on the input field of an attribute shown in the respective form. Hints are generated from the domain information defined for the respective column in the concerned source database table.

A hint will be displayed only if the message that was previously shown in the window message line was blank or another hint. If the previous message was an error message, the hint will not be displayed. Sometimes, when you move the cursor to the input field of another attribute after an error message has been displayed, the hint related with the currently selected attribute will not be displayed. If you want the hint to be displayed, click on the input field of a another attribute and then click on the input field of the desired attribute again.

Error Messages

Ignoring error messages if they initially appear will not cause a loss of data. All error messages are written into the corresponding source database message table when the data modifications are applied to the database. Depending on the current situation, error messages will be displayed in the window message line of the respective SDM form or in a separately opened alert window.

If errors occur during the apply transaction of data modifications, an alert window will be displayed indicating the number of error messages that have been stored in the corresponding source database message table. If you press the button MSG in the SDM Toolbar immediately after you have acknowledged this message, the Error Message Form will appear and will show the first error of those error messages.

Queries

If you select an SDM form, it will automatically come up with a full set of data if valid preset values have been provided in the Job Management Form. In this case, the logic behind the form is able to perform an automatic query on the requested data based on the provided preset values. However, if no preset values have been specified in the Job Management Form or if the specified preset values are invalid, the form comes up empty and will automatically switch to Query Mode. This means, the first action you must perform before you can work with the respective SDM form must be a query to retrieve data to work with.

Even if your preset values are correct and the SDM form has come up with a full set of data, you may perform a new query to retrieve another set of data to work with.

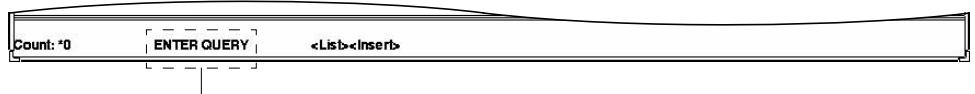
Query Mode

If no preset values have been specified in the Job Management Form or if the specified preset values are invalid, a selected SDM form comes up empty and switches automatically to Query Mode.

Query Mode can be recognized by an appropriate system message that appears in the window status line of the respective SDM form (see figure 1 below), by the status of the SDM Toolbar (all buttons of the SDM Toolbar, except the button **Query**, are disabled) and the content of the input fields of the concerned SDM form (when entering Query Mode, the input fields are emptied).

FIGURE 1

Indication of Query Mode in the Status Line of the respective SDM form



This system message indicates Query Mode

If the SDM form you have selected comes up in Query Mode, you must perform a query before you can perform your intended data modifications. Detailed information on how to perform a query can be obtained from the section 'Performing a Query' on page 11 in this chapter.

 **Note:**

If the selected SDM form is in Query Mode and a query has not been performed, any operation that is not involved in performing a query will be rejected and an appropriate system message will appear in the window message line of the respective SDM form.

Even if you can obviously enter data into the text fields of the respective SDM form, you will not be able to store these entries in the database since the buttons of the Command Block are disabled.

After you have performed a query, Query Mode is terminated automatically.

If your SDM form is currently not in Query Mode and you want to perform a query, you must invoke Query Mode and then you can enter the Query Criteria and perform your query. For more details on how to perform a query, refer to the section 'Performing a Query' below.

Query Mode can be cancelled (even without performing a query) by selecting **Exit** from the File menu in the SDM Menubar. After the Query Mode has been cancelled, the buttons of the SDM Toolbar and the buttons of the Command Block in your SDM form might be enabled, if appropriate. Then, you can select another SDM form from menus of the SDM Menubar or you can enter new data into the empty form.

 **Note:**

*If you enter new data into your empty form and you apply those data modifications by pressing the button **Apply** in the Command Block of your form, your data modifications will be applied to the source database and a query on all available data records of the respective data entity will be performed.*

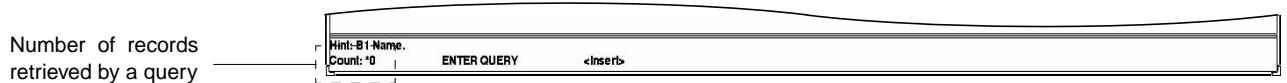
Query Criteria

Using the query feature, all available data records of a specific data entity or a subset of the available data records matching certain query criteria can be retrieved.

The number of retrieved data records will be displayed in the Status Line of the respective SDM form.

FIGURE 2

Number of retrieved data records indicated in the Status Line of the SDM form



For the retrieval of a subset of the available data records that match certain criteria, the SDM forms provide the following possibilities to specify query criteria:

- Retrieval of data records matching exact values

You can retrieve specific data records by entering exact values for the query criteria. For example, if you enter Vienna into the text field of the attribute **B1-Name** in the Master Block of the B3 Form and 220 into the text field of the attribute **B1-Name** in the Master Block of the B3 Form, the query will select all records in which the B1-block name is Vienna and the B2-block name is 220.

- Retrieval of data records matching a search patterns

You can also retrieve data records that match a particular search pattern composed of a value (e.g., a character string) and the wildcard characters underscore ("_") or percentage ("%") or a combination of both.

The wildcard character "_" represents any single character. The wildcard character "%" represents any combination of characters (including no character). For example, the B1-block name Vienna would match both the search pattern Vienn_ and the search pattern Vie%.

Query Window

Besides Query Mode and the query facilities in the Master Block, SDM provides a particular window for the retrieval of technological addresses. This window is called "Query Window".

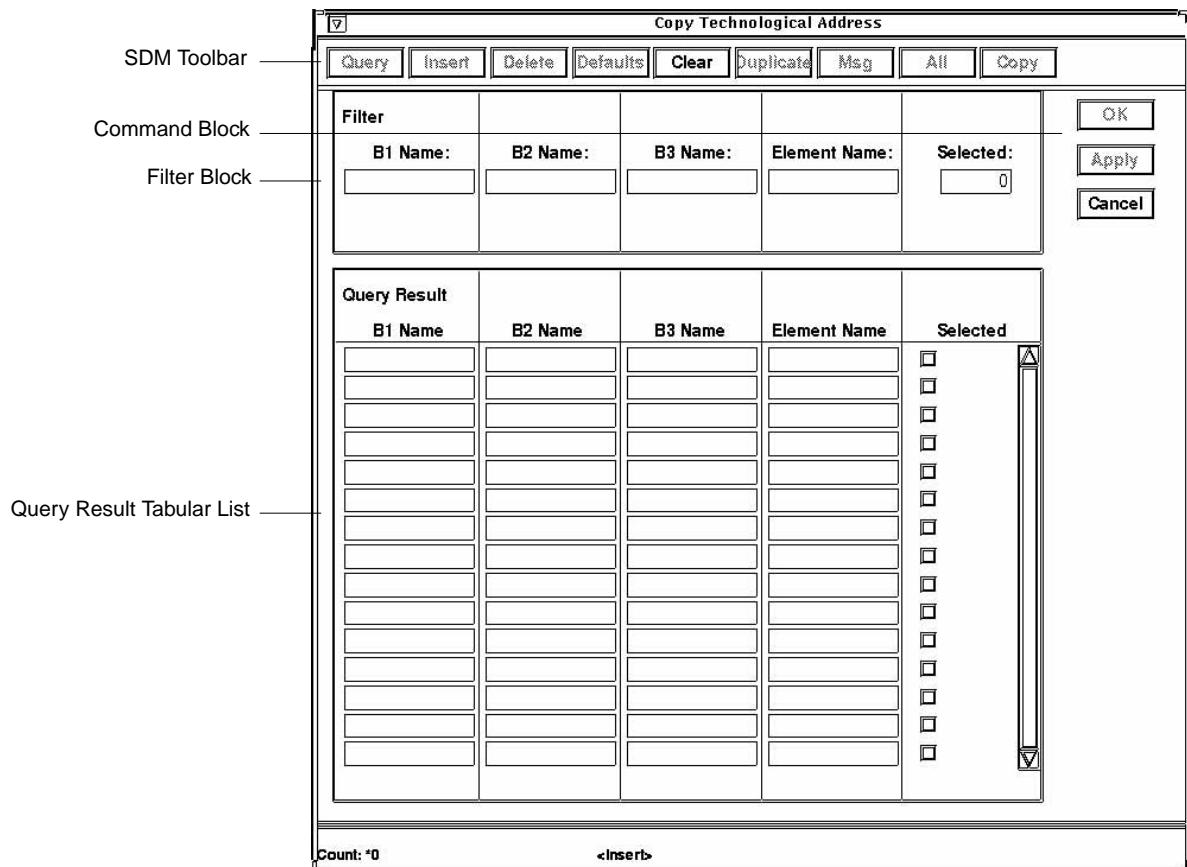
It allows you to perform a query on technological addresses via a convenient user interface. The retrieved technological addresses may be copied into an internal clipboard and then be taken over into a SDM form with a simple Copy and Paste-procedure.

Figure 3 on page 9 (below) shows you the basic structure of the Query Window:

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FIGURE 3

Structure of the Query Window



■ SDM Toolbar

Besides the seven standard toolbar buttons (see section 'SDM Toolbar' on page 21 for more details), the SDM Toolbar of the Query Window provides the following additional buttons:

- **All**

Pressing this button selects all available technological addresses from the Query Result Tabular List. The check boxes of the selected technological addresses in the column **Selected** of the Query Result Tabular List are automatically checked.



Note:

The button All remains disabled until at least one technological address is available in the Query Result Tabular List.

- **Copy**

If you press the button **Copy** in the SDM Toolbar of the Query Window, the selected technological addresses from the Query Result Tabular List are copied to the internal clipboard.

 **Note:**

*The button **Copy** remains disabled until at least one technological address has been selected from the Query Result Tabular List.*

■ **Command Block**

Basically, the Command Block of the Query Window contains the same buttons as the standard Command Block in a SDM form (see section 'Command Block' on page 26 for more details).

 **Note:**

*The buttons **OK** and **Apply** remain disabled.*

- **OK**
- **Apply**
- **Cancel**

Pressing the button **Cancel** button closes the Query Window.

■ **Filter Block**

- **B1-Name**
- **B2-Name**
- **B3-Name**
- **Element Name**

The text fields of these 4 attributes can be used to enter the query criteria (search pattern).

 **Note:**

Unlike the other query facilities, characters such as “%” or “_” will not be considered as wildcard characters (see section ‘Query Criteria’ on page 8 for more details on wild-card characters).

– **Selected**

Shows the number of the currently selected technological addresses from the Query Result Tabular List. Read-only display field.

■ **Query Result Tabular List**

The Query Result Tabular List shows the result of a query performed via the Query Window. It contains the technological addresses matching the search pattern specified by values of the attributes **B1-Name ... Element Name** in the Filter Block. Each line of the tabular list represents a single technological address. The columns **B1-Name ... Element Name** contain the attribute values of the respective technological address. The column **Selected** contains a check box that can be used to select the respective technological address.

– **B1-Name**

– **B2-Name**

– **B3-Name**

– **Element Name**

These 4 attributes represent a retrieved technological address. Read-only display fields.

– **Selected**

A check box that is used to select the concerned technological address. Click on this check box to toggle its status from not checked to checked and vice versa. To select a technological address, the concerned check box must be checked.

Performing a Query

1. Press the button **Query** in the SDM Toolbar.

This action empties the SDM form and puts it in Query Mode.

 **Note:**

The following step 2 is optional and may be omitted.

2. Enter the query criteria.

If a query is performed without setting specific query criteria, all data records of the respective data entity (for example, all B1 block records, all application data characteristic group records, etc.) are retrieved.

Depending on the selected SDM form, enter the query criteria either into the text fields of the Master Block or in another accessible text field.

☞ **Note:**

If your SDM form provides a Master Block, you must enter the query criteria into the text field(s) of the Master Block.

3. Press the button **Query** in the SDM Toolbar.

This action executes the query and retrieves all data records from the concerned source database tables that match the query criteria. If no query criteria are entered, then all records will be retrieved. If no records match the query criteria, no records will be retrieved and an appropriate system message will appear in the window message line of the respective SDM form.

Performing a Query using the Query Window

1. Press the button **Query TAs** in the SDM Toolbar to call up the Query Window.

☞ **Note:**

*The button **Query TAs** might be disabled. Refer to the description of the SDM Toolbar in the specific SDM form for more details on the availability of this button.*

The Query Window pops up.

2. Enter your search pattern into the text fields **B1-Name ... Element Name** in the Filter Block.

☞ **Note:**

Wildcard characters will not be considered (see the description of the attributes in the Filter Block on page 10 for more details).

*Initially, the Query Window will be in data entry mode (the button **Query** in the SDM Toolbar of the Query Window will be disabled). It switches automatically to Query Mode if you enter a character into the text fields **B1-Name ... Element Name** in the Filter Block (the button **Query** in the SDM Toolbar of the Query Window will be enabled).*

3. Press the button **Query** in the SDM Toolbar.

This action executes the query and retrieves all technological addresses from the concerned source database tables that match the entered search pattern. If no technological addresses match the search pattern, no technological addresses will be retrieved.

The retrieved technological addresses will be shown in the Query Result Tabular List.

Query And Paste Technological Addresses Using The Query Window

1. Open the Query Window and perform your query as described in the section 'Performing a Query using the Query Window' above.

 **Note:**

For the following procedure description we assume that technological addresses have been retrieved.

Steps 2 and 3 may be performed alternatively. You may perform either of these steps and omit the other.

2. Select the desired technological addresses from the Query Result Tabular List by clicking on the concerned check box in the column **Selected** of the Query Result Tabular List.

The number shown in the display field of the attribute **Selected** in the Filter Block will be updated each time you select or de-select a technological address.

3. Select all technological addresses from the Query Result Tabular List by clicking on the button **All** in the SDM Toolbar of the Query Window.
4. Press the button **Copy** in the SDM Toolbar of the Query Window to copy the selected technological addresses to the internal clipboard.
5. Press the button **Cancel** in the Command Block of the Query Window to close the Query Window.
6. Paste the technological addresses from the internal clipboard into the currently selected data record of your SDM form by pressing the button **Paste** in the SDM Toolbar of the respective SDM form.

 **Note:**

If the cursor is currently located in a tabular list and you are going to paste several technological addresses, the technological addresses will be inserted in the appropriate columns of successive rows in the list.

For example: Let's assume your SDM form contains a tabular list with columns representing a technological address. Your cursor is currently located in the first row of this list. Now, you perform a query using the Query Window and you copy and paste 3 technological addresses. The first technological address will be inserted into the appropriate columns of the row where the cursor is located, the second technological address in the appropriate columns of the next row, and so on.

The List Of Values (LOV) Feature

Any attribute of a data entity may have an associated static list of valid values. This list may either be defined in the concerned database table of the source database or may be established for the concerned form component during the form creation.

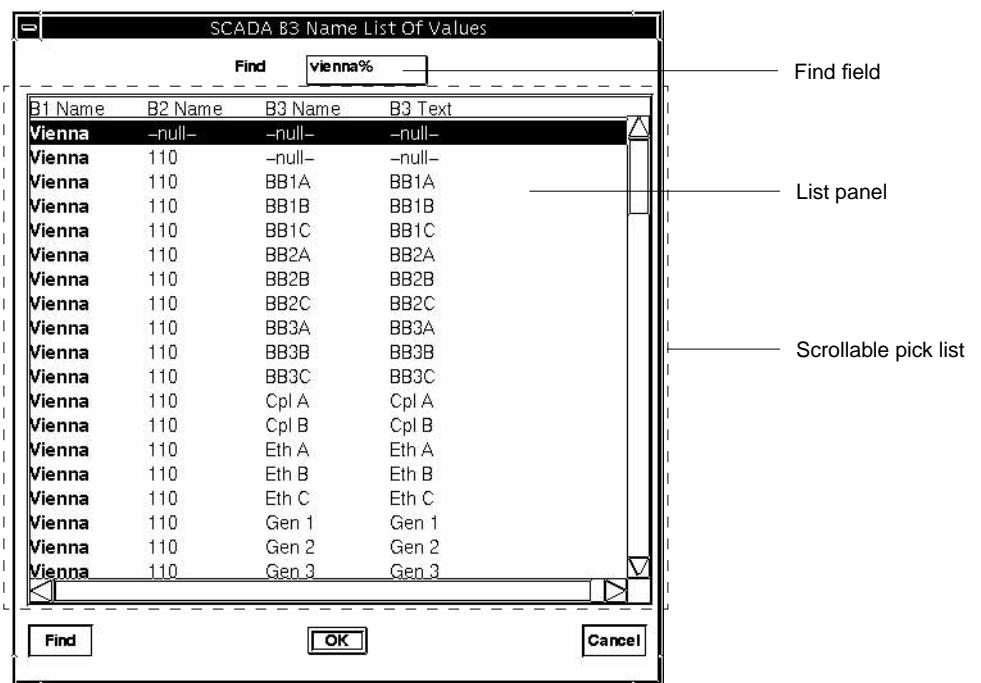
SDM forms support these lists by the List Of Values (LOV) feature. A list of values is a scrollable list in a separate window that pops up if you double-click on an input field that has an assigned list of valid values (for an example, see figure 4 on page 14).

List of Values Window

The List of Values Window contains a scrollable pick list that shows a list of single-column or multi-column entries from which you can select a single, distinct value (in case of single-column entries) or a set of values (in case of multi-column entries). The list entries correspond to columns in a database table or to static values that have been established during the form creation (see first paragraph of the section 'The List Of Values (LOV) Feature' above).

FIGURE 4

Example of a List of Values Window



A list of values appears as a modal window which can be moved and resized. It contains the following components:

- Find field
The Find field can be used to search specific list entries (refer to the section 'Searching specific list entries' on page 15 for further details).
- List panel
The List panel shows the LOV entries (single-column entries or multi-column entries).

- Three buttons
 - Find
 - OK
 - Cancel

Selecting a value from the list of values

To select a value from a list of values, perform one of the following procedures:

- Double-click on the desired list entry
The value will be selected and the List of Values Window will be dismissed automatically.
- Highlight a value by clicking on the desired list entry
The value will be only be highlighted.
- Click on the desired list entry or on the highlighted list entry and dismiss the list of values by pressing the button **OK** in the List of Values Window
The value will be selected. The List of Values Window will be dismissed after the button **OK** has been pressed.
- Dismiss the List of Values Window without choosing a value by pressing the button **Cancel** in the List of Values Window

Searching specific list entries

The List of Values Window contains a Find field (see figure 4 on page 14) that can be used to search the list entries of the list of values matching entries:

1. Click on the Find field and enter your search pattern.
The search pattern may contain the wildcard character “%”. The wildcard character “%” represents any combination of characters (including no character).
2. Hit the **Return** key on your keyboard or press the button **Find** to perform the search.
The list panel will be re-configured and will show only matching list entries.

Auto-reducing the number of list entries

1. Click on the List panel and enter your search pattern.
The list of values will automatically be reduced to those values that match your entry.

☞ **Note:**

Since the list will be reduced after each single keystroke, it might happen that further entries will produce no search result. Pressing the Backspace key on the keyboard will restore the previous search result.

Selecting technological addresses

Selecting technological addresses from a list of values is done in the same way as for other data. For example: double-click on the input field of a B1, B2, B3 or Elem attribute in your SDM form and the List of Values Window appears.

However, the content of the List of Values Window depends on the type of the concerned attribute (B1, B2, B3 or Elem) and on the attribute values of the other attributes of the concerned technological address. For example: if you open a list of values from a B2 attribute and the concerned B1 is empty, the list of values will show all available B1/B2-combinations. If you specify a B1 and then you open the list of values from the concerned B2 attribute, the list of values shows all possible B1/B2-combinations containing the specified B1, etc.

Creating New Data Records

 **Note:**

Step 1 and Step 2 describe alternative methods to create a new data record. You may use either of them and omit the other.

1. Move the cursor to the position where you want to place the new data record and press the button **Insert** in the SDM Toolbar.

A new (empty) row will be inserted into the tabular list where you can enter your new attribute values. For more information on the button **Insert** in the SDM Toolbar, refer to its description on page 22.

2. Instead of inserting a new data record somewhere within a tabular list, you can also create a record by scrolling the tabular list to the end using the scrollbar and moving the cursor to the very last (empty) row in the list. Simply enter the new attribute values there.

 **Note:**

Steps 3, 4 and 5 are optional and may be omitted.

3. To fill your new data record with default values (if those are available), press the button **Defaults** in the SDM Toolbar. For more information on this feature, refer to the description of the button **Defaults** on page 23.

4. If you want to use an available data record as a template for a new data record, move the cursor to the data record that shall be used as a template and press the button **Insert** in the SDM Toolbar.

A new (empty) row will be inserted into the tabular list where you can enter your new attribute values (see step 1, too).

5. Move the cursor to the newly inserted row and press the button **Duplicate** in the SDM Toolbar. The new row will be filled with the attribute values of the preceding data record. For more information on the duplicate feature, refer to the description of the button **Duplicate** on page 24.

6. Complete the creation of the new data record and save it in the database by pressing the button **Apply** in the Command Block of the respective SDM form (refer to the sections 'Applying Transactions' on page 17 and 'Command Block' on page 26 for more details on the button **Apply**).

Updating or Modifying Existing Data Records

1. Select the desired data record by clicking on one of the input fields of the concerned row in the tabular list.
2. Change the desired attributes by entering new attribute values in the concerned input fields of the selected row.

 **Note:**

The modified attribute value will be highlighted.

If an attribute that you update is a foreign key in another database table, an alert window will appear which informs you that a modification of the concerned attribute value will result in a cascading rename of all dependent child records. The alert window always offers you the option to cancel or to continue the transaction.

3. Complete the modification of the selected data record and save the changes in the database by pressing the button **Apply** in the Command Block of the respective SDM form (refer to the sections 'Applying Transactions' on page 17 and 'Command Block' on page 26 for more details on the button **Apply**).

Deleting Existing Data Records

A delete transaction will remove one or more records from the database. It removes at least the current row (the row where the cursor is located), but it may also remove several records. Multiple row deletion is known as a cascading delete.

1. Select the desired data record by clicking on one of the input fields of the concerned row in the tabular list.
2. Perform the deletion by pressing the button **Delete** in the SDM Toolbar.

For detailed information on the deletion of data records refer to the description of the button **Delete** in the SDM Toolbar on page 22).

Applying Transactions

When you use a form and you perform modifications on the contained data, these data modifications are not directly applied to the database. Instead, they are collected in a so-called "work space".

To make your modifications permanent, you must commit the contents of the work space by pressing the button **Apply** or the button **OK** in the Command Block of the respective SDM form. After you have pressed one of these buttons, the data modifications collected in the work space are applied to the database.

For more information on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Clear

This feature allows you to empty the input fields of a data record. To clear the input fields of a data record, simply press the button **Clear** in the SDM Toolbar.

For more information on this feature, refer to the description of the button **Clear** on page 23.

Obtaining Information on Error Messages

If you perform a transaction (e.g., a data modification) and an error occurs, a message indicating the occurrence of an error will appear in the Message Line of the respective SDM forms.

For detailed information on the concerned error, select the Help menu from the SDM Menubar and click on the **Error** choice. This menu choice will display error information and/or detailed help information for the item that caused the last error.

The Model Feature

SDM provides a model feature that allows you to copy an entire data hierarchy and to insert it as a new data hierarchy into the source database.

Unlike the Duplicate feature which is used to create and insert a copy of a single data record, the model feature copies all data records of the selected data hierarchy and inserts these data records as a new data hierarchy into the source database.

For example: the model feature allows to create a new B1 block (e.g., a new substation) as a copy of an existing B1 block. All subordinate data entities of the B1 block model (all B2-data records, B3-date records, etc.) will be copied and inserted automatically.

The model feature is performed via the Model Form.

For more information on the Model Form, refer to the section 'Model Form' on page 65. Further details on the Duplicate feature can be obtained from the description of the button **Duplicate** on page 24.

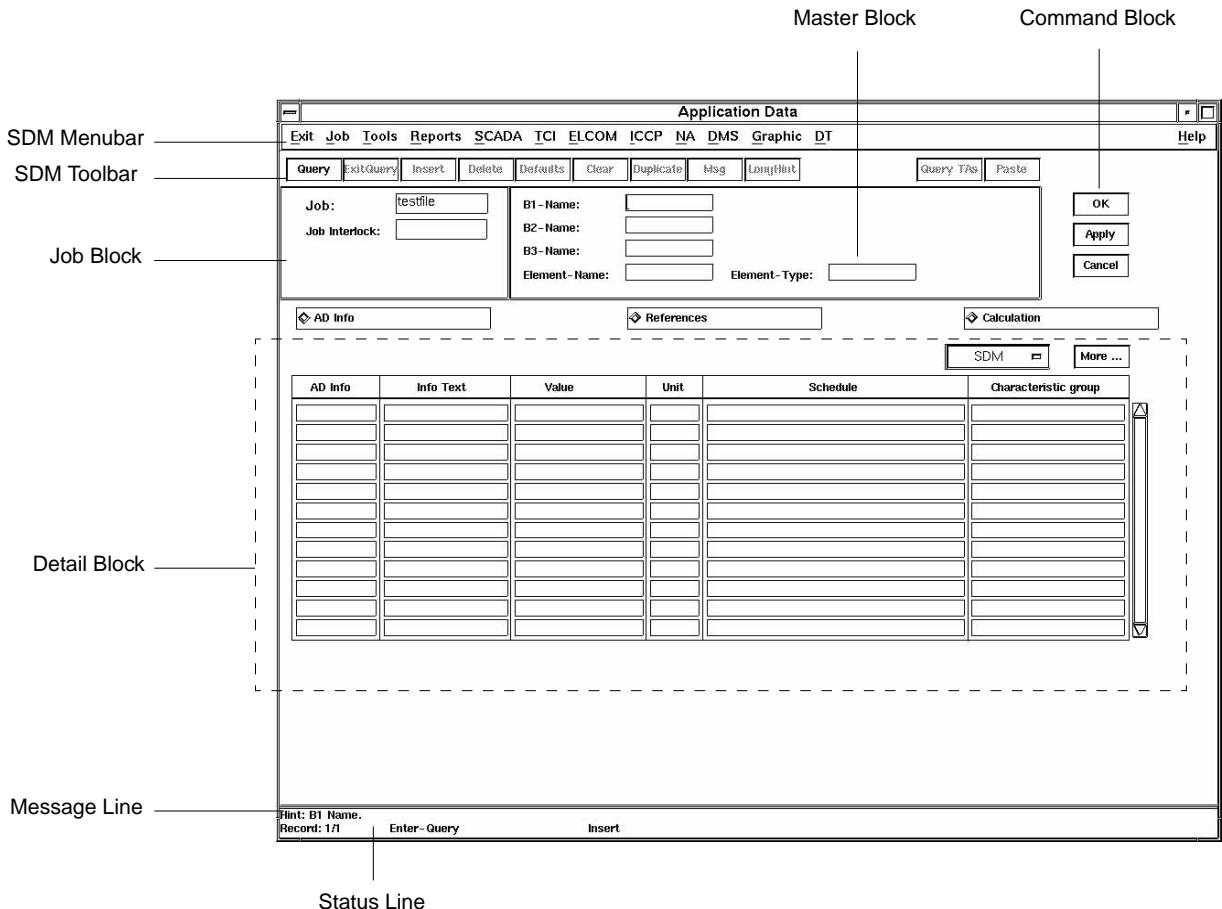
The Basic Structure of SDM Forms

All SDM forms are composed of the same basic form components. This common standardized structure supports the operator in becoming familiar with the SDM forms. However, depending on the form's intended purpose certain SDM forms will not need some of the components provided by the common structure and the structure of other SDM forms will slightly deviate from this standard. Those differences are indicated in the subsequent SDM form descriptions.

The following figure 5 shows you the standardized form components using the Application Data Info Form as an example.

FIGURE 5

Basic Structure of a SDM form



Each SDM form is composed of the following form components:

- SDM Menubar

SDM Basics

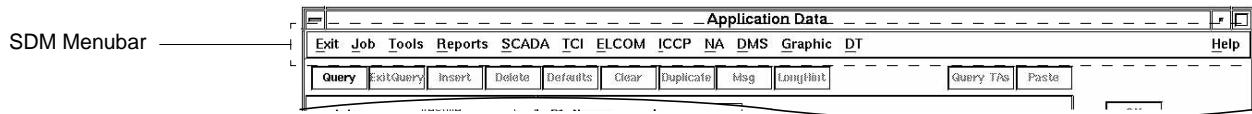
- SDM Toolbar
- Job Block
- Master Block (optional)
- Command Block
- Detail Block
- Message Line
- Status Line

SDM Menubar

Each SDM form provides a menu bar (the “SDM Menubar”), which is located at the top of an SDM form and runs across the entire SDM form (see figure 6 below).

FIGURE 6

SDM Menubar



The SDM Menubar contains the following menus:

- **File**
The File menu provides form-related actions. For example: Exit from form.
- **Job**
Use the Job menu to select organizational SDM forms dealing with job and task management, such as Job Management Form, Job Log Form, Job Trace Form, Job Interlock Form, etc.
- **Tools**
Perform various SDM actions by selecting organizational SDM forms like the Model Form, Reverse Transfer Form, etc.
- **Reports**
Create application-specific reports by selecting the appropriate form via the Reports menu.
- **Help**
Get online help Information by selecting the appropriate help topic from the Help menu.

The following menus can be used to access application-specific SDM forms:

- **SCADA**

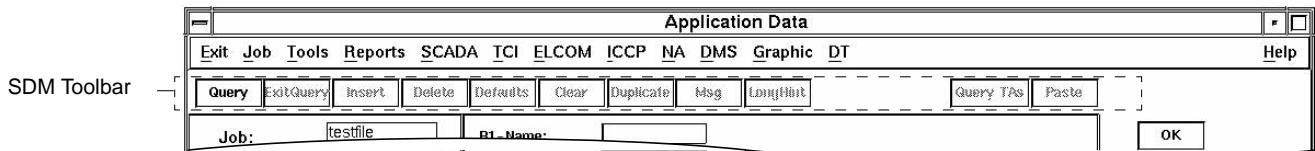
SDM Basics

- **AD**
- **TCI**
- **ELCOM**
- **ICCP**
- **NA**
- **DMS**
- **Graphic**

SDM Toolbar

The SDM Toolbar is a row of buttons located beneath the SDM Menubar and provides fast access to important SDM features, e.g., creating, editing or deleting a data record, etc. (for an example of a SDM Toolbar, see figure 7 below).

FIGURE 7 Example of a SDM Toolbar



The standard SDM Toolbar provides seven buttons (see description below). These buttons are available in each application-specific SDM form.

☞ **Note:**

Other buttons may be available depending on the selected SDM form and the current situation.

Depending on the selected SDM form and the current situation, some of the provided buttons may be disabled. Buttons provided in the SDM Toolbar will be enabled or disabled dynamically.

If more buttons are available than the eight buttons described below, refer to the description of the concerned SDM form for more information on those buttons.

The content of the SDM Toolbar in organizational SDM forms might deviate from the described SDM Toolbar configuration. If so, refer to the description of the concerned SDM form for more information on the specific SDM Toolbar.

- **Query**

If the concerned SDM form is already in Query Mode, pressing the button **Query** performs a query based on the entered Query Criteria.

If the concerned SDM form was not in Query Mode, pressing the button **Query** puts the form into Query Mode.

For more details on the Query Mode and queries, refer to the section 'Queries' on page 6.

■ **ExitQuery**

If the concerned SDM form is in Query Mode, pressing the button **ExitQuery** leaves the Query Mode without performing a query.

■ **Insert**

Insert new (empty) data record.

Pressing the button **Insert** creates a new data record. If the cursor is located in a tabular list, a new blank row is inserted into the list beneath that row where cursor is located.

☞ **Note:**

*Insert creates a new record, but does not store it. If you want to store the new data record, press the button **OK** or the button **Apply** in the Command Block of the concerned SDM form. For more details on the Command Block, refer to the section 'Command Block' on page 26.*

*In case the button **Insert** is disabled you are currently not allowed to insert a new data record.*

■ **Delete**

Remove one or more data records from the database.

Pressing the button **Delete** removes the currently selected data record. If the cursor is located in a tabular list, the currently selected row (the row where the cursor is located) is removed.

☞ **Note:**

You will not be allowed to remove a data record if there are pending data modifications on any attribute of the concerned data record. If the SDM form detects uncommitted data modifications it will request you to commit those modifications or to perform a roll-back on those modifications before you can proceed with your deletion.

If the data record to be removed has associated data records in other database tables (so-called "Child Records"), those data records will also be removed. This is called "Cascading Delete". For example, if you remove an application data characteristic group record, this data record may have associated application data characteristic records and these may have associated characteristic segment records. If you press the button **Delete** to remove the application data characteristic group record all associated application data characteristic records and all associated characteristic segment records will also be removed.

If the data record you are about to remove has associated child records, an alert window will pop up informing you that a cascading delete will be performed. At this point you can cancel the deletion or continue it by pressing the appropriate button in the alert window.

☞ **Note:**

Sometimes you may encounter a long waiting time while a delete transaction is performed. This will especially be the case if a deletion is performed which removes a large amount of data from the database (e.g., in case of a cascading delete). Since a lot of activity takes place beneath the surface in such a case, we recommend that you break such transactions down into several smaller transactions. For example, when removing a large B1 block, it would be better, to delete each B2 block individually rather than to delete the entire B1 block at once.

An attempt to perform a delete transaction which is too large to delete may cause an errors, especially if the system is rather busy.

Deletions will automatically change the database. Once a deletion is initiated, it cannot be rolled back.

To reverse the effects of a deletion, use the Cancel Task feature in the Task Log Form (see section 'Task Log Form' on page 60 for more details on this topic).

No specific alert window will appear if a cascading delete removes child data records used in other source database tables. The inconsistency that occurs in such a case will be detected during a global validation.

■ **Defaults**

Assign pre-defined default values to the attributes of the currently selected data record.

Columns of a source database table may have associated default values which are also defined in the source database. If default values are available for the selected data record, the current attribute values will be replaced by the specified default values after you have pressed the button **Defaults**.

☞ **Note:**

If no default values are available for the selected data record, the button Defaults will be disabled.

If you intend to use default values on a data record, we recommend to use the Defaults feature before you enter any other information for this data record, since default values will overwrite all related items you have already entered for this data record.

■ **Clear**

Remove the content of the input fields of the selected data record.

If you press the button **Clear**, the content of all input fields of the currently selected data record will be emptied. The content of these fields will also be removed from the work space (for more information on the work space, refer tot the section 'Applying Transactions' on page 17).

☞ **Note:**

Unlike Delete (see description on page 22), pressing the button Clear will not remove the concerned data record from the database.

*If you did not apply your data modifications on the currently selected data record yet, and you have pressed the button **Clear**, the entire data record will be removed. If the cursor is located in a tabular list, the currently selected row (the row where the cursor is located) will be removed.*

■ **Duplicate**

Duplicate the preceding data record and insert this copy as a new data record.

If you press the button **Duplicate**, a copy of the preceding data record will be inserted as a new data record.

☞ **Note:**

Attributes that require unique information will not be copied and the concerned input fields in the new data record will be left blank. If the cursor is located in a tabular list, the currently selected row (the row where the cursor is located) will be copied and inserted as a new row below the selected row.

■ **MSG**

Open the Error Message Form.

Pressing the button **MSG** opens the Error Message Form that shows the error messages of the job you are currently connected to. For a detailed description of the information displayed in the Error Message Form, refer to the section 'Error Message Form' on page 72.

■ **Longhint**

Display a long hint text.

Move the cursor to the input field of an attribute and press the button **Longhint**. Then, the long hint associated with the respective attribute will be displayed in the Message Line of the respective SDM form.

☞ **Note:**

Just like "short" hints (see section 'Hints' on page 6 for details), long hints must be defined in the source database table where the concerned attribute is defined.

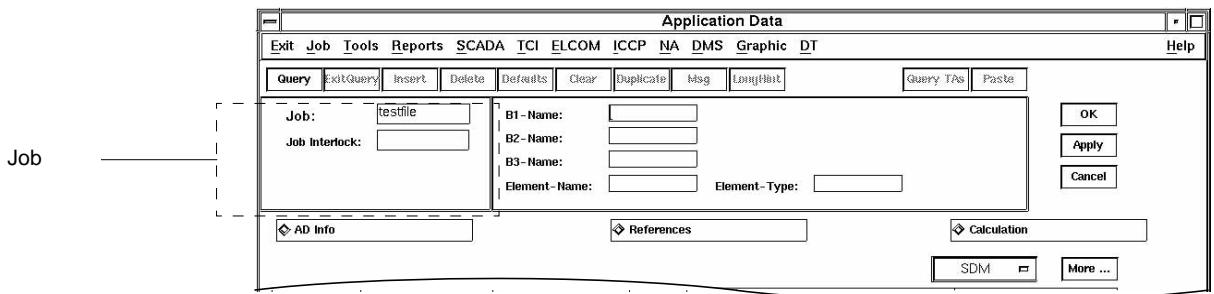
*If no long hint is available for the respective attribute, the button **Longhint** will be disabled. The accessibility of the button **Longhint** may change every time you move the cursor to another input field depending on the availability of a long hint in the concerned source database table.*

Job Block

The Job Block is located in the upper left corner of an SDM form just below the SDM Toolbar and contains display fields showing job information and job interlock information.

FIGURE 8

Example of a Job Block



■ **Job**

Shows the name of the job accessing the respective SDM form.

■ **Job Interlock**

If a job interlock for the entire SDM form exists, the display field of the attribute Job Interlock shows the name of the locking job.

Note:

Depending on the hierarchical level of the data presented by the form, this attribute might not appear. For more details on job interlocks, refer to the section 'Job Interlocks' on page 4.

Master Block

The Master Block is an optional form component. Its availability in a SDM form depends on the form's intended purpose and the hierarchical level of the data presented by the respective SDM form.

The Master Block provides attributes representing the primary database keys of the concerned data object. The input fields of the provided attributes are used to enter query criteria when performing a query.

Note:

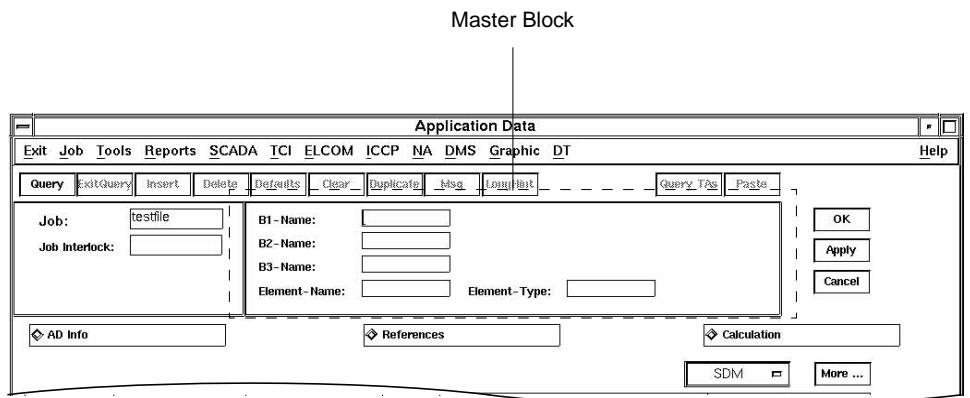
Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

For detailed information on the availability of a master block in a specific SDM form and its content, refer to the description of the concerned SDM form.

SDM Basics

FIGURE 9

Example of a Master Block



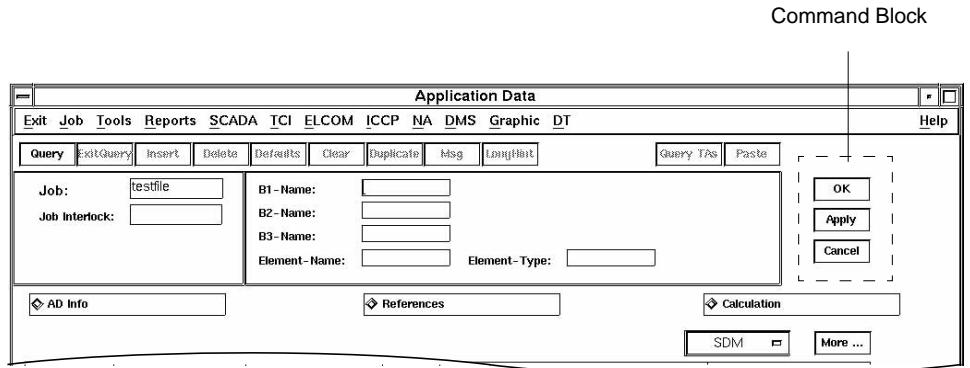
Command Block

The command block is located in the upper right corner of an SDM form just below the SDM Toolbar and contains the following buttons to apply and discard data modifications performed in the SDM form:

- **OK**
Applies the performed data modifications to the database and exits the concerned SDM form.
- **Apply**
Applies the performed data modifications to the database. The concerned SDM form remains and further data modifications can be performed.
- **Cancel**
Dismisses the performed data modifications. The data modifications will not be applied to the database. The concerned SDM form will be exited.

FIGURE 10

Command Block



Detail Block

The detail block of a SDM form contains all form components that are provided to perform the form's intended purpose. The actual content of the detail block varies from SDM form to SDM form and may change dynamically depending on the operator's interaction with SDM.

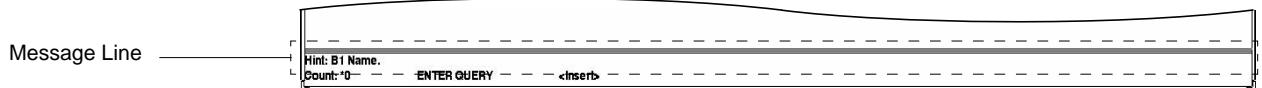
For more details on the form components actually provided by the detail block, refer to the description of the concerned SDM form.

Message Line

Each SDM form contains a message line that is used to display hint texts (for more details, refer to the section 'Hints' on page 6) and system messages. It is located at the bottom of the SDM form and reaches across the entire form.

FIGURE 11

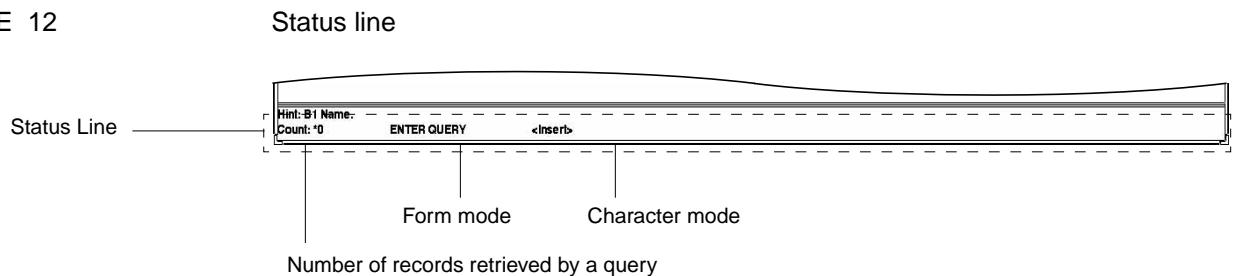
Message line



Status Line

Each SDM form contains a status line that is used to indicate modes and other status information. For example: the status line indicates form modes, such as Query Mode (see section 'Query Mode' on page 7), character modes, e.g., insert characters or replace characters, the number of records retrieved by a query, etc. .

FIGURE 12

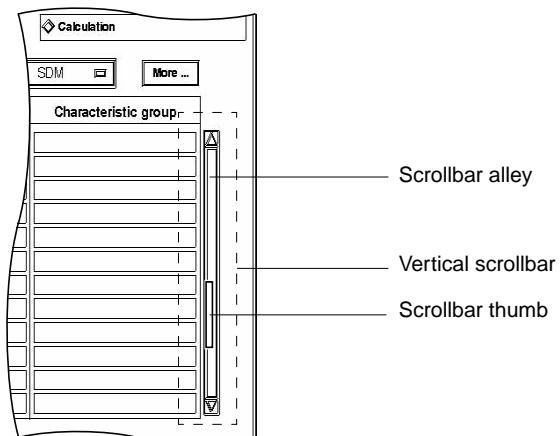


Scrollbars

Scrollbars allow you to quickly navigate through a set of data records, e.g., in a tabular list. Scrollbars can be attached either horizontally or vertically.

FIGURE 13

Example of a vertical scrollbar



Note:

The behavior of scrollbars in forms slightly deviates from the behavior of scrollbars you might be familiar with from other applications. The differences are described below.

As usual, the position of the scrollbar thumb in the scrollbar alley gives you a feedback of the relative position of the current data record within the respective set of data records (e.g., within a tabular list). The length of the scrollbar thumb will give you information on the number of retrieved data records.

However, since forms retrieve data records on a package basis, "set of data records" does not necessarily mean "all available data records", but the set of data records that have been fetched so far. This may or may not include all data records to be retrieved.

This will become obvious if you move the scrollbar thumb to the bottom of the scrollbar alley. In a form, this scrolls the content of the list to the end of the currently fetched data records. In another application, this would scroll the content of a tabular list to the end of the list.

For example, if 100 data records are to be retrieved but only 10 have been fetched so far, moving the scrollbar thumb to the bottom of the scrollbar alley would display the 10th data record, not the 100th. The scrollbar thumb will automatically move up again. Moving the scrollbar thumb down again would cause the form to fetch the next package of data records, and so on. The length of the scrollbar thumb will decrease while the number of fetched data records increases.

Overview of SDM Forms

SDM forms can be divided into the following main groups:

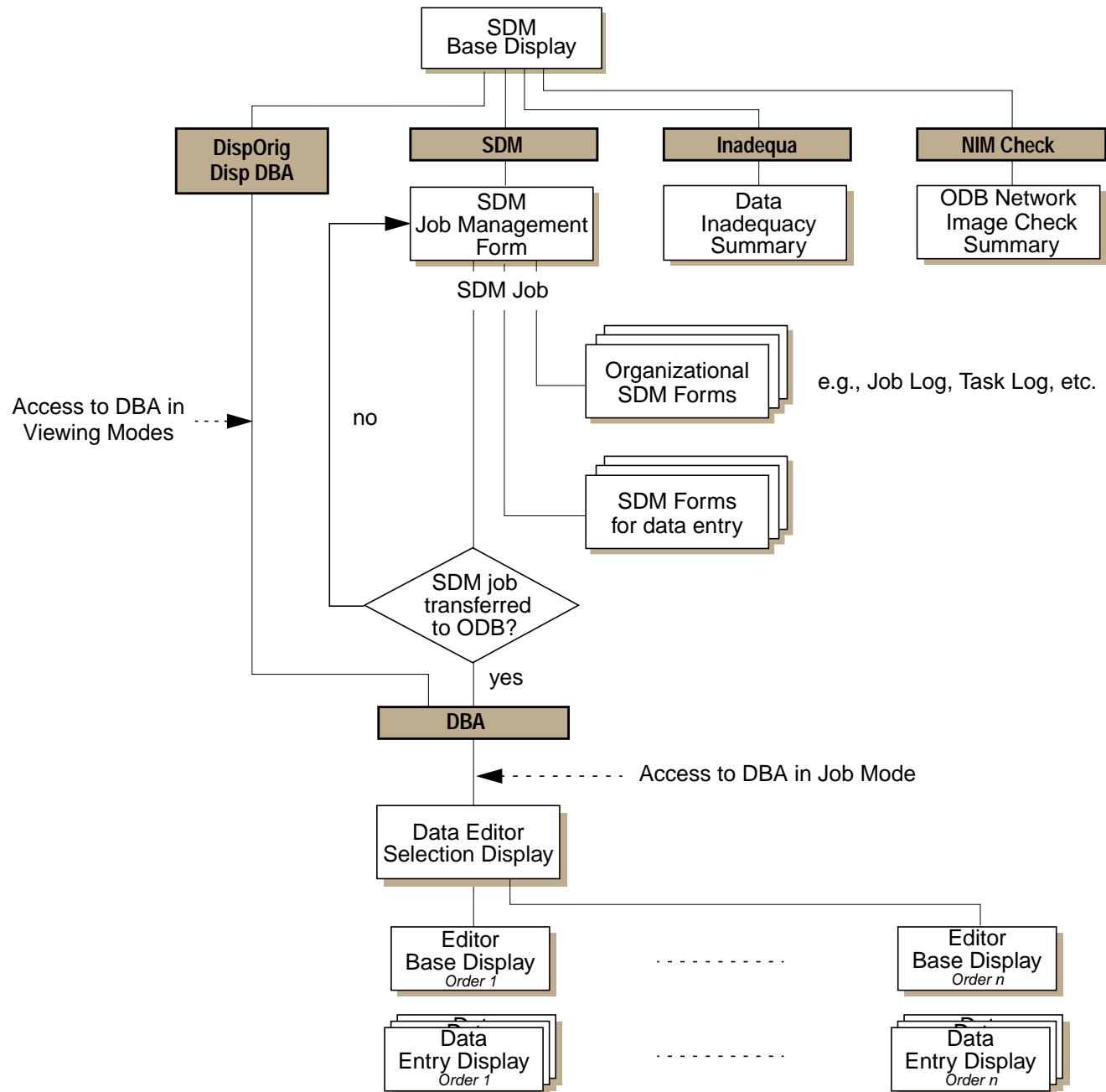
- Organizational SDM forms
These SDM forms are used for the administration and organization of data modifications.
- SDM forms for data entry

Figure 14 on the following page shows the interconnection between the different SDM forms.

SDM Basics

FIGURE 14

Interconnections between the different SDM displays



Organizational SDM Forms

SDM Base Display

The SDM Base Display is the first display that appears on the screen after you have selected SDM from the Basic Signaling Display (BaSiDi).

It can used to call the SDM Job Management Form, to access to the SDM ODB Database Administration (DBA) in two viewing modes (Disp Orig and Disp SDM) and to invoke several applications related with the SDM ODB Database Administration (DBA), such as, the Network Image Check or the Data Inadequacy summary.

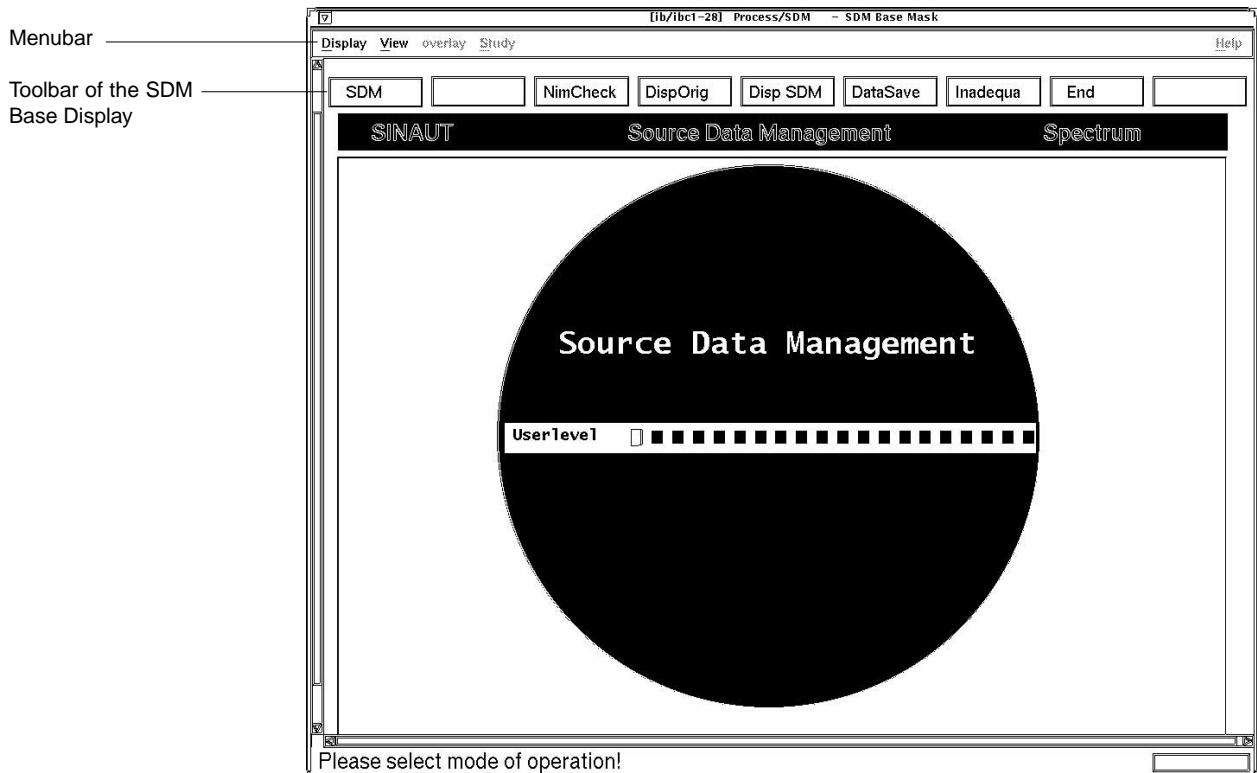
For further details on DBA, its operation modes and its related applications, refer to the user guide *U-SD10, “SDM ODB Reference”*.

The following figure 15 shows an example of the SDM Base Display:

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FIGURE 15

SDM Base Display



Toolbar of the SDM Base Display

The SDM Base Display contains a toolbar located beneath the menubar of the SDM Base Display. For details, refer to the description of the buttons below on this page. It contains buttons that allow you to access the previously mentioned SDM and DBA functions. The following buttons are provided in the Toolbar of the SDM Base Display:

- **SDM**
Calls up the SDM Job Management Form that allows you to create and manage SDM jobs, to perform job-based data modifications via SDM forms, to automatically transfer data modifications to the Operational Database (ODB) and to access DBA in job mode. For more details on the functionality of SDM and the Job Management Form, refer to the subsequent chapters.
- **NIMCheck**
Invokes the ODB-based Network Image Check.
- **Disp Orig**

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Pressing this button allows you to acces DBA in the viewing mode “Disp Orig”. For more details on this DBA-mode, refer to the appropriate description in the user guide *U-SD10, “SDM ODB Reference”*.

- **Disp SDM**

Pressing this button allows you to access DBA in the viewing mode “Disp SDM”. For more details on this DBA-mode, refer to the appropriate description in the user guide *U-SD10, “SDM ODB Reference”*.

- **DataSave**

Invokes the DBA-related application “Data Save” to backup data.

- **Inadequa**

Calls up the Data Inadequacy Summary.

For more details on the Data Inadequacy Summary, refer to the appropriate description in the user guide *U-SD10, “SDM ODB Reference”*.

- **End**

Closes the SDM Base Display and quits SDM.

EMS-Menu of the SDM Base Display

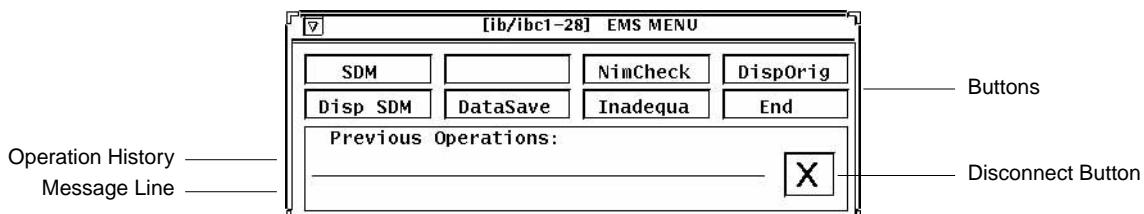
If you like to have the buttons provided by the Toolbar of the SDM Base Display in a separate window rather than in the SDM Base Display, move the mouse cursor into the SDM Base Display and click the right mouse button. An EMS-menu will appear that contains the same buttons shown in the Toolbar of the SDM Base Display. In addition to the buttons shown in the Toolbar of the SDM Base Display, the EMS-Menu of the SDM Base Display contains a Disconnect button that allows you to lock, unlock or disconnect your current SINAUT **Spectrum** session (see figure 16 below). The EMS-Menu of the SDM Base Display also contains a line showing the operation history (i.e., the history of buttons pressed in the EMS-menu) and a message line for system messages.

☞ **Note:**

The Toolbar of the SDM Base Display remains in the SDM Base Display.

FIGURE 16

EMS-Menu of the SDM Base Display



Organizational SDM Forms

Job Management Form

You can access the main form for job management by pressing the button **SDM** in the SDM Base Display (see chapter 'SDM Base Display' on page 31).

Figure 17 shows you the basic structure of the Job Management Form:

FIGURE 17

Basic structure of the Job Management Form

The screenshot displays the 'JOBM' window, which is the main form for job management. The window is divided into several sections:

- SDM Menubar:** Located at the top, containing options like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- Toolbar of the Job Management Form:** A row of buttons including Mail, DBA, Clear Job Errors, and Clear Job Trace.
- Job Block:** A section containing input fields for Job Name, Job Status, Current User, and Job ID, along with checkboxes for SCADA and TCI.
- Preset Selection Block:** A section containing input fields for B1 Name, B2 Name, B3 Name, and Element Name, along with a 'Clear Presets' button.
- Presets Block:** A section containing buttons for Job Log, Report, Export, To ODB, Update, Node, Cancel, and Delete.
- Worksheet Selection Group:** A dashed-line enclosed group containing a table titled 'Job Name' with columns for Job Name, Job Status, Locked by, Current Username, and Last Used Date Time. The table lists various jobs with their status and last used date.
- Detail Block:** A section below the worksheet containing a message line and a status line.
- Message Line:** A line at the bottom of the Detail Block with the text 'Enter value for : JOB_NAME'.
- Status Line:** A line at the bottom of the Detail Block with the text 'Count: 0 <List><Insert>'.

The Job Management Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Toolbar of the Job Management Form

Organizational SDM Forms

- Job Block
- Preset Selection Block
- Presets Block
- Worksheet Selection Group
- Detail Block

These form components are described in detail in the following sections.

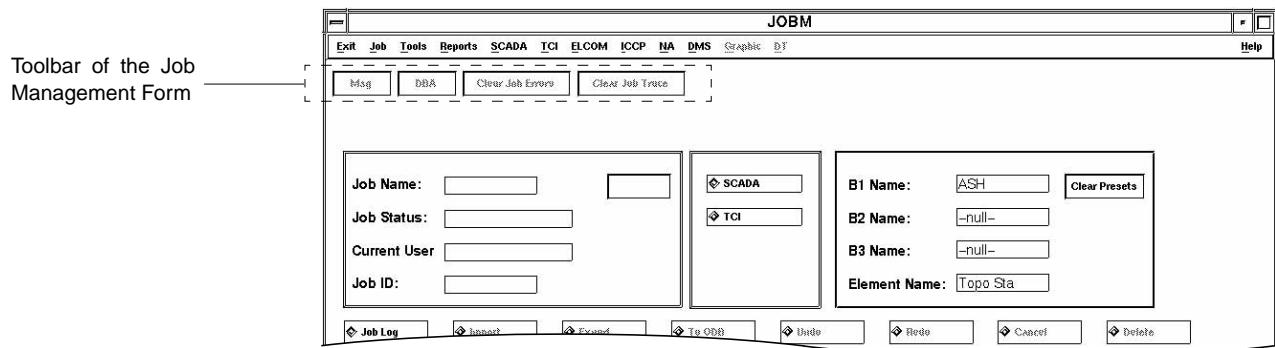
Toolbar of the Job Management Form

The Job Management Form contains a toolbar that differs from the standard SDM Toolbar (see section 'SDM Toolbar' on page 21 for details). The Toolbar of the Job Management Form is located beneath the SDM Menubar of the Job Management Form. For details, refer to the description of the buttons below on this page.

These buttons provide easy access to frequently used functions within the SDM forms. They will be enabled if their functionality is applicable, however, the programmed logic behind the Job Management Form will temporarily disable a button if its function is not applicable in the current situation.

FIGURE 18

Toolbar of the Job Management Form (example)



- **Msg**
Open the Error Message Form.
- **DBA**
Invokes of the SINAUT **Spectrum** Database Administration System (DBA).
- **Clear Job Errors**
Clears all error messages of the currently connected job.
- **Clear Job Trace**
Clears trace messages of the currently connected job.

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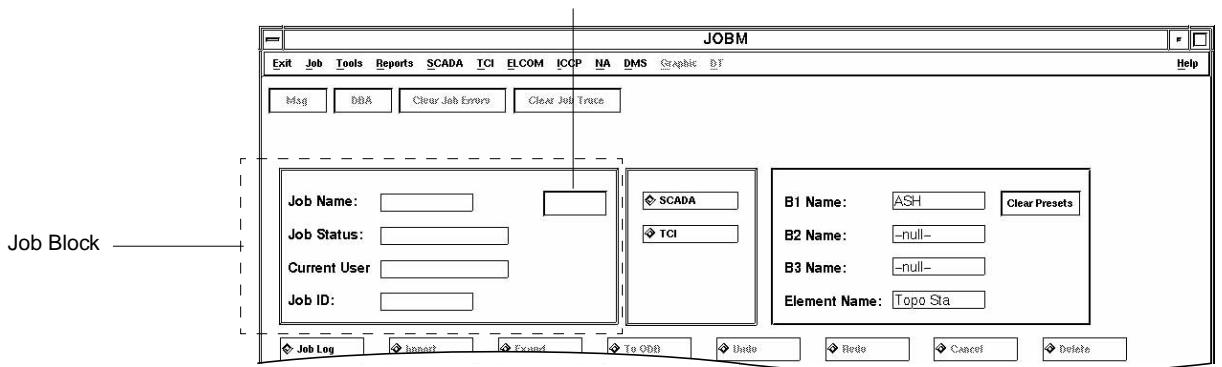
Job Block

As extension to the list of jobs in the detail block there is a separate block available in the upper-left corner of the main Job Management form. This block contains the job name, the job status, the current user name, the job ID number, and a function button. Using this block, you can create a new job or resume an existing job.

FIGURE 19

Job Block

Job Button



■ Job Name

When you create a job, the input in this field is taken as name of the new job. The length of the name can be from one to eight characters. Letters and numbers are allowed in the name, but no blanks.

When you resume a job, you can enter the job name either directly by typing the job name in this field or simply by selecting a job name in the 'Job List' through a mouse-click.

■ Job Status

This field displays the status of the job.

■ Current User

This field displays the name of the current user for the specified job.

■ Job ID

This field displays a number used for identifying the specified job.

■ Job Button

Depending on certain circumstances, the Job Button may activate one of the following functions:

- Connect

Create a new job or resume an existing job: after the input of the job name in the field **Job Name**, a mouse-click on this button causes the job to be linked to the source data management system.

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- **Disconnect**

Break the link of the connected job to the system.

- **Reset**

Allows you to return a job to a “normal” status:. This button is only available if a job is left in a transient state, e.g., EDITING, TRANSFERRING, ODB_ACTIVATING, ODB_DELETING, etc.

The three functions are mutually exclusive, only one of them is available at a given time.



Note:

For the a certain user a new job may be created and connected only if there is no existing job connected, i.e., a currently connected job must be disconnected first in this case. An existing job can be directly connected while the currently connected job will be disconnected automatically.

Preset Selection Block

The Preset Selection Block contains a group of radio buttons to select different types of data presets for use in different SDM forms:

- **SCADA**

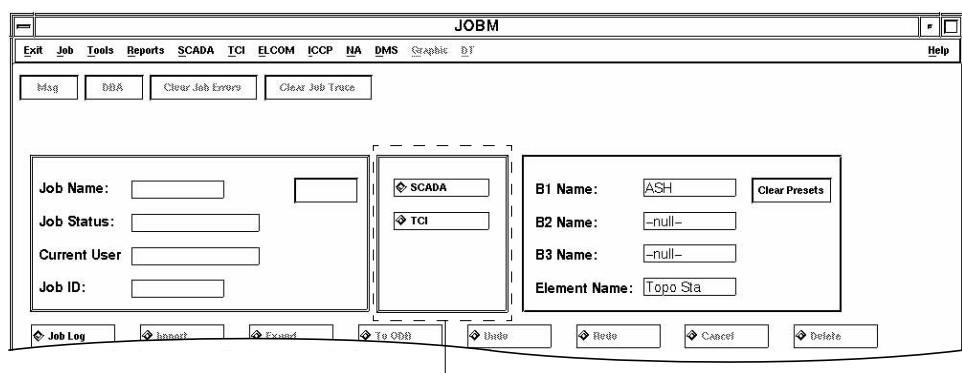
Clicking on the radio button SCADA switches to SCADA presets. The content of the Presets Block is changed accordingly.

- **TCI**

Clicking on the radio button TCI switches to TCI presets. The content of the Presets Block is changed accordingly.

FIGURE 20

Preset Selection Block



Preset Selection Block

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Presets Block

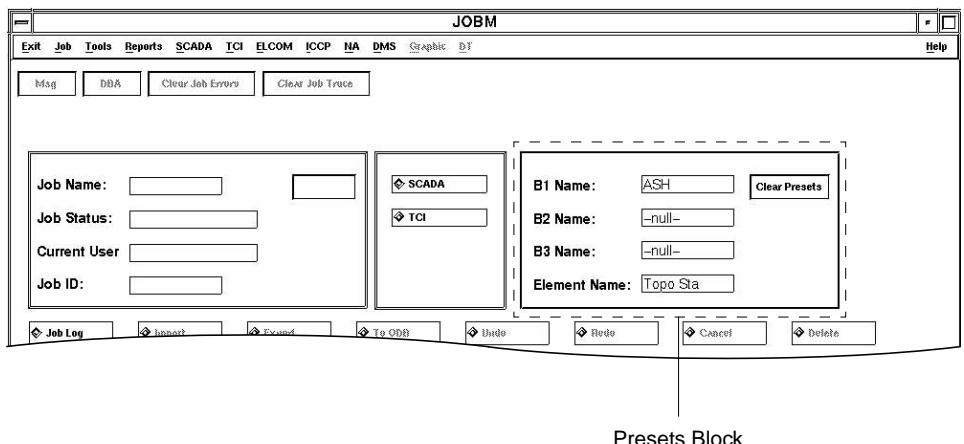
The Presets Block appears in the upper right corner of the Job Management Form and contains the button Clear Presets and a series of text fields for entering presets that will be used later as defaults for the attributes in the Master Block of an SDM form, if applicable.

 **Note:**

The actual content of the Presets Block depends on the current selection in the Preset Selection Block (for more details see section 'Preset Selection Block' above).

FIGURE 21

Presets Block



Using Presets

The preset values in the fields allow you to choose, ahead of time, the information you'll be seeing on the lower level, application-specific forms. No default values are set.

For example, if you have entered "Vienna" into the text field of the preset attribute **B1** and you call the **B2** Form, "Vienna" will be used as a default value in the Master Block of the **B2** Form and the **B2** data associated with this **B1**-name will automatically be displayed in the **B2** Form. In other words, the preset values serve as filters during data retrieval.

The passing of preset values is bi-directional. This means, in the same way the **B1**-name was passed "down" to the **B2** Form, another **B1**-name entered into the appropriate text field in the Master Block of the **B2** Form will be passed "up" to the preset fields in the Job Management Form. This is particularly helpful when you're moving from one form to another. Carrying the same preset information up and down the forms ensures that you will look at related pieces of data.

Assume, that you are in the **B3** Form and you have selected the information of the **B3**-block "Vienna/220/Paris". Now you want to have look at the elements associated with this

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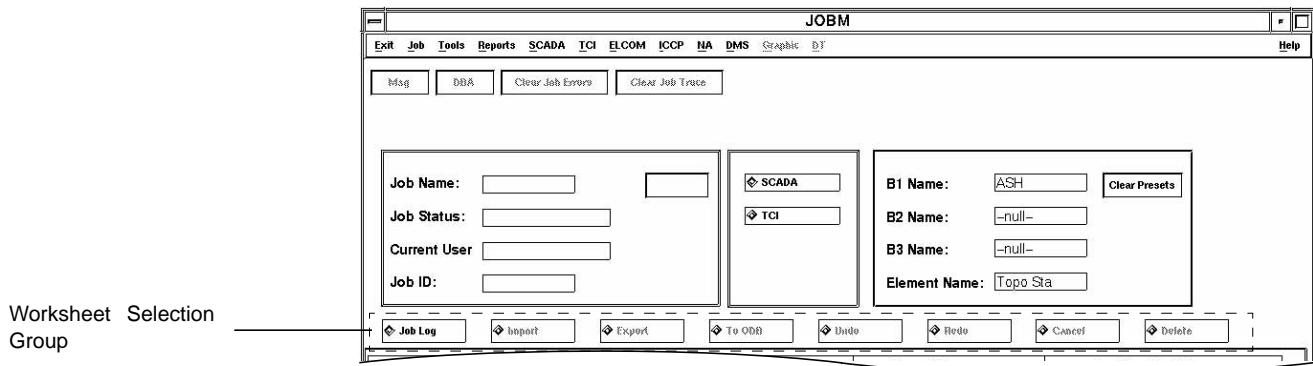
B3-block. Since the current preset values will be passed on forward, all you have to do is to select the Element Form.

If you want to clear all preset values and start again, just open the Job Management Form and press the button Clear Presets in the Presets Block.

Worksheet Selection Group

FIGURE 22

Worksheet Selection Group



The Worksheet Selection Group serves for selection of the required worksheet to be displayed in the Detail Block of the Job Management Form. The following radiobuttons are provided (only those radiobuttons are enabled, whose function is applicable in the current situation):

■ **Import**

Selects the Import Worksheet in the Detail Block of the Job Management Form (see section 'Import Worksheet' on page 43 for details) and activates the import of data from IDD (ASCII) files into the source database (SDB). For more information about IDD files refer to chapter 12 'Base Applications Import Data Definitions' on page 295 in this document and the appropriate chapters in other SDM Reference user guides.

■ **Export**

Selects the Export Worksheet in the Detail Block of the Job Management Form (see section 'Export Worksheet' on page 44 for details). Pressing this button activates the extraction of data from the source database and creates IDD files which may subsequently be re-imported.

■ **To ODB**

Selects the Validation, Transfer and Activation Worksheet in the Detail Block of the Job Management Form (see section 'Validation, Transfer and Activation Worksheet' on page 46 for details).

The validation section verifies the contents of the entire source database. Both entry-level and database-level validation are performed by global validation. Error messages will occur if data values violate the validation rules.

The transfer section activates the transfer of data modifications associated with a job from the source database to the database copy 1 of the Operational Database (ODB). The transfer is enabled only if a preceding global validation was completed successfully.

The activation section activates the loading of data for a job from the copy 1 of the Operational Database (ODB) into the database realtime copy (copy 0) of the Operational Database.

■ **Undo**

Selects the Undo Worksheet in the Detail Block of the Job Management Form (see section 'Undo Worksheet' on page 47 for details). The Undo Worksheet can be used to undo data modifications of a job.

This button is enabled in the following two cases:

- If a job has been activated and transferred to the copy 0 of the ODB (the job's status is `ODB_ACTIVATED`) the Undo feature removes the data modifications from the copy 0 of the ODB. However, the data modifications will remain in the copy 1 of the ODB.
- If a job has never been transferred to the ODB, i.e., if it is in status `READY`, the Undo feature removes the data modifications made by this job from the source database.

■ **Redo**

Selects the Redo Worksheet in the Detail Block of the Job Management Form (see section 'Redo Worksheet' on page 48 for details). The Redo Worksheet can be used to re-apply the data modifications made by a job to the source database after an undo.

This feature will be enabled only for a job with the status `UNDONE`, i.e., after an Undo from the ODB (see description of the button **Undo** above).

■ **Cancel**

Selects the Cancel Worksheet in the Detail Block of the Job Management Form (see section 'Cancel Worksheet' on page 48 for details). The Cancel Worksheet can be used to cancel data modifications of a job and remove job from the Job List.

This button is enabled in the following two cases:

- If a job has been transferred from the source database to the copy 1 of the ODB but has not been activated in the copy 0 of the ODB (the job's status is `ODB_TRANSFERRED`, the Cancel feature will remove the data modifications from the copy 1 of the ODB. However, data modifications will remain in the source database.
- In case a job has never been transferred to the ODB, i.e., if it is in status `READY`, the Cancel feature will remove the data modifications made by the respective job

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from the source database and will remove the job itself from the Job List in the Job Management Form.

- **Delete**

Selects the Delete Worksheet in the Detail Block of the Job Management Form (see section 'Delete Worksheet' on page 49 for details). The Delete Worksheet can be used to remove a job from the Job List without removing data modifications made by the concerned job.

This button will be enabled if a job has been activated in the copy 0 of the ODB, i.e., if the job is in status ODB_ACTIVATED. After the button Delete has been pressed, the job itself will be removed from the Job List and the data modifications made by the removed job exist permanently both in the source database and in the ODB. The job is fulfilled.

Detail Block

The Detail Block is located in the lower part of the Job Management Form and may contain one of the following worksheets:

- Job List
- Import Worksheet
- Export Worksheet
- Validation, Transfer and Activation Worksheet
- Undo Worksheet
- Redo Worksheet
- Cancel Worksheet
- Delete Worksheet

The Job List is automatically selected in the Detail Block of the Job Management Form if it is opened. The other worksheets are selected by selecting the appropriate radiobutton in the Worksheet Selection Group (see section 'Worksheet Selection Group' on page 39 for further details on these radiobuttons).

When you select a particular worksheet by selecting a radiobutton in the Worksheet Selection Group, the content of the Detail Block changes and the selected worksheet will appear in the Detail Block of the Job Management Form.

The worksheets provide an OK button to run the task covered by the respective worksheet. Once a task has been completed, an alert window appears that indicates the completion of the respective task. Press the button OK in this alert window to quit it.

Organizational SDM Forms

Communication Between a Task and the Job Management Form

When you run a particular task a UNIX script will be executed. The messages of this Unix script will appear in the Message Line of the Job Management Form. Keep this portion of the Job Management Form visible during the execution of the concerned task to be able to view these messages as they appear.

Job List

The Job List is a tabular list that shows the pending jobs and their particular features. Each line of the tabular list represents a single job. A scrollbar is attached to the tabular list which can be used to quickly navigate through the list. Changes in the list are updated automatically.

FIGURE 23

Job List in Detail Block

Job Name	Job Status	Locked by	Current Username	Last Used Date Time
Line	READY			06-JUL-1998 17:31:05
London	READY			06-JUL-1998 17:32:23
MPLS	READY			06-JUL-1998 17:33:05
Nurembrg	READY			06-JUL-1998 17:35:38
Oslo_A	READY			06-JUL-1998 17:39:24
Oslo_C	READY			06-JUL-1998 17:40:11
Paris	READY			06-JUL-1998 17:41:53
Rome	READY			06-JUL-1998 17:42:43
Vienna	READY			06-JUL-1998 17:46:41
ka	READY			07-JUL-1998 08:10:25
multi	TRANSFERRED		PRIME	06-JUL-1998 15:08:30
testfile	READY			06-JUL-1998 17:56:57

The following attributes are displayed in the Job List:

■ **Job Name**

The name that identifies a job in the system (up to eight characters). It is defined by the user when the job is created and must be unique among all SDM job names in the system. Read-only display field.

■ **Job Status**

Contains the current job status. Read-only display field.

■ **Locked by**

Identifies the operator who locks the respective job. Read-only display field.

■ **Current Username**

Identifies the operator who is currently working on the respective job. Read-only display field.

■ **Last Used Date Time**

Organizational SDM Forms

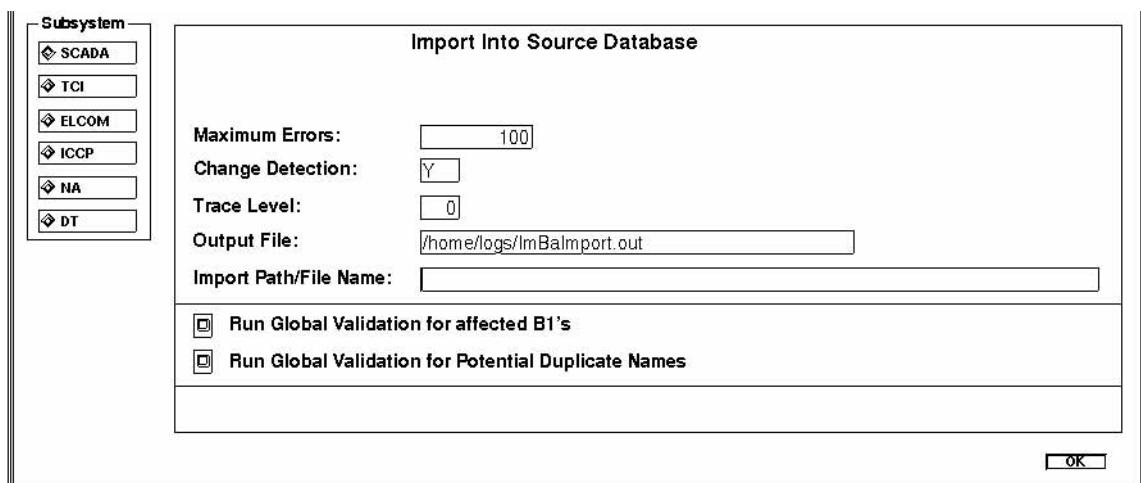
Show the date and the time of last processing (creation or modification) performed by the respective job. This attribute is automatically updated by the system whenever a processing is performed by the respective job. Read-only display field.

Import Worksheet

The Import Worksheet may be selected in the Detail Block of the Job Management Form by selecting the radiobutton **Import** in the Worksheet Selection Group. It provides facilities for the import of IDD files into the source database.

FIGURE 24

Import Worksheet



The screenshot shows a dialog box titled "Import Into Source Database". On the left, there is a vertical list of subsystems: SCADA, TCI, ELCOM, ICCP, NA, and DT. The "SCADA" option is selected. The main area contains several configuration fields:

- Maximum Errors:** A text input field containing "100".
- Change Detection:** A dropdown menu showing "Y".
- Trace Level:** A dropdown menu showing "0".
- Output File:** A text input field containing "/home/logs/lmBalmport.out".
- Import Path/File Name:** A text input field.
- Checkboxes:** Two checkboxes are present:
 - Run Global Validation for affected B1's
 - Run Global Validation for Potential Duplicate Names
- OK button:** A button located at the bottom right of the dialog box.

The Import Worksheet consists of the following main components:

Organizational SDM Forms

■ Subsystems Block

A group of radio buttons to select the subsystem the imported data belong to:

- SCADA
- TCI
- ELCOM
- ICCP
- NA
- DT

■ Import Block

- **Maximum Errors**

Shows the maximum number of errors allowed during an import (preset).

- **Change Detection**

Shows the current change detection mode (yes/no) (preset).

- **Trace Level**

Shows the currently selected trace level (preset).

- **Output File**

Shows the name of the output file that contains messages that have occurred during an import (preset).

- **Import Path/File Name**

Contains the full pathname of the IDD file that must be imported.

- **Run Global Validation for Affected B1's**

- **Run Global Validation for Potential Duplicated Names**

Checkboxes to select the named global validation during import.

■ OK

Press the button **OK** to activate the import task.

Export Worksheet

The Export Worksheet may be selected in the Detail Block of the Job Management Form by selecting the radiobutton **Export** in the Worksheet Selection Group. It provides facilities for the export of data from the source database to IDD files.

Organizational SDM Forms

FIGURE 25

Export Worksheet

The screenshot shows the 'Export Worksheet' dialog box. On the left, there is a vertical 'Subsystem' block containing radio buttons for SCADA, TCI, ELCOM, ICCP, NA, and DT. The 'SCADA' button is selected. The main area is titled 'Export Source Database'. It contains the following fields:

- Hierarchy Name:** A text input field containing 'B1'.
- B1 Name:** An empty text input field.
- Trace Level:** A dropdown menu showing '0'.
- Output File:** A text input field containing '/home/logs/ImBaExport.out'.
- IDDUG Directory:** An empty text input field.

In the bottom right corner of the dialog box is an 'OK' button.

The Export Worksheet consists of the following main components:

- **Subsystems Block**
 - A group of radio buttons to select the subsystem the exported data belong to:
 - SCADA
 - TCI
 - ELCOM
 - ICCP
 - NA
 - DT
- **Export Block**
 - **Hierarchy Name**
 - B1 or Reference -- if B1 is selected, a field for input of the B1 name is provided.
 - **B1 Name**
 - Field for input of the B1 block to be exported.
 - **Trace Level**
 - Shows the currently selected trace level (preset).
 - **Output File**
 - Shows the name of the output file that contains messages that have occurred during an export (preset).
 - **IDD Directory**
 - Contains the directory path of the IDD file that will be created.

Organizational SDM Forms

■ OK

Press the button **OK** to activate the data export.

Validation, Transfer and Activation Worksheet

The Validation, Transfer and Activation Worksheet may be selected in the Detail Block of the Job Management Form by selecting the radiobutton **To ODB** in the Worksheet Selection Group. It provides facilities for validation of the source database, transfer of data modifications to the copy 1 of the operational database and activation of the changes into ODB copy 0. The input fields of the tasks are displayed after the respective checkbox has been selected.

FIGURE 26

Validation, Transfer and Activation Worksheet

The screenshot shows a dialog box titled "Validation, Transfer and Activation". On the left, there is a vertical list of subsystems: SCADA, TCI, ELCOM, ICCP, NA, DT, and DMS. To the right of this list are three main sections: "Validation", "Transfer", and "Activation". Each section contains several options and log file paths. The "Validation" section includes checkboxes for "Validation", "Job Validation", "Global Validation", and "Delete Job Messages". The "Transfer" section includes checkboxes for "Transfer" and "Row Level Validation". The "Activation" section includes checkboxes for "Activation", "Debug", and "Forced". Below each section is a text input field for the "Log" file path. The "Validation Log" path is set to "/home/logs/ImGvJob.out", the "Transfer Log" path is set to "/home/logs/ImBaJobTransfer.out", and the "Activation Log" path is set to "/home/logs/ImDBAJobMgmt.out". At the bottom right of the dialog is an "OK" button.

The Validation, Transfer and Activation Worksheet consists of the following main components:

- Validation Block
 - **Validation Log**
Shows the name of the output file that contains messages that have occurred during a validation (preset).
 - **Job Validation**
 - **Global Validation**
Radiobuttons to select whether validation shall be performed for the selected job only, or whether a global validation shall be performed.
 - **Delete Job Messages**
Checkbox to select, whether the messages of the job shall be deleted before validation.

Organizational SDM Forms

- **Row Level Validation**
Checkbox to select row level validation mode.
- Job Transfer Block
 - **Transfer Log**
Shows the name of the output file that contains messages that have occurred during a job transfer (preset).
- After the job transfer has been finished successfully, the status of the job is set to TRANSFERRED in the Job List and the data modifications are placed in the copy 1 of the ODB.
- Activation Block
 - **Activation Log**
Shows the name of the output file that contains messages that have occurred during a job transfer (preset).
 - **Debug**
Checkbox to switch on debugging.
 - **Forced**
When this checkbox is selected, activation is performed also if e.g. locks are existing.
- OK
Press the button **OK** to activate the selected tasks.

Undo Worksheet

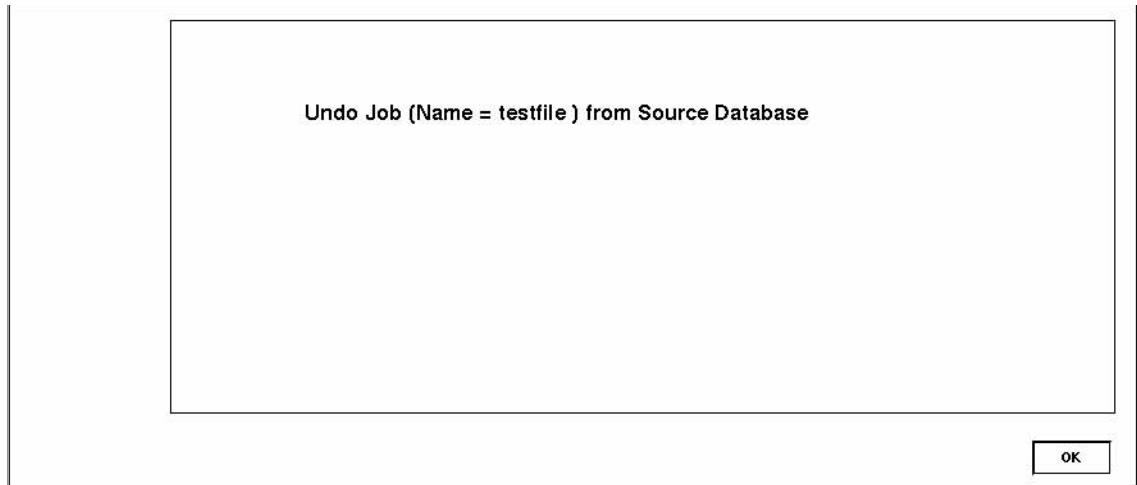
When you are connected to a job in the status ODB_ACTIVATED, the activation can be undone by using the Undo feature. The Undo feature is performed via the Undo Worksheet.

The Undo Worksheet may be selected in the Detail Block of the Job Management Form by selecting the radiobutton **Undo** in the Worksheet Selection Group. It provides facilities to undo data modifications of a job.

Organizational SDM Forms

FIGURE 27

Undo Worksheet



The Undo Worksheet consists of the following main components:

- **Undo Block**
Shows the name of the respective job. Read-only display field.
- **OK**
Press the button **OK** to undo data modifications.
If the respective job has been activated and transferred to the copy 0 of the ODB (the job's status is `ODB_ACTIVATED`), pressing the button **OK** removes the data modifications from the copy 0 of the ODB. The data modifications in the copy 1 of the ODB will remain.
If the respective job has never been transferred to the ODB, i.e., if it is in status `READY`, the pressing the button **OK** removes the data modifications made by this job from the source database. The job will be in status `UNDONE` after the undo task as finished.

Redo Worksheet

Selecting on the “**Redo**” radiobutton opens the Redo Worksheet to re-apply the changes made by a job to the SDB. The redo task is only possible for a job with status `UNDONE`.

Cancel Worksheet

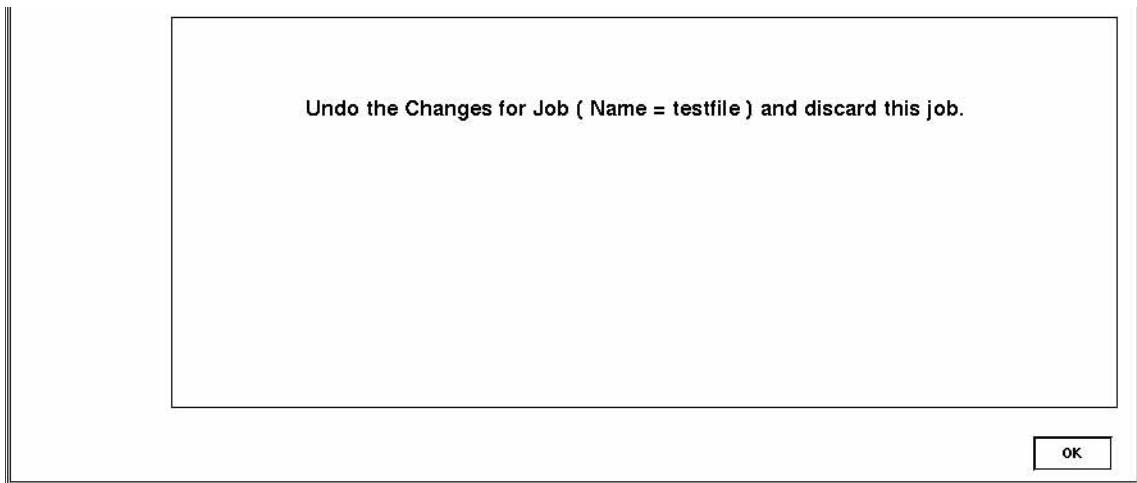
For jobs in status `TRANSFERRED`, the data modifications in the copy 1 of the operational database can be removed using the Cancel task. The Cancel task is performed via the Cancel Worksheet.

Organizational SDM Forms

The Cancel Worksheet may be selected in the Detail Block of the Job Management Form by selecting the radiobutton **Cancel** in the Worksheet Selection Group. It provides facilities to remove data modifications in the copy 1 of the operational database.

FIGURE 28

Cancel Worksheet



The Cancel Worksheet consists of the following main components:

- **Cancel Block**
Shows the name of the respective job (preset). Read-only display field.
- **OK**
Press the button **OK** to cancel data modifications.
If the respective job has been transferred from the source database to the copy 1 of the ODB but has not been activated in the copy 0 of the ODB (the job's status is `ODB_TRANSFERRED`), the Cancel feature will remove the data modifications from the copy 1 of the ODB. The data modifications of the respective job will remain in the source database.
If the respective job has never been transferred to the ODB, i.e., if it is in status `READY`, the Cancel feature will remove the data modifications made by the respective job from the source database and will remove the job itself from the Job List in the Job Management Form.
After the Cancel task has been finished, the Cancel Worksheet will automatically be closed and the Job List will appear again.

Delete Worksheet

Selecting on the "Delete" radiobutton opens the 'Delete Worksheet' to delete a job with status "ODB_ACTIVATED" from the Operational Database and the Source Database (with the modifications remaining)

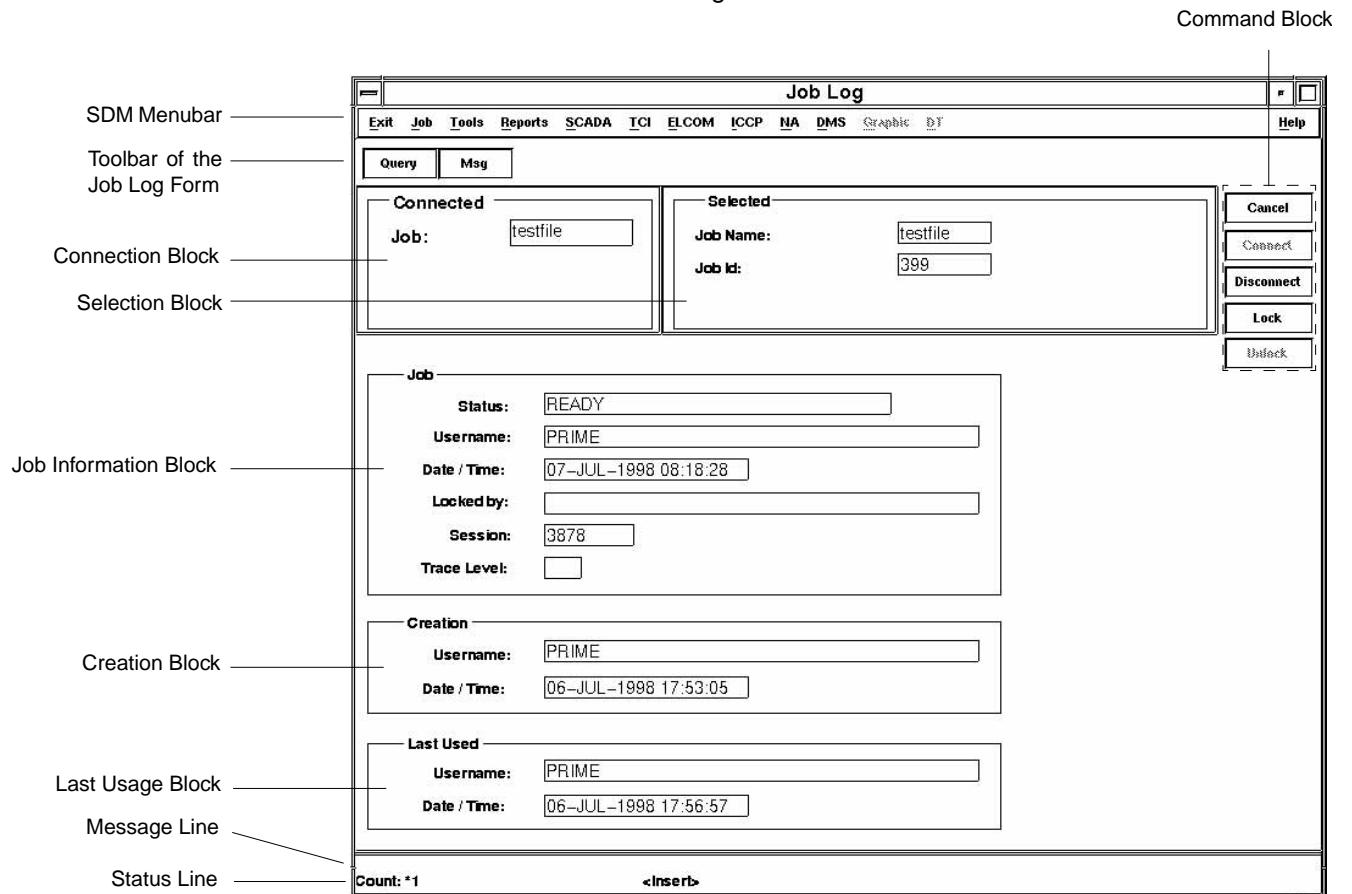
Organizational SDM Forms

Job Log Form

The Job Log Form can be selected from the menu **Job** in the SDM Menubar. It provides facilities that allow you to connect or disconnect and to lock or unlock a job. None of the data in this form, except the job name, can be accessed.

FIGURE 29

Basic Structure of the Job Log Form



Note:

The entire form is read-only.

You can modify the status of a job by using the buttons in the Command Block (see section 'Command Block' on page 53).

The Job Log Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Toolbar of the Job Log Form
- Connection Block
- Selection Block
- Job Information Block
- Creation Block
- Last Usage Block
- Command Block

These form components are described in detail in the following sections.

Toolbar of the Job Log Form

The Job Log Form contains a toolbar that differs from the standard SDM Toolbar (see section 'SDM Toolbar' on page 21 for details). The Toolbar of the Job Log Form provides the following buttons for an easy access to frequently used features related with the job log:

- **Query**
Perform a query on the database and retrieve the job log status for the job specified in the **Job Name** field.
- **Msg**
Opens the Error Message Form to show error messages of the concerned job. For more details on the Error Message Form, refer to the section 'Error Message Form' on page 72.

Connection Block

- **Job**

Shows the name of the currently connected job. Read-only display field.

Selection Block

■ Job Name

This name (up to eight characters) identifies a job in the system. Read-only display field.

The input field of the attribute **Job Name** will be accessible in **Query Mode**. Enter your **Query Criteria** into this input field in **Query Mode**.

■ Job ID

Shows the number (job ID) used to identify the concerned job. Read-only display field.

Job Information Block

The Job Information Block shows the following status information of the concerned job:

■ Status

Shows the status of the specified job. Read-only display field.

■ Username

Shows the username of the operator who is currently working on the concerned job. Read-only display field.

■ Date / Time

Shows the current date and time. Read-only display field.

■ Locked by

If available, this display field shows the username of the operator who has locked the concerned job. Read-only display field.

■ Session

Shows a number used to identify the concerned session. Read-only display field.

■ Trace Level

Shows the current job trace level. Read-only display field.

Creation Block

■ Date / Time

Shows the date and time of the creation of the job. Read-only display field.

■ Username

Shows the username of the operator who has created the job. Read-only display field.

Last Usage Block

- **Date / Time**

Shows the date and the time of latest processing (creation or modification) performed by the respective job. This attribute is automatically updated by the system whenever a processing is performed by the respective job. Read-only display field.

- **Username**

Shows the username of the operator who performed the latest processing (creation or modification) on the respective job. This attribute is automatically updated by the system whenever a processing is performed. Read-only display field.

Command Block

The Command Block of the Job Log Form differs from the standard Command Block contained in a SDM form (see section 'Command Block' on page 26 for details). Since the entire Job Log Form is read-only, only the Command Block of the Job Log Form can be used to change the status of the currently displayed job. It contains the following buttons:

- **Cancel**

Exits the Job Log Form. If you press this button, the Job Log Form will be closed and the Job Management Form will appear.

- **Connect**

Connect the job whose name is currently displayed in the display field of the attribute **Job Name** to the system.

- **Disconnect**

Disconnect the job whose name is currently displayed in the display field of the attribute **Job Name** from the system. If you press this button, the display field of the attribute **Job** in the Connection Block will be emptied.

- **Lock**

Establish a job interlock on the job whose name is currently displayed in the display field of the attribute **Job Name**. After a lock has been established, the locked job can be modified only by the operator who has locked it.

- **Unlock**

Remove the job interlock from the job whose name is currently displayed in the display field of the attribute **Job Name**. After a lock has been removed, the respective job can be connected and modified by any operator.

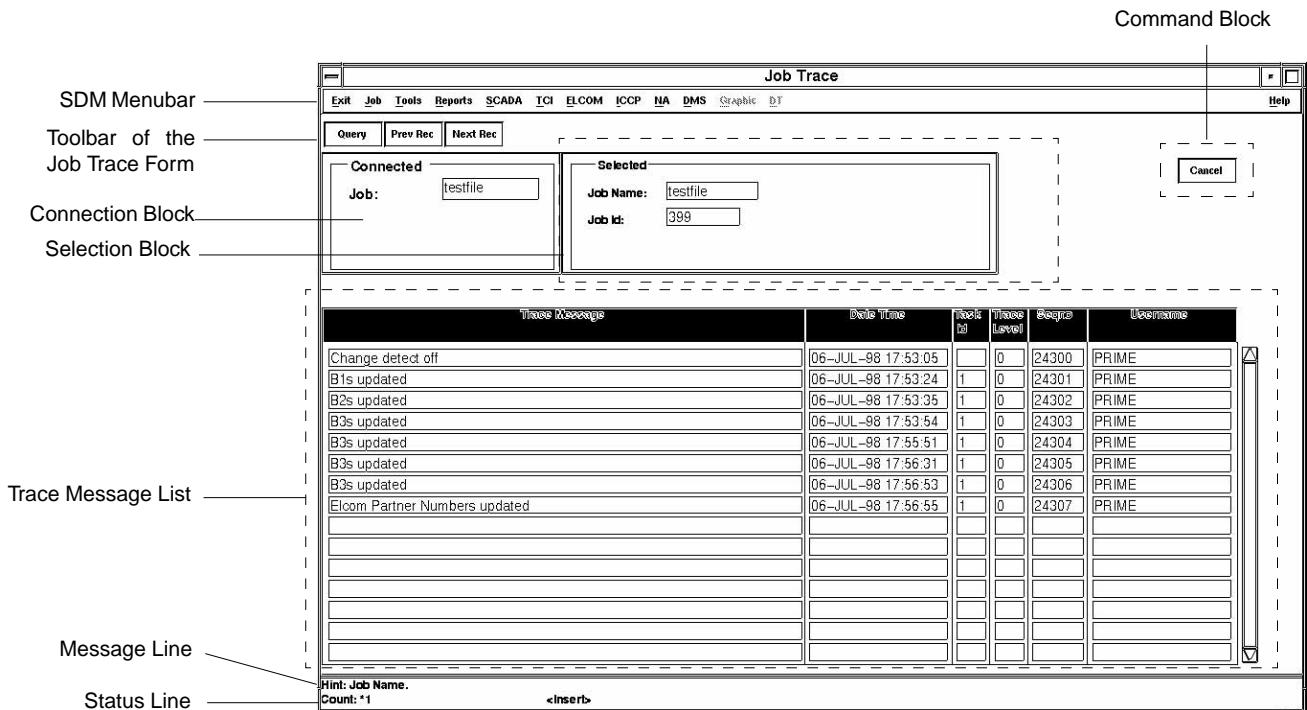
Organizational SDM Forms

Job Trace Form

The Job Trace Form can be selected from the menu **Job** in the SDM Menubar. It provides facilities that allow you to view trace information associated with a certain job. This feature can be used for debugging purposes. For example, you can debug a job with the help of the Job Trace Form to figure out whether it has been completed properly.

FIGURE 30

Basic Structure of the Job Trace Form



Note:

The entire form is read-only. None of its input fields can be accessed.

The Job Trace Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

Organizational SDM Forms

- Toolbar of the Job Trace Form
- Connection Block
- Selection Block
- Command Block
- Trace Message List

These form components are described in detail in the following sections.

Toolbar of the Job Trace Form

The Job Trace Form contains a toolbar that differs from the standard SDM Toolbar (see section 'SDM Toolbar' on page 21 for details). The Toolbar of the Job Trace Form provides the following buttons for an easy access to features related with trace information of a job:

- **Query**
Perform a query on the database and retrieve trace information for the job specified in the input field of the attribute **Job Name** in the Selection Block. The retrieved trace information will be displayed in the Trace Message List.
- **Prev Rec**
Moves the cursor to the previous record.
- **Next Rec**
Moves the cursor to the next record in the current block.

Connection Block

- **Job**
Shows the name of the currently connected job. Read-only display field.

Selection Block

- **Job Name**
This name (up to eight characters) identifies a job in the system. Read-only display field.
The input field of the attribute **Job Name** will be accessible in **Query Mode**. Enter your **Query Criteria** into this input field in **Query Mode**.
- **Job ID**
Shows the number (job ID) used to identify the concerned job. Read-only display field.

Command Block

The Command Block of the Job Trace Form differs from the standard Command Block contained in a SDM form (see section 'Command Block' on page 26 for details). It contains the following button:

- **Cancel**
Exits the Job Trace Form. If you press this button, the Job Trace Form will be closed and the Job Management Form will appear.

Trace Message List

The Trace Message List is a tabular list that shows trace information of that job whose job name is currently displayed in the input field of the attribute **Job Name** in the Selection Block. Each line of the tabular list represents a single trace message, i.e., a single action performed by the respective job. The columns of the list contain the attributes of the respective trace message. A scrollbar is attached to the tabular list which can be used to quickly navigate through the list. Changes in the list are updated automatically.

- **Trace Message**
Shows detailed information about a performed action.
- **Date Time**
Shows the date and the time the concerned action was made.
- **Task Id**
Shows the number of the task to which the concerned action belongs.
- **Trace Level**
Shows the respective job trace level.
- **Seqno**
Shows the sequence numbers for the concerned action that has been performed.
- **Username**
Shows the username of the operator who has performed the respective action.

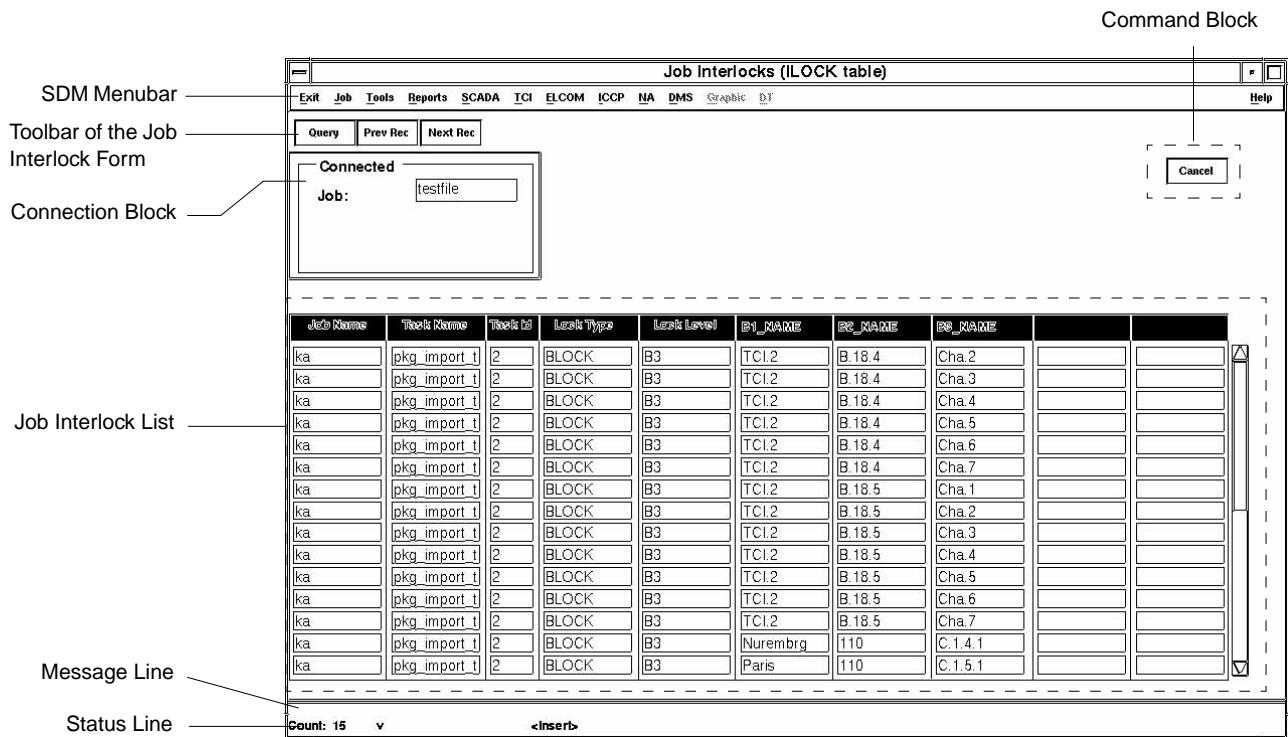
Organizational SDM Forms

Job Interlock Form

The Job Interlock Form can be selected from the menu **Job** in the SDM Menubar. It provides facilities that allow you to view job interlock information. This feature can be used for debugging purposes. For example, you can debug a job with the help of the Job Interlock Form to figure out whether locks exist on certain data.

FIGURE 31

Basic Structure of the Job Interlock Form



Note:

The entire form is read-only. None of its input fields can be accessed.

The Job Interlock Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

Organizational SDM Forms

- Toolbar of the Job Interlock Form
- Command Block
- Connection Block
- Job Interlock List

These form components are described in detail in the following sections.

Toolbar of the Job Interlock Form

The Job Interlock Form contains a toolbar that differs from the standard SDM Toolbar (see section 'SDM Toolbar' on page 21 for details). The Toolbar of the Job Interlock Form provides the following buttons for an easy access to features related with job interlock information:

- **Query**
Perform a query on the database and retrieve trace information for the job specified in the input field of the attribute **Job Name**. The retrieved job interlock information will be displayed in the Job Interlock List.
- **Prev Rec**
Moves the cursor to the previous record.
- **Next Rec**
Moves the cursor to the next record in the current block.

Connection Block

- **Job**
Shows the job name of the currently connected job. Read-only display field.
If no job is currently connected, the display field will be blank.

Command Block

The Command Block of the Job Interlock Form differs from the standard Command Block contained in a SDM form (see section 'Command Block' on page 26 for details). It contains the following button:

- **Cancel**
Exits the Job Interlock Form. If you press this button, the Job Interlock Form will be closed and the Job Management Form will appear.

Job Interlock List

The Job Interlock List is a tabular list that shows job interlock information. Each line of the tabular list represents a single job interlock. The columns of the list contain the attributes of the respective job interlock. A scrollbar is attached to the tabular list which can be used to quickly navigate through the list. Changes in the list are updated automatically.

■ **Job Name**

The name (up to eight characters) identifies a job in the system.

■ **Task Name**

Shows the name of the concerned task that has been performed.

■ **Task ID**

Shows the number (task ID) of the concerned task that has been performed.

■ **Lock Type**

Shows the type of data that is locked, e.g., reference or block data, etc. .

■ **Lock Level**

Shows the hierarchical level of the locked data object, e.g., **B1**, **B2**, **B3**, **Element**, **Info**, etc. .

■ **Key 1**

■ **Key 2**

■ **Key 3**

■ **Key 4**

■ **Key 5**

These 5 columns show the concerned database keys of the locked data object. For example: in case of a locked info, these attributes will show the B1-name, the B2-name, the B3-name, the Element name and the Info name of the locked info. In case of a locked application data characteristic group, the attribute **Key 1** will show the name of the locked application data characteristic group, etc.

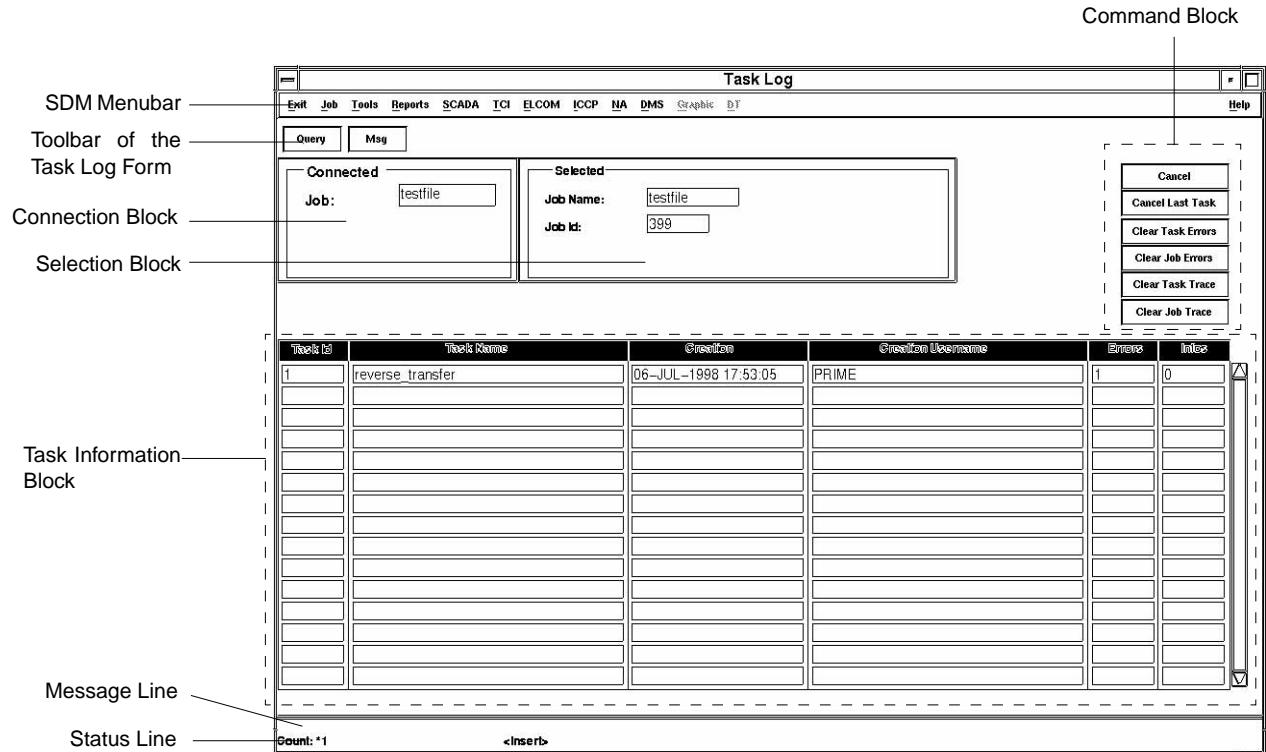
Organizational SDM Forms

Task Log Form

The Task Log Form allows you to view the chronology of the tasks for a particular job. It also allows you to cancel the last one of these tasks. It can be selected under the menu **Job** in the SDM Menubar. Each task and its identifying parameters are shown in one line of the Task Information Block. There is a scrollbar at the right side of the list to scroll the list, as there can be more tasks defined than one page can show.

FIGURE 32

Basic Structure of the Task Log Form



☞ Note:

The entire form is read-only. None of its input fields can be accessed.

The Job Interlock Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

Organizational SDM Forms

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Toolbar of the Task Log Form
- Connection Block
- Selection Block
- Command Block
- Task Information Block

These form components are described in detail in the following sections.

Toolbar of the Task Log Form

The Toolbar of the Task Log Form indicates the actions which may be made for the Task Information Block. It contains the following buttons:

- **Query**

This button has the function to query the database and get the task list for a job specified in the **Job Name** field.

A click on this button clears the Task Information Block and the **Job Name**, and goes into the query mode being ready for the next query. Note that in query mode the **Cancel** button is disabled.

- **Msg**

Pressing this button opens the Error Message Form indicating error messages for the particular job. For more details on the Error Message Form, refer to the section 'Error Message Form' on page 72.

Connection Block

In the Connection Block the name of the job you are currently connected to is displayed.

Selection Block

The Selection Block contains the following fields:

- **Job Name**

This name (up to eight characters) identifies a job in the system. Only this field can be modified in the query mode.

- **Job ID**

This field displays the number used for identifying the specified job.

Command Block

The Command Block contains the following buttons:

- **Cancel**
Exits the Task Log Form. If you press this button, the Task Log Form will be closed and the Job Management Form will appear.
- **Cancel Last Task**
This button allows you to cancel the most recently completed task, thereby removing any data changes made by that task from the database. You can cancel all of the tasks associated with a job, but each task must be cancelled individually and in the reverse order of how it was performed.
- **Clear Task Errors**
This function clears the errors for the selected task in the Task Information Block and sets the error number in the **Errors** field to zero.
- **Clear Job Errors**
This function clears the errors for all tasks of the specified job.
- **Clear Task Trace**
This function clears the trace messages for the selected task in the Task Information Block.
- **Clear Job Trace**
This function clears the trace messages for all tasks of the specified job.

Task Information Block

The following parameters are shown in the Task Information Block:

- **Task ID**
This is a chronological number to record the tasks performed.
- **Task Name**
It is the name of a particular task. This name is generated automatically by the system according to the specified task.
- **Creation**
This field indicates the date and time for the creation of the task.
- **Creation Username**
Shows the username of the operator who has created the respective task.
- **Errors**
The number of errors appeared for the specified task.

Organizational SDM Forms

■ Infos

The number of informational messages appeared for the selected task.

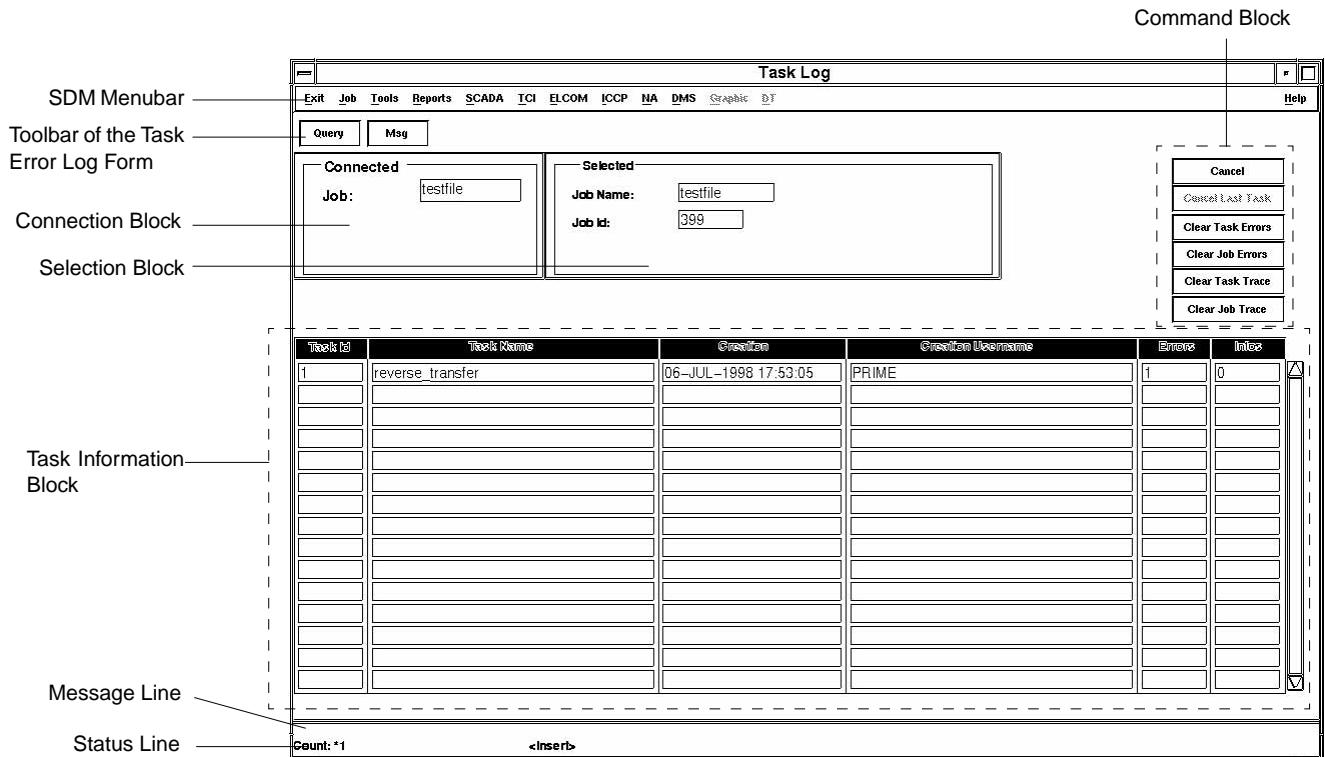
Organizational SDM Forms

Task Error Log Form

The Task Error Log Form allows you to view the chronology of the tasks containing errors for a particular job. The form can be selected under the menu **Job** in the SDM Menubar. Each task which contains errors and its identifying parameters are shown in one line of the Task Information Block. There is a scrollbar at the right side of the list to scroll the list, as there can be more tasks defined than one page can show.

FIGURE 33

Basic Structure of the Task Error Log Form



This form is identically constructed as the Task Log Form. The difference is that only the tasks which involve errors are displayed and the Cancel Last Task button is always disabled.

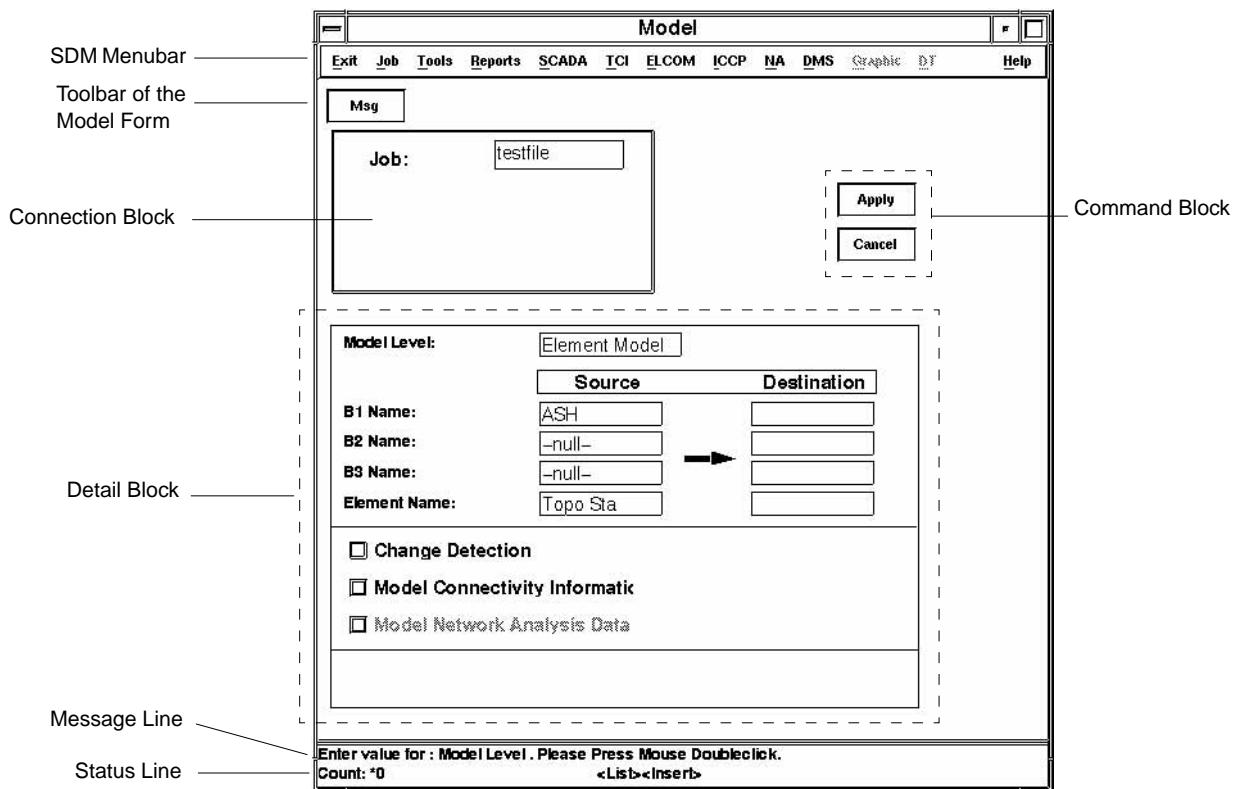
Organizational SDM Forms

Model Form

The Model Form can be selected from the menu **Tools** in the SDM Menubar and from other SDM forms (refer to the description of the concerned SDM form for details). It provides facilities that allow you to duplicate an entire data hierarchy (for example, an entire substation, an entire switchbay, etc.) in the database.

FIGURE 34

Basic Structure of the Model Form



The Model Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Toolbar of the Model Form
- Detail Block

These form components are described in detail in the following sections.

Connection Block

In the Connection Block the name of the job you are currently connected to is displayed.

Command Block

The Command Block of the Model Form differs from the standard Command Block contained in a SDM form (see section 'Command Block' on page 26 for details). It contains the following buttons:

- **Apply**
Creates the object according to the entered data.
 - **Cancel**
Exits the Model Form. If you press this button, the Model Form will be closed and the Job Management Form will appear.
-  **Note:**
*If you have not applied your entries by pressing the button **Apply** in the Command Block, they will be dismissed.*

Toolbar of the Model Form

The Model Form contains a toolbar that differs from the standard SDM Toolbar (see section 'SDM Toolbar' on page 21 for details). It provides the following button:

- **Msg**
Opens the Error Message Form to show error messages of the concerned job. For more details on the Error Message Form, refer to the section 'Error Message Form' on page 72.

Detail Block

The Detail Block provides the following attributes:

- **Model Level**
Contains the model level, i.e., the hierarchical level of the data hierarchy to be copied.
- **Change Detection**

Checkbox to select whether changes shall be detected and recorded in the change log.

■ **Model Connectivity Information**

Checkbox to select whether the connectivity information of the model data hierarchy shall be copied.

■ **Model Network Analysis Data**

Checkbox to select whether the network analysis data of the model data hierarchy shall be copied.

The attributes **B1 Name ... Element Name** form a tabular list with two columns (**Source** and **Destination**). The attributes **B1 Name ... Element Name** in the column **Source** specify the technological address of the data to be copied. The attributes **B1 Name ... Element Name** in the column **Destination** specify the technological address for the new data hierarchy that shall be created from the copy.

If you specify the technological address of the source data, you may enter values for the attributes **B1 Name ... Element Name** in the column **Source** either directly or by selection from a list of values. If you specify the technological address of the destination data, values of the attributes **B1 Name ... Element Name** in the column **Destination** can only be entered directly.

☞ **Note:**

*Depending on the selected Model Level (see description of the attribute **Model Level** on page 66), some of the subsequently described attributes may be protected and not be available for data entry. This applies both to attributes of the column **Source** and **Destination**.*

■ **Source**

– **B1 Name**

Specifies the name of the source B1-block.

☞ **Note:**

The input field of this attribute will be accessible for all Model Levels.

– **B2 Name**

Specifies the name of the source B2-block.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is B2, B3 or Element.

– **B3 Name**

Specifies the name of the source B3-block.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is B3 or Element.

– **Element Name**

Specifies the name of the source element.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is Element.

■ **Destination**

– **B1 Name**

Specifies the name of the destination B1-block.

☞ **Note:**

The input field of this attribute will be accessible for all Model Levels.

– **B2 Name**

Specifies the name of the destination B2-block.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is B2, B3 or Element.

– **B3 Name**

Specifies the name of the destination B3-block.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is B3 or Element.

– **Element Name**

Specifies the name of the destination element.

☞ **Note:**

The input field of this attribute will be accessible only if the selected Model Level is Element.

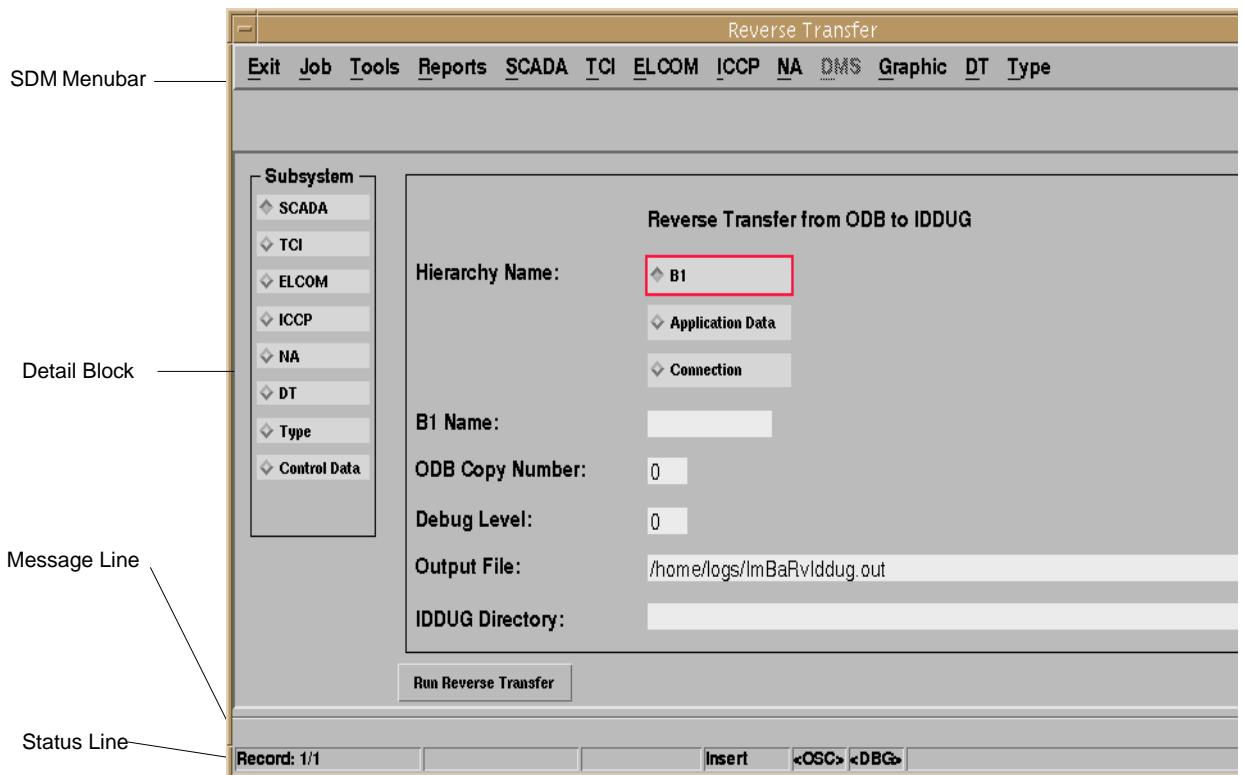
Organizational SDM Forms

Reverse Transfer Form

The Reverse Transfer Form can be selected from the menu **Tools** in the SDM Menubar and from other SDM forms (refer to the description of the concerned SDM form for details). It provides facilities that allow you to create IDD files for ASCII data import from the data of the Operational Database (ODB).

FIGURE 35

Basic Structure of the Reverse Transfer Form



The Reverse Transfer Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Detail Block

This form component is described in detail in the following section.

Detail Block

The Detail Block of the Reverse Transfer Form provides the following attributes:

■ **Subsystem**

Radiobuttons for selection of the subsystem:

- SCADA
- TCI
- Elcom
- ICCP
- NA
- DT
- Type
- Control Data

■ **Hierarchy Name**

Radiobuttons for selection of B1 or Application Data or Connection (if B1 or Application Data is selected, then a field for input of a B1 name is provided). These radiobuttons are only provided, if subsystem SCADA has been selected.

■ **B1 Name**

Field for input of a B1 name.

■ **ODB Copy Number**

Field for input of the number of the ODB copy (preset as 1)

■ **Debug Level**

Field for setting a debug level (preset as 0).

■ **Output File**

Shows the name of the output file that contains messages that have occurred during the reverse transfer task (preset).

■ **IDDUG Directory**

Field for entering the full pathname of the IDD file that will be created.

■ **Run Reverse Transfer**

Press the button Run Reverse Transfer to activate the reverse transfer.

■ **Cancel**

Exits the Reverse Transfer Form. If you press this button, the Reverse Transfer Form will be closed and the Job Management Form will appear.

Organizational SDM Forms

Additionally, if the subsystem **TCI** is selected, radio buttons for **create RTU data** and **create TCI data** are displayed for selection. Further, if **Control Data** is selected, 3 radio buttons for **Create Control Data Files** (for reverse-trasferring control data from ODB to IDD), **Load Control Data into SDB** (from IDD), and **with AD** (AD data also processed) can be selected.

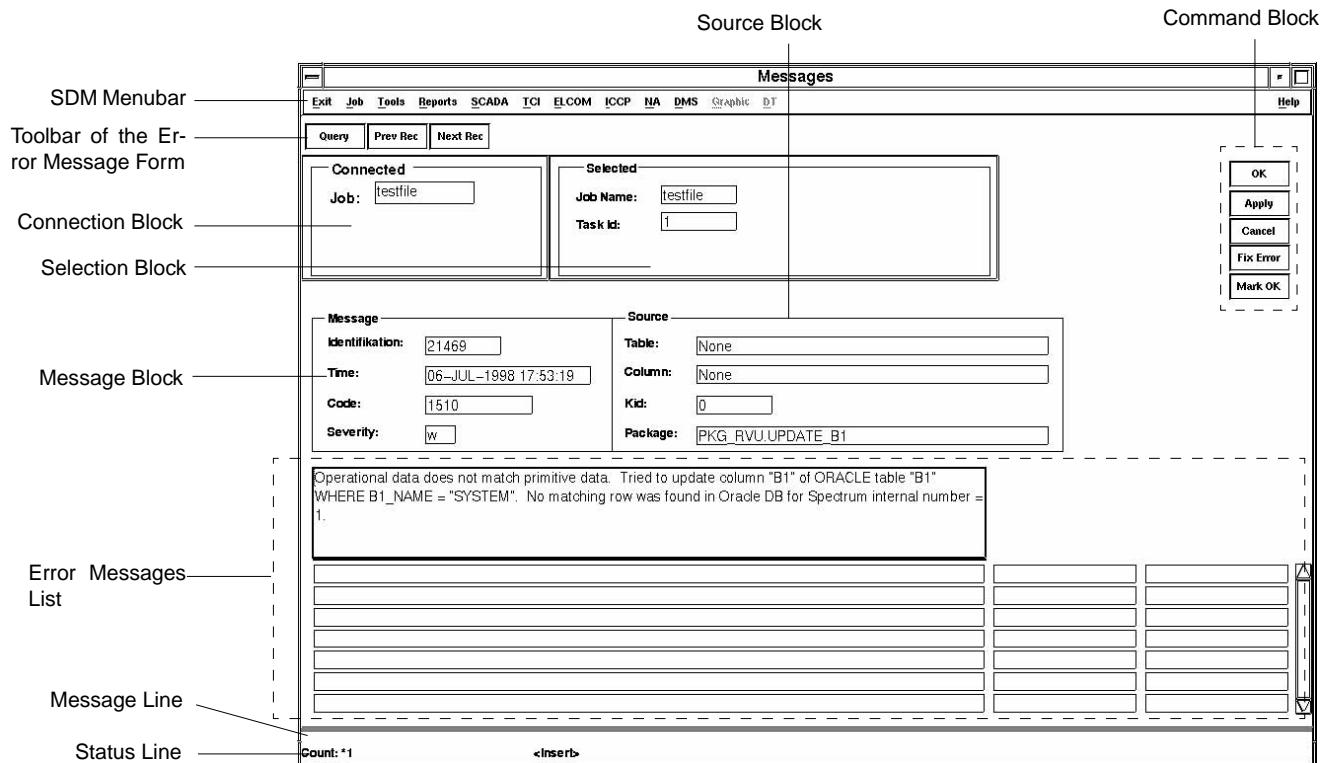
Organizational SDM Forms

Error Message Form

The Error Message Form allows you to view an error message and, depending on your needs, allows you to correct the error or to mark the error as okay. This form can be selected from the menu **Tools** in the SDM Menubar of the Job Management Form and from each of the individual application data forms (via the **Msg** button) described in detail in chapter 6.

FIGURE 36

Basic Structure of the Error Message Form



The Job Interlock Form is composed of the following components:

- SDM Menubar
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Toolbar of the Error Message Form
- Connection Block
- Selection Block
- Command Block
- Message Block
- Source Block
- Error Messages List

These form components are described in detail in the following sections.

Connection Block

In the Connection Block the name of the job you are currently connected to is displayed.

Selection Block

The Selection Block contains the following fields:

- **Job Name**
This name (up to eight characters) identifies a job in the system.
- **Task Id**
This field displays a number used for identifying a specified task.

Command Block

The Command Block contains the following buttons:

- **OK**
Enters into the database all changes made since the last 'Apply', exits the current form and returns to the place from which it was called. It is practically the combination of the buttons 'Apply' and 'Cancel'.
- **Apply**
Enters into the database all changes made since the last 'Apply'.
- **Cancel**
The Cancel function behaves differently, depending on what mode the form is in.
If the form is in Normal mode, pressing 'Cancel' exits the current form and returns to the place from which it was called.
- **Fix Error**

As the name implies, the **Fix Error** button provides a handy way of navigating to the erroneous data so that you can correct the problem.

If you choose to fix the data, be sure to delete the error message too.

■ **Mark OK**

One of the features of the SDM database is the ability, in most cases, to override data constraints. And for those situations, when data deviates from the norm, the **Mark OK** button has to be used.

Marking a message okay not only moves the message out of the error message table, it also turns off that error for that record for all times. Once an error is marked okay, it will never again be issued for that data record.

Toolbar of the Error Message Form

■ **Query**

This button has the function to query the database and get the error messages for a job specified in the **Job Name** field.

■ **Prev Rec**

Moves the cursor to the previous record.

■ **Next Rec**

Moves the cursor to the next record in the current block. If no more records are found, this function creates a new blank record.

Message Block

■ **Identification**

This field displays a number used for identifying a specified message.

■ **Time**

This field indicates the date and time the messages were issued.

■ **Code**

The Code is a number assigned for the template used to produce this diagnostic message.

■ **Severity**

It is the severity of this diagnostic:

w = warning;

f = fatal and

i = informational.

Source Block

- **Table**
It is the Oracle table to which this message is referring.
- **Column**
It is the Oracle column to which this message is referring.
- **Kid**
It is the Oracle kid to which this message is referring.
- **Package**
It is the name of the routine issuing this message

Error Messages List

This list contains the diagnostic message texts.

CHAPTER 5

Reports

SDM provides a Report feature that allows you to summarize the content of a single source database table or a number of associated source database tables as a so-called “report”. The basic structure of a report and its appearance is preconfigured. Reports are activated via particular SDM forms. The forms for SCADA reports and SDM reports are described in this chapter, for a description of reports for other subsystems refer to the respective SDM Reference guides.

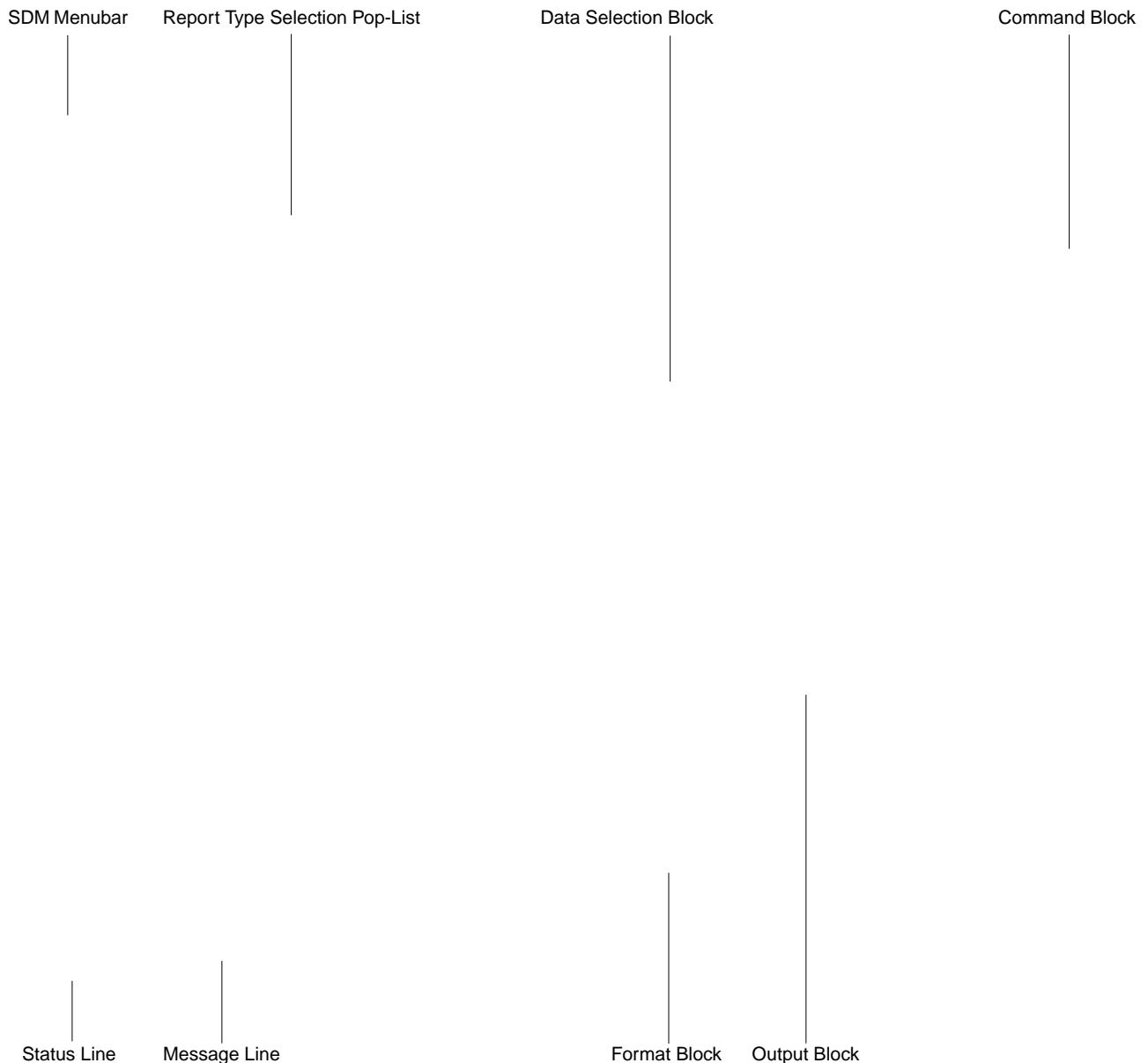
SCADA Report Form

This form can be opened by selecting the menu **Reports** in the SDM Menubar of the Job Management Form.

Reports

FIGURE 37

Basic Structure of the SCADA Report Form



Reports

The SCADA Report Form is composed of the following components:

- SDM Menubar
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Report Type Selection Pop-List
- Data Selection Block
- Output Block
- Format Block

These form components are described in detail in the following sections.

Report Type Selection Pop-List

The Report Type Selection Pop-List can be used to choose the type of the data to be reported. The following options are provided:

- **B1 Data**
- **AD Info Data**
- **Connection Data**
- **Network Group Data**
- **Network Group Isolation Data**
- **Block Type Data**
- **Element Type Data**
- **Archive Filter Data**
- **Archive TA Direct**
- **Archive TA Filter**
- **Archive Object Data**

Data Selection Block

Depending on the selected report type, fields for selecting the data to be reported are displayed.

Output Block

- **Output File**

Specifies the pathname of the output file where the report is stored.

- **Diagnostic File**

Specifies the pathname where the diagnostic information is stored.

Format Block

■ Page Orientation Group

The Page Orientation Group of the SCADA Report Form consists of a group of radio buttons that can be used to select different page orientations for a report. The following radio buttons are provided:

- **Landscape**
- **Portrait**

■ View Checkbox

When this checkbox is selected, the report currently available in the output file is displayed on the screen.

- ☞ *When the checkbox is selected, an input field is displayed, where the output terminal can be entered.*

■ Print Checkbox

When this checkbox is selected, the report currently available in the output file is printed.

- ☞ *When the checkbox is selected, an input field is displayed, where the printer can be entered.*

■ Generate Checkbox

When this checkbox is selected, a new report is generated and stored in the specified output file.

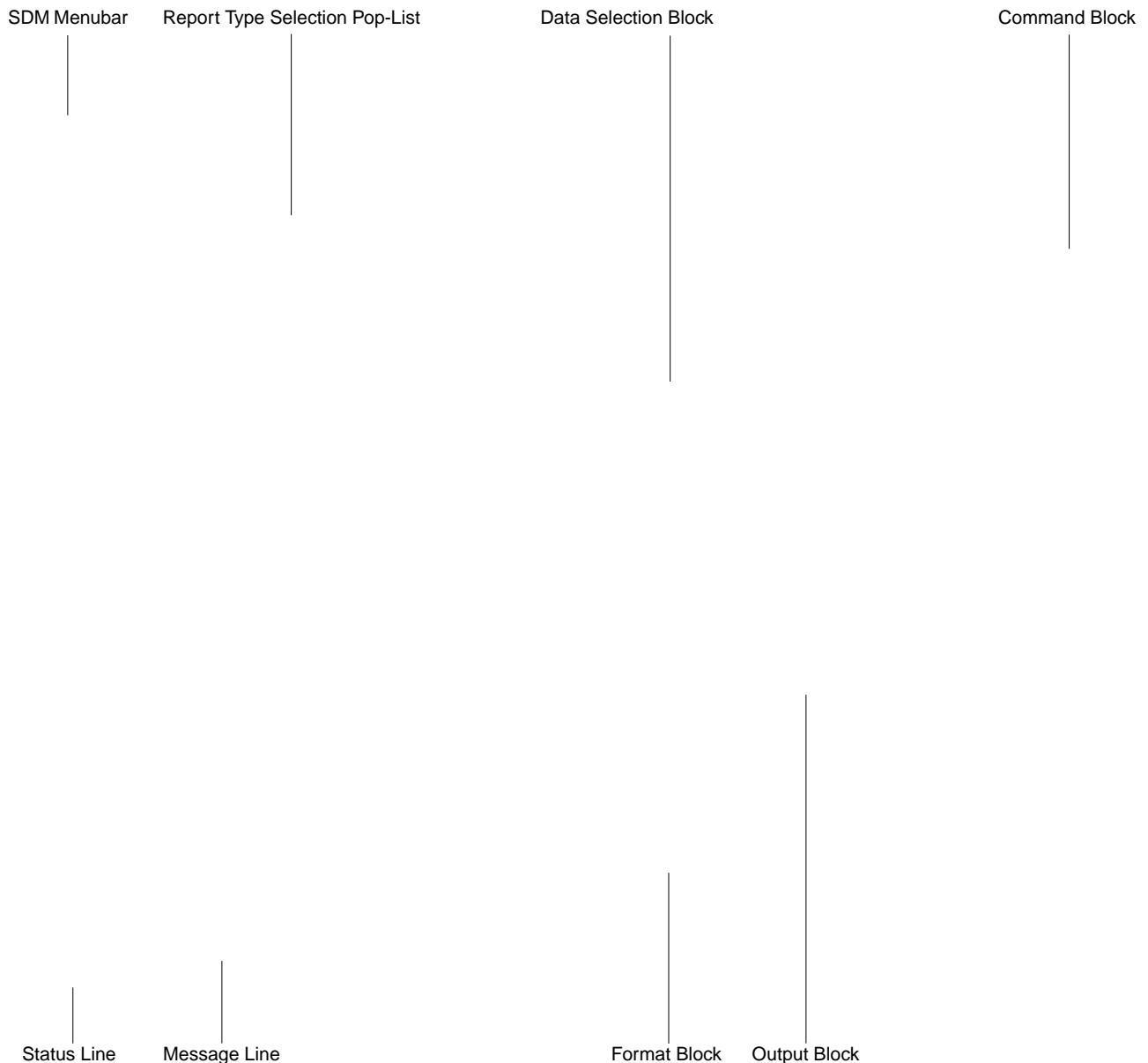
SDM Report Form

This form can be opened by selecting the menu '**Reports**' in the SDM Menubar of the Job Management Form.

Reports

FIGURE 38

Basic Structure of the SDM Report Form



The SDM Report Form is composed of the following components:

- SDM Menubar
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Report Type Selection Pop-List
- Data Selection Block
- Output Block
- Format Block

These form components are described in detail in the following sections.

Report Type Selection Pop-List

The Report Type Selection Pop-List can be used to choose the type of the data to be reported.

Data Selection Block

Depending on the selected report type, fields for selecting the data to be reported are displayed.

Output Block

- **Output File**
Specifies the pathname of the output file where the report is stored.
- **Diagnostic File**
Specifies the pathname where the diagnostic information is stored.

Format Block

■ Page Orientation Group

The Page Orientation Group of the SDM Report Form consists of a group of radio buttons that can be used to select different page orientations for a report. The following radio buttons are provided:

Reports

- **Landscape**
- **Portrait**
- **View Checkbox**

When this checkbox is selected, the report currently available in the output file is displayed on the screen.

☞ *When the checkbox is selected, an input field is displayed, where the output terminal can be entered.*
- **Print Checkbox**

When this checkbox is selected, the report currently available in the output file is printed.

☞ *When the checkbox is selected, an input field is displayed, where the printer can be entered.*
- **Generate Checkbox**

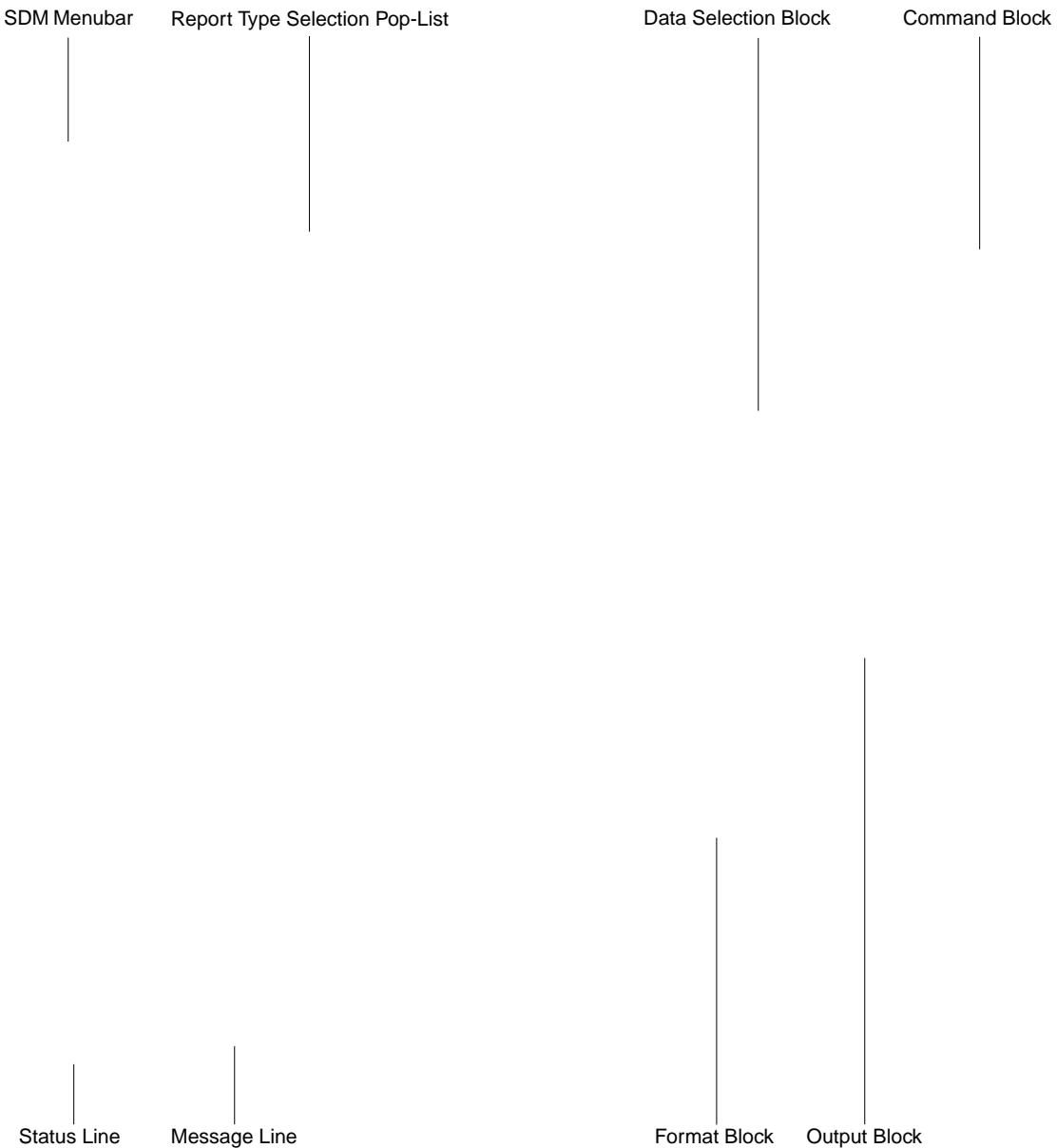
When this checkbox is selected, a new report is generated and stored in the specified output file.

DT Report Form

This form can be opened by selecting item **DT Reports** of menu **Reports** in the SDM Menubar of the Job Management Form.

Reports

FIGURE 39 Basic structure of the DT Report Form



The Type Report Form is composed of the following components:

- SDM Menubar

- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Report Type Selection Pop-List
- Data Selection Block
- Output Block
- Format Block

These form components are described in detail in the following sections.

Report Type Selection Pop-List

The Report Type Selection Pop-List can be used to choose the type of the data to be reported. The following options are provided:

- **Interlocking Overview**
- **Combinations Overview**
- **DT Table Details**
- **DT Type Details**
- **DT Group Detail**

Data Selection Block

Depending on the selected report type, fields for selecting the data to be reported are displayed.

Output Block

- **Output File**
Specifies the pathname of the output file where the report is stored.
- **Diagnostic File**
Specifies the pathname where the diagnostic information is stored.

Format Block

■ Page Orientation Group

The Page Orientation Group of the Type Report Form consists of a group of radio buttons that can be used to select different page orientations for a report. The following radio buttons are provided:

- **Landscape**
- **Portrait**

■ View Checkbox

When this checkbox is selected, the report currently available in the output file is displayed on the screen.

☞ *When the checkbox is selected, an input field is displayed, where the output terminal can be entered.*

■ Print Checkbox

When this checkbox is selected, the report currently available in the output file is printed.

☞ *When the checkbox is selected, an input field is displayed, where the printer can be entered.*

■ Generate Checkbox

When this checkbox is selected, a new report is generated and stored in the specified output file.

Type Report Form

This form can be opened by selecting item **Type Reports** of menu **Reports** in the SDM Menubar of the Job Management Form.

Reports

FIGURE 40

Basic structure of the Type Report Form



The Type Report Form is composed of the following components:

- SDM Menubar

- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- Report Type Selection Pop-List
- Data Selection Block
- Output Block
- Format Block

These form components are described in detail in the following sections.

Report Type Selection Pop-List

The Report Type Selection Pop-List can be used to choose the type of the data to be reported. The following options are provided:

- **Element Types**
- **Element Types with Used TAs**
- **Info Types**
- **Info Types with Used TAs**

Data Selection Block

Depending on the selected report type, fields for selecting the data to be reported are displayed.

Output Block

- **Output File**
Specifies the pathname of the output file where the report is stored.
- **Diagnostic File**
Specifies the pathname where the diagnostic information is stored.

Format Block

- **Page Orientation Group**

The Page Orientation Group of the Type Report Form consists of a group of radio buttons that can be used to select different page orientations for a report. The following radio buttons are provided:

- **Landscape**
- **Portrait**

■ **View Checkbox**

When this checkbox is selected, the report currently available in the output file is displayed on the screen.

☞ *When the checkbox is selected, an input field is displayed, where the output terminal can be entered.*

■ **Print Checkbox**

When this checkbox is selected, the report currently available in the output file is printed.

☞ *When the checkbox is selected, an input field is displayed, where the printer can be entered.*

■ **Generate Checkbox**

When this checkbox is selected, a new report is generated and stored in the specified output file.

CHAPTER 6

SCADA Forms

This chapter deals with the SCADA Forms, i.e., forms for B1, B2, B3, Element, Digital, Analog, Accumulator as well as with the forms for defining the connectivity.

These forms can be opened by selecting the related items in the menu **SCADA** of the SDM Menubar of the Job Management Form.

The following forms are provided:

- B1 Form
- B2 Form
- B3 Form
- Element Form
- Digital Form
- Analog Form
- Accumulator Form
- Connectivity Form
- Network Group Form

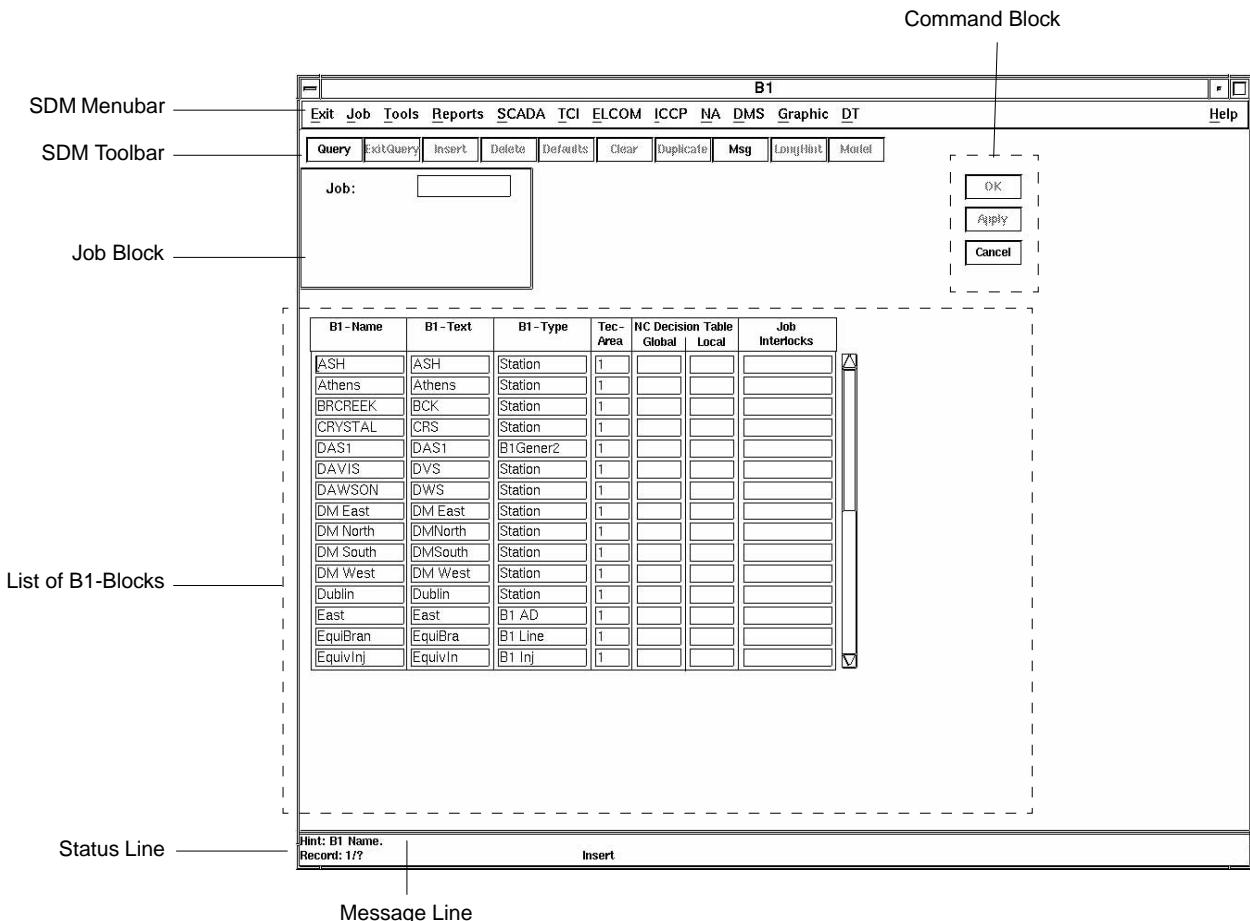
SCADA Forms

B1 Form

The B1 Form deals with attributes of B1-blocks. The facilities provided by the B1 Form can be used to create, modify, remove and view B1-blocks.

FIGURE 41

Basic Structure of the B1 Form



The B1 Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Command Block

- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

List of B1-Blocks

The B1 Form contains a tabular list that shows the attributes of the available B1-blocks. Each line of the tabular list represents a single B1-block. The columns **B1-Name ... Job Interlock** contain the associated attribute settings of the respective B1-block.

- **B1-Name**

Contains the block name of the respective B1-block.

- ☞ **Note:**

The B1-block name must be unique among all other B1-block names in the database.

- **B1-Text**

Contains the block text of the respective B1-block. The block text is a character string (up to 8 characters) that is used for reporting purposes in summaries.

- ☞ **Note:**

If no block text has been specified, the B1-block name is used for reporting in summaries.

- **B1-Type**

Contains the block type of the respective B1-block. Possible attribute values are:

- **B1 AD**

Generic B1 block that may contain any application data element. Usually used for organizational purposes.

- **B1 Inj**

Global block for injections

- **B1 Line**

Global block for lines

- **B1 Syst**

Global block for modelling the computer system itself

- **B1 Traf**

Global block for transformers

- **B1Gener1**

Generic B1 block that may contain any element. Usually used for organizational purposes.

- **B1Gener2**

Generic B1 block that may contain any element. Usually used for organizational purposes.

- **B1StatNA**

Distribution network substation without telecontrol link

- **Station**

Network substation

 **Note:**

After a B1-block has been applied to the database, the block type cannot be modified. If you need to modify the block type of a B1-block, you must remove the entire data hierarchy of the concerned B1-block (i.e., the B1-block and all subordinate B2- and B3-blocks) and re-define the concerned B1-block with the new block type.

■ **Tec-Area**

Contains the number of the technological area of the respective B1-block. Possible attribute values are:

- 1 ... 16

■ **NC Decision Table Global**

Contains the number of an associated decision table for global interlocking checks. Global interlocking checks are considered by Supervisory Control.

■ **NC Decision Table Local**

Contains the number of an associated decision table for local interlocking checks. Local interlocking checks are considered by Supervisory Control.

 **Note:**

For more information on global and local interlocking checks, refer to the appropriate sections in the user guide U-SC20, "Base Applications Data Analysis".

■ **Job Interlock**

Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

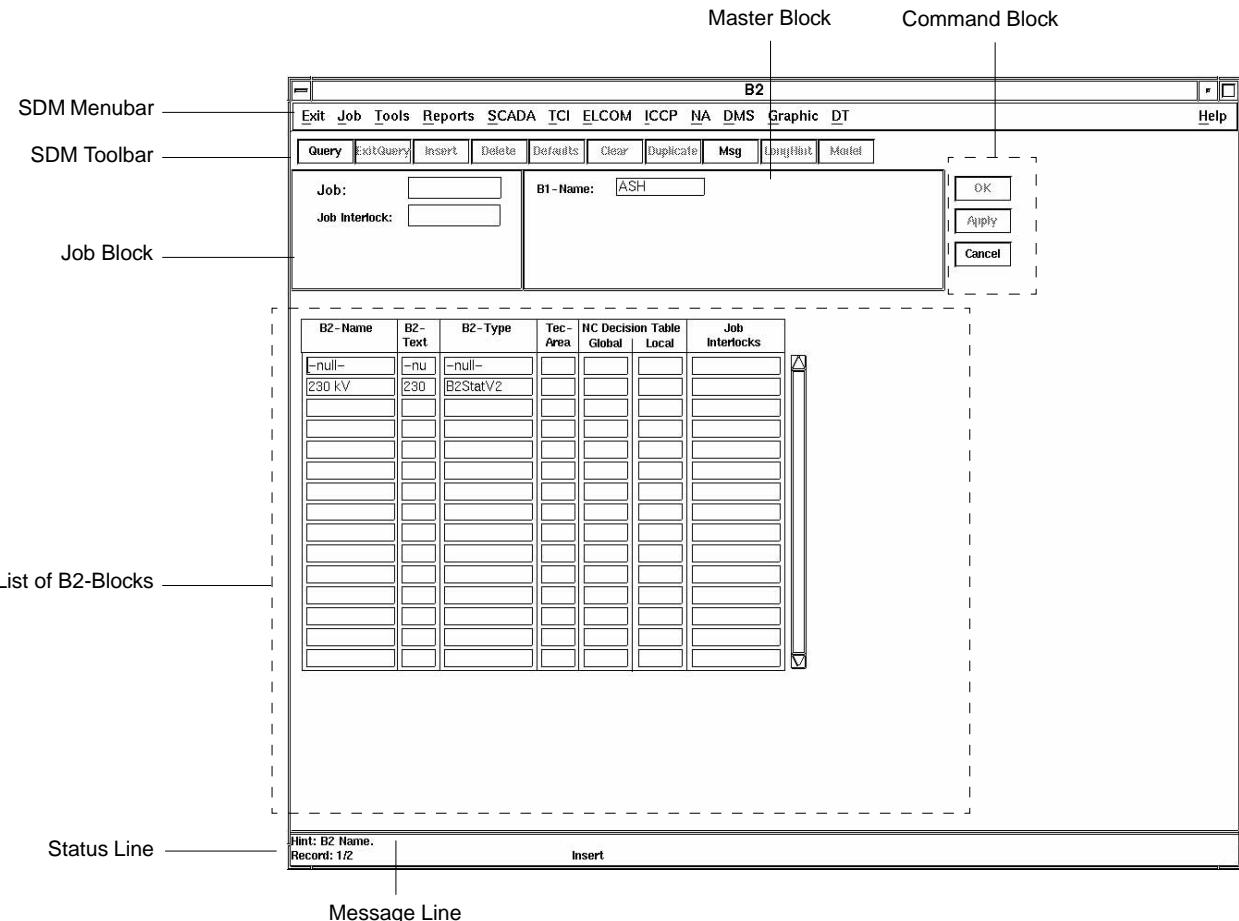
SCADA Forms

B2 Form

The B2 Form deals with attributes of B2-blocks. The facilities provided by the B2 Form can be used to create, modify and view B2-blocks.

FIGURE 42

Basic Structure of the B2 Form



The B2 Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Command Block

- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Master Block

- **B1-Name**

Shows the name of the selected B1-block. Another B1-block may be selected from this text field by entering its name or by selecting its name from a list of values. The list of values is opened after a double-click on the concerned text field.

 Note:

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

List of B2-Blocks

The B2 Form contains a tabular list that shows the attributes of the available B2-blocks of the selected B1-block. Each line of the tabular list represents a single B2-block. The columns **B2-Name ... Job Interlock** contain the associated attribute settings of the respective B2-block.

- **B2-Name**

Contains the block name of the respective B2-block.

 Note:

The B2-block name must be unique among all other B2-block names of the selected B1-block.

- **B2-Text**

Contains the block text of the respective B2-block. The block text is a character string (up to 8 characters) that is used for reporting purposes in summaries.

 Note:

If no block text has been specified, the B2-block name is used for reporting in summaries.

- **B2-Type**

Contains the block type of the respective B2-block. Possible attribute values are:

- **B2 AD**

Generic B2 block that may contain any application data element. Usually used for organizational purposes.

- **B2 Comp**
Generic B2 block for a level within the computer system
- **B2 Dev**
Hardware class of the computer system itself (except computers, ELCOM links and RTUs), e.g. time system, printers, etc.
- **B2 ELCOM**
ELCOM partners (separate level within the computer system)
- **B2 Level**
Generic B2 block for a level within the computer system, e.g., front-end system, main computer system, etc.
- **B2 RTU**
RTUs (separate level within the computer system)
- **B2 Traf**
Block for transformers (B2 block for B1 block of type 'B1 Traf' and/or 'Station')
- **B2Gener1**
Generic B2 block that may contain any element. Usually used for organizational purposes.
- **B2Gener2**
Generic B2 block that may contain any element. Usually used for organizational purposes.
- **B2Inj V1**
- **B2Inj V2**
- **B2Inj V3**
- **B2Inj V4**
- **B2Inj V5**
- **B2Inj V6**
- **B2Inj V7**
- **B2Inj V8**
The B2-block types **B2Inj V1** ... **B2Inj V8** can be used for B2-blocks representing injections of the highest, second highest, ... eighth highest voltage level (B2-block for B1 block of type **B1 Inj**)
- **B2LineV1**
- **B2LineV2**
- **B2LineV3**
- **B2LineV4**
- **B2LineV5**
- **B2LineV6**
- **B2LineV7**

– **B2LineV8**

The B2-block types **B2LineV1** ... **B2LineV8** can be used for B2-blocks representing lines of the highest, second highest, ... eighth highest voltage level (B2-block for B1 block of type **B1 Line**)

- **B2StatV1**
- **B2StatV2**
- **B2StatV3**
- **B2StatV4**
- **B2StatV5**
- **B2StatV6**
- **B2StatV7**
- **B2StatV8**

The B2-block types **B2StatV1** ... **B2StatV8** can be used for B2-blocks representing voltage levels of the highest, second highest, ... eighth highest rated voltage (B2-block for B1 block of type **Station**)



Note:

*The block types **B2StatV1** ... **B2StatV8** are used for voltage levels within a substation (B1-block using the block type **Station**). The respective rated voltage, however, is not the n^{th} highest voltage within the substation, but the n^{th} highest voltage within the entire network. In other words, voltage levels are defined globally for the entire network.*



Note:

After a B2-block has been applied to the database, the block type cannot be modified. If you need to modify the block type of a B2-block, you must remove the entire data hierarchy of the concerned B2-block (i.e., the B2-block and all subordinate B3-blocks) and re-define the concerned B2-block with the new block type.



Tec-Area

Contains the number of the technological area of the respective B2-block. Possible attribute values are:

- 1 ... 16



NC Decision Table Global

Contains the number of an associated decision table for global interlocking checks. Global interlocking checks are considered by Supervisory Control.



NC Decision Table Local

Contains the number of an associated decision table for local interlocking checks. Local interlocking checks are considered by Supervisory Control.



Note:

For more information on global and local interlocking checks, refer to the appropriate sections in the user guide U-SC20, "Base Applications Data Analysis".

SCADA Forms

- **Job Interlock**

Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

SCADA Forms

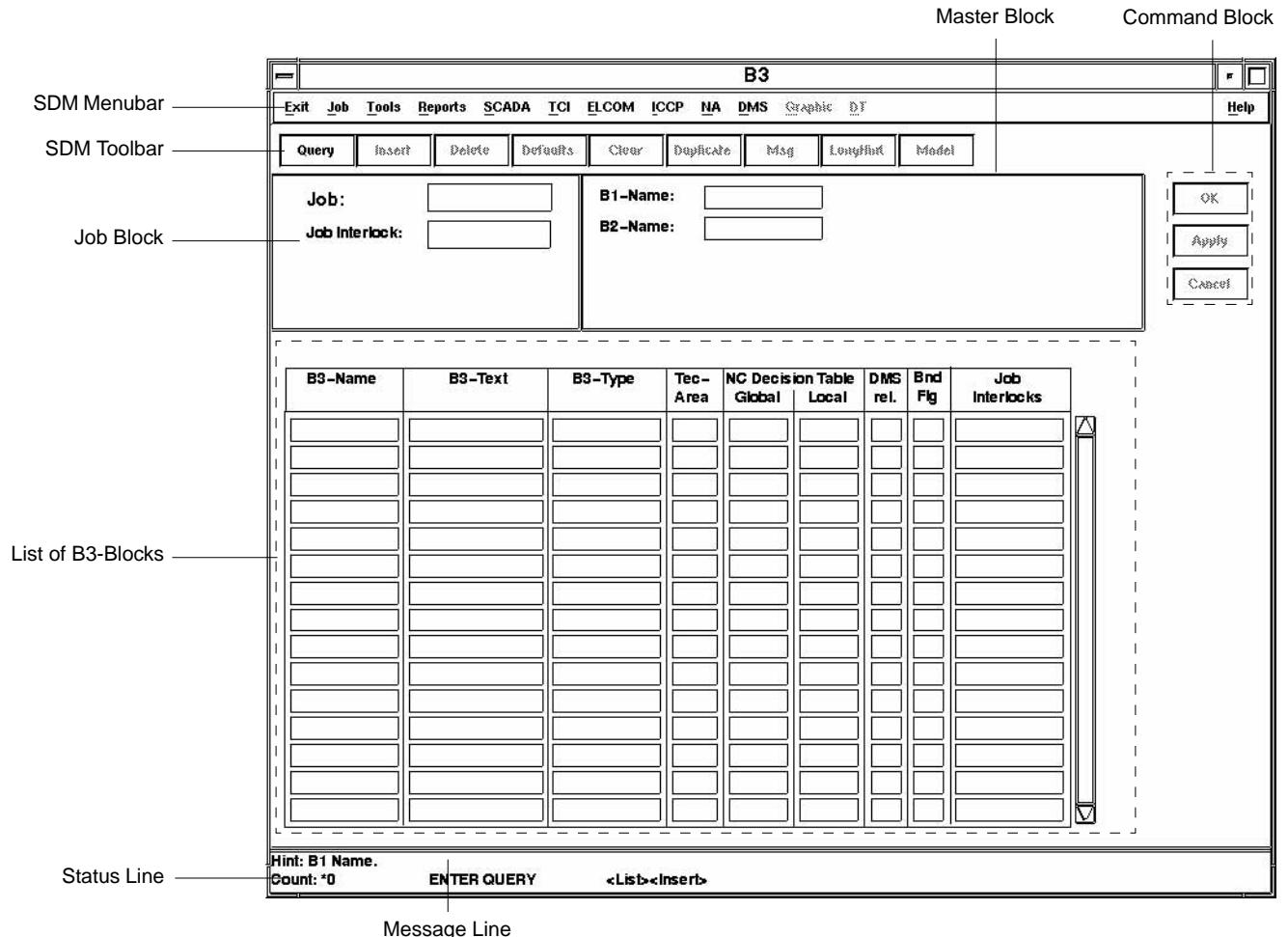
B3 Form

The SCADA form B3 is used to insert, modify, delete and display B3 blocks and their attributes.

B3 blocks are units defined to structure the network in a technological way. All information of a B3 block, e.g., a bay, is shown in a line.

FIGURE 43

Basic Structure of the B3 Form



The B3 Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Master Block

- **B1-Name**
- **B2-Name**

Show the names of the selected B1/B2-block. Another B1/B2-block may be selected from these text fields by entering its name or by selecting its name from a list of values. The list of values is opened after a double-click on the concerned text field.

 **Note:**

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

List of B3-Blocks

The B3 Form contains a tabular list that shows the attributes of the available B3-blocks of the selected B1/B2-block. Each line of the tabular list represents a single B3-block. The columns **B3 Name ... Job Interlocks** contain the associated attribute settings of the respective B3-block.

■ B3 Name

Contains the block name of the respective B3-block.

☞ **Note:**

The B3-block name must be unique among all other B3-block names of the selected B2-block.

e.g.: The names ABCD, ABC d, ABC_D are not allowed for different B3-blocks because they would be interpreted as the same name.

■ B3 Text

Contains the block text of the respective B3-block. The block text is a character string (up to 8 characters) that is used for reporting purposes in summaries.

☞ **Note:**

If no block text has been specified, the B3-block name is used for reporting in summaries.

■ **B3 Type**

Contains the block type of the respective B3-block. Possible attribute values are:

Organizational B3-blocks

– **B3 AD**

Generic B3 block that may contain any application data element. Usually used for organizational purposes.

– **B3 Comp**

Computers

– **B3 Dev**

Hardware component of the computer system (except computers)

– **B3 ELCOM**

ELCOM partner

– **B3 RTU**

RTU

– **B3Gener1**

Generic B3 block that may contain any element. Usually used for organizational purposes.

– **B3Gener2**

Generic B3 block that may contain any element. Usually used for organizational purposes.

Network Components

- **cmpLine**
Line
- **cmpEquBr**
Equivalent branch
- **cmpLiInL**
Injection-/Load-Line
- **cmpInj**
Injection
- **cmpEqInj**
Equivalent injection
- **cmpTrafo**
Transformer
- **cmpTrInL**
Injection-/Load-Transformer
- **cmpLoad**
Load
- **cmpGen**
Generator
- **cmpCoupI**
Calculated (cross) coupling
- **cmpABbSc**
Auxiliary busbar section
- **cmpBbSc1**
Busbar section of busbar 1
- **cmpBbSc2**
Busbar section of busbar 2
- **cmpBbSc3**
Busbar section of busbar 3
- **cmpPetC**
Peterson coil
- **cmpShunt**
Shunt reactor
- **cmpBBIn1**
Injecting busbar 1 (distribution network)
- **cmpBBIn2**
Injecting busbar 2 (distribution network)

SCADA Forms

- **cmpBBIn3**
Injecting busbar 3 (distribution network)
- **cmpBBFd1**
Feeding busbar 1 (distribution networks)
- **cmpBBFd2**
Feeding busbar 2 (distribution networks)
- **cmpBBFd3**
Feeding busbar 3 1 (distribution networks)
- **cmpLin-c**
Line (not calculated by NA, but colored)
- **cmpInj-c**
Injection (not calculated by NA, but colored)
- **cmpTrf-c**
Transformer (not calculated by NA, but colored)
- **cmpBb1-c**
Busbar section of busbar1 (not calculated by NA, but colored)
- **cmpBb2-c**
Busbar section of busbar2 (not calculated by NA, but colored)
- **cmpBb3-c**
Busbar section of busbar3 (not calculated by NA, but colored)
- **cmpABb-c**
Auxiliary busbar section (not calculated by NA, but colored)
- **cmpCpl-c**
Coupling (not calculated by NA, but colored)

Switchbays

- **swLine**
Line switchbay
- **swInj**
Switchbay to injection
- **swTrafo**
Transformer switchbay
(Each lower voltage side switchbay to transformer and/or upper voltage side switchbay to transformer treated as a single transformer during the supervisory control function ‘transformer switching’)
- **swTrafo1**
Transformer switchbay
(Upper voltage side switchbay to transformer treated as a member of a group of parallel transformers during the supervisory control function ‘transformer switching’)
- **swTrafo2**
Transformer switchbay
(Upper voltage-side switching field to transformer treated as a member of a second group of parallel transformers during the supervisory control function ‘transformer switching’)
- **swLoad**
Load switchbay
- **swGen**
Generator switchbay
- **swCoup1**
Cross coupler switchbay
(Circuit breaker pole and isolator pole if divided into three blocks and/or the whole cross coupler)
- **swCoupEx**
Cross coupler switchbay connected to another network component
- **swSerCpl**
Busbar sectionizer switchbay
- **swGround**
Earthing switchbay (links busbar section to ground)
- **swPetCo**
Switchbay to Peterson coil
- **swShunt**
Switchbay to Shunt reactor

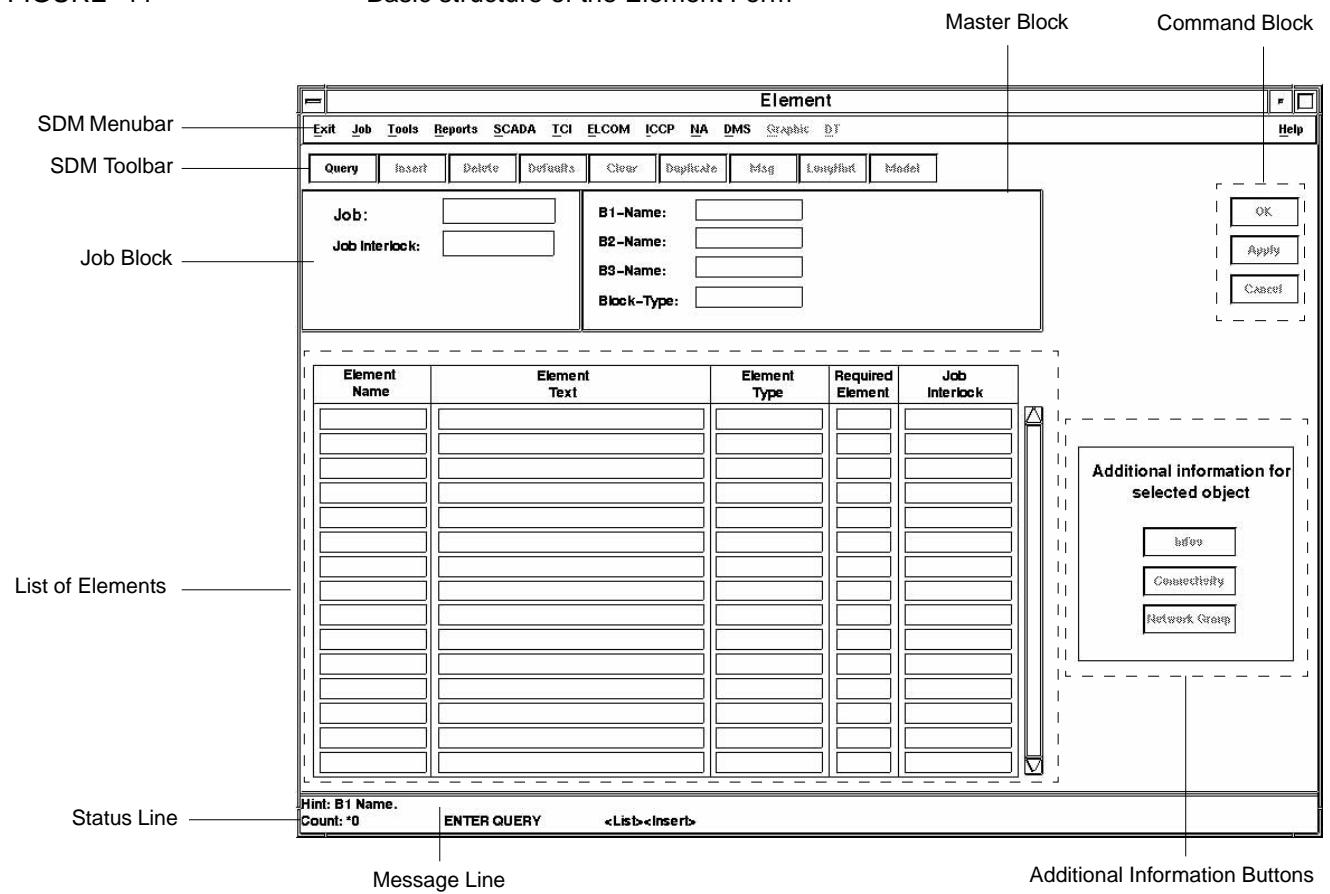
- **swMeas**
Switchbay for measurements only
- **swBayGnr**
Generic switchbay
- **swNeutEa**
Neutral earth
- **Tec Area**
Contains the number of the technological area of the respective B3-block. Possible attribute values are:
 - 1 ... 16
- **NC Decision Table Global**
Contains the number of an associated decision table for global interlocking checks. Global interlocking checks are considered by Supervisory Control.
- **NC Decision Table Local**
Contains the number of an associated decision table for local interlocking checks. Local interlocking checks are considered by Supervisory Control.
- ☞ **Note:**
For more information on global and local interlocking checks, refer to the appropriate sections in the user guide U-SC20, “Base Applications Data Analysis”.
- **DMS rel.**
If the block is to be processed by the DMS applications, “Y” has to be entered in this field.
This field is only relevant when defining DMS data.
- **Bnd Flg**
This value is used by the DMS applications to tell whether a boundary busbar is reached and which part of the busbar should be included in the calculations.
This field is only relevant when defining DMS data.
- **Job Interlocks**
Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

Element Form

With the Element Form all elements belonging to a block can be defined. Elements are e.g. analog values, switches, topological elements, etc. New elements can be defined and existing elements can be removed.

FIGURE 44

Basic structure of the Element Form



The Element Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Command Block

- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Master Block

- **B1-Name**
- **B2-Name**
- **B3-Name**

Show the names of the selected B1/B2/B3 -block. Another B1/B2/B3-block may be selected from these text fields by entering its name or by selecting its name from a list of values. The list of values is opened after a double-click on the concerned text field.

- **Block-Type**

The Block-Type is a read-only field and belongs to the parent B3 record. It is included in this form so that you can limit the scope of a query to a subset of records (i.e. records for a specific block type).

☞ **Note:**

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

List of Elements

The List of Elements contains a tabular list that shows the attributes of the available elements of the selected B1/B2/B3-block. Each line of the tabular list represents a single element. The columns **Element Name** ... **Job Interlock** contain the associated attribute settings of the respective B3-block.

- **Element Name**

Contains the name of the respective element.

☞ **Note:**

The element name must be unique among all other element names of the selected B3-block.

- **Element Text**

Contains the text of the respective element. The text is a character string (up to 8 characters) that is used for reporting purposes in summaries.

☞ **Note:**

If no text has been specified, the element name is used for reporting in summaries.

■ **Element Type**

Contains the type of the respective element. For information about the possible attribute values refer to the *Base Applications Data Analysis* user guide *U-SC20*.

■ **Required Element**

The ‘Required Element’ is a logical and read-only field which indicates whether or not an element is required and, therefore, can not be deleted. The data for this field is derived automatically by the system when a new record is inserted into the database.

■ **Job Interlock**

Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

Additional Information Buttons

At the right side of the List of Elements there are three buttons for selecting further SDM forms to enter additional information for the selected element. A click on one of these buttons opens the respective form:

■ **Infos**

The label of this button changes depending on the selected element type for selection of one of the following forms:

- Digital Form
- Analog Form
- Accumulator Form

■ **Connectivity**

A click on this button opens the Connectivity Form.

■ **Network Group**

A click on this button opens the Network Group Form.

Digital Form

The Digital Form consists of three worksheets for digital attributes, digital info description and digital calculations. One of these worksheets can be opened through a mouse-click on the respective radiobutton in the Digital Form.

When the Digital Form is opened, as default the Worksheet for Digital Attributes is displayed.

SCADA Forms

Worksheet for Digital Attributes

With this worksheet the attributes for the information of an element can be defined or modified. They are assigned to informations, which are designed implicitly when the corresponding elements are created with the Element Form.

FIGURE 45

Worksheet for Digital Attributes

The screenshot shows the 'Worksheet for Digital Attributes' window. At the top is a menu bar with options like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Type. Below the menu is a toolbar with buttons for Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and LongHint. The main area is divided into several blocks:

- Master Block:** Contains fields for Job (test), Job Interlock, and three digital attributes (B1-Name: Vienna, B2-Name: 220, B3-Name: Paris). It also has fields for Element-Name (CB) and Element-Type (CB).
- Command Block:** On the right side, there are buttons for OK, Apply, Cancel, and InfoType.
- Job Block:** Below the Master Block, it shows Info: ANOPExcl, Info Type: ANOPExcl, and Info Text: (empty).
- Detail Block:** This large block contains several sections:
 - Value:** Includes Initial, Name Index (13), Name Command Index (0), Persistant State (N), Spontaneous Change (N), and Disturbance Type (0).
 - Acknowledge List:** Includes fields for Appearing (N) and Disappearing (N).
 - Lists:** A table with columns for Lists Number, Insert Acknowledge, Appearing, Disappearing, and Message Format. It lists four items: List1 (1, 9, Y, Y, 12), List2 (9, empty, empty, empty, empty), List3 (empty, empty, empty, empty, empty), and List4 (empty, empty, empty, empty, empty).
 - Archive:** Includes Historic Database (N) and Disturbance Type (0).
 - Message:** Includes Class (4) and Text (empty).
- Status Line:** At the bottom, it shows a message line: Hint: List 1 Insert if Appearing. Character. Must be "N", "Y". Record: 1/1 List of Values Insert <OSC> <DBG>.

The Digital Form is composed of the following components:

- SDM Menubar
- Job Block
- SDM Toolbar

- Master Block
- Command Block
- Message Line
- Status Line
- Detail Block

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Command Block

In addition to the standard buttons **OK**, **Apply** and **Cancel** the Command Block of the Digital Form contains button

- **InfoType**

This button is enabled, when the Worksheet for Digital Info Description is selected and an info/info type has been selected in the tabular list. Pressing this button opens the Info Type Definition Form for the selected info/info type (for details about the Info Type Definition Form refer to chapter 11 'Typification Forms' on page 267 in this document).

Detail Block

The Detail Block of the Worksheet for Digital Attributes contains the following fields:

- **Info**

Name of the specified information.

- **Info Text**

For each piece of information, the text can be changed individually. Otherwise the information name is taken. The text is used in the field for **Message Text**, described in following. This field itself is read-only.

- **Info Type**

The information type describes the feature of the specified information. This field is read-only.

There are two columns for the following attribute fields, i.e., column for 'Default from Info Type', which is read-only, and column for '1:1 Assignment', which is editable.

- **Initial Value**

The information in the network image can be initialized with a default value, but only at the time of creating the data for this block. One application, e. g., is to set the information 'normal state' for switching elements as default value.

- **Value Name Index**

This is an index for the value name.

■ **Value Name Command Index**

This is an index for the value name command.

■ **Signalling Persistant State**

Selection guidance for persistent messages; flashing buttons guide to the concerned event.

Value range: Y/N; Y = selection guidance; N = no selection guidance.

■ **Signalling Spontaneous Change**

Selection guidance for acknowledge messages; flashing buttons guide to the concerned event.

Value range: Y/N; Y = selection guidance; N = no selection guidance.

■ **Historic Database**

Dispose the message to the archives system.

Value range: Y/N;

Y = must be stored in archives; N = need not to be stored in archives.

■ **Disturbance Type**

The disturbance type is a number determining the type of the disturbance data recording, e.g., the recording period before or after a disturbance.

■ **Message Text**

The text in the message line can be changed individually for each information. If a message text is entered, this text will replace the info text.

☞ *An individual information text is displayed only if a particular text line format is configured in the information type.*

■ **Message Class**

Determines the message class for selection guidance.

■ **List 1..4**

List number, e.g., 1 for general summary;

Entries can be made in four lists (summaries) at maximum.

■ **Insert Acknowledge Appearing**

Specification if a message appearing in a list must be acknowledged.

Value range: Y/N; Y = acknowledge; N = no acknowledge.

■ **Insert Acknowledge Disappearing**

Specification if a message disappearing from a list must be acknowledged.

Value range: Y / N; Y = acknowledge; N = no acknowledge.

■ **Message Format**

Number (0..50) of the text format of the alarm/status/message

☞ *It is necessary to check if the selected list exists.*

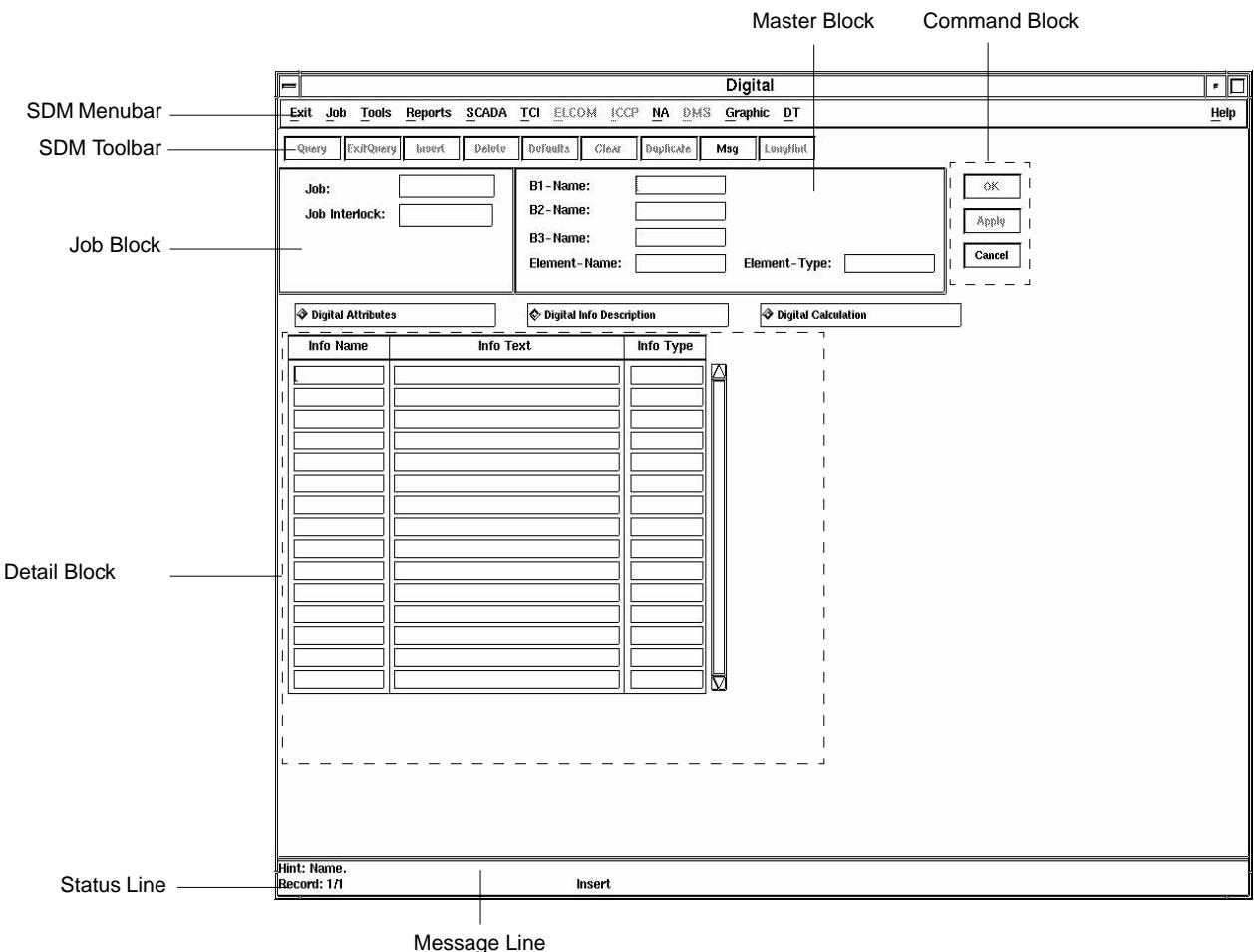
SCADA Forms

Worksheet for Digital Info Description

Clicking on the 'Digital Info Description' radiobutton in the Digital Form opens this worksheet which gives a survey of all information for the specified element.

FIGURE 46

Worksheet for Digital Info Description



The Detail Block of the Worksheet for Digital Info Description consists of a tabular list with the following columns:

- Info Name
- Info Text
- Info Type

SCADA Forms

When you have selected an info in the tabular list, you can display the Info Type Definition Form for this info by selecting button **InfoType** in the Command Block.

SCADA Forms

Worksheet for Digital Calculation

Clicking on the 'Digital Calculation' radiobutton in the Digital Form opens this worksheet for definition of a calculation rule to build a combined Information.

It is possible to build various message information about different combining rules. So you can scroll through all information.

FIGURE 47 Worksheet for Digital Calculation

The screenshot shows the 'Worksheet for Digital Calculation' window. The window has a title bar 'Digital' and a menu bar with options like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help. Below the menu is a toolbar with buttons for Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and Lengthful. The main area is divided into several sections:

- Master Block:** Contains fields for Job (with a dropdown for Job Interlock), B1-Name, B2-Name, B3-Name, Element-Name, and Element-Type. To the right are OK, Apply, and Cancel buttons.
- Command Block:** A dashed rectangular area.
- SDM Menubar:** Points to the top menu bar.
- SDM Toolbar:** Points to the toolbar below the menu.
- Job Block:** Points to the Job section in the Master Block.
- Info Block:** Points to the Info section, which includes Name and Text fields.
- Formula Block:** Points to the Formula section, which includes Number, Type, Execution Type, Priority, Delay Time, and Description fields.
- Operands List:** Points to a large grid table for Operand entries. The columns are Operand, Type, Constant, B1-Name, B2-Name, B3-Name, Element-Name, and Info-Name. The grid contains 20 rows of empty input fields.
- Status Line:** Points to the bottom status bar which displays 'Hint: Name.' and 'Record: 1/1'.
- Message Line:** Points to the bottom message line which displays 'Insert'.

Info Block

■ **Name**

For those informations of an element which are derived by means of combinations with other sources, the data described below can be entered. The different information belonging to an element can be listed and selected through the List of Values through a double-click on this field. The information required can also be entered directly in the field.

■ **Text**

Description text for the specified Info. This field is read-only.

Formula Block

■ **Number**

The number of a mathematical calculation can now be selected from the related List of Values which shows the formula number and description. All formulas are defined by using the formula editor.

■ **Type**

The type of calculation to be used.

- 0 = Formula
- 1 = Authorization
- 2 = Increment

■ **Execution Type**

The activation type, i. e., the calculation releasing criterion is chosen via the List of Values with values

- 0 = No Processing Type
- 1 = Spontaneous

Calculation is done when a modification of the calculation concerning source information occurs.

- 2 = Cyclic
- Calculation is done periodically
- 3 = External Coordinate

- 4 = Time Controlled
- 5 = Delayed

Calculation is done when a modification of the calculation concerning source information occurs, after the expiration of a time lag, configurable in **Delay Time**.

- 6 = Archived

■ **Priority**

If a finding, resulting from a calculation, enters another calculation as source information, a priority controlled run is essential. The priority is entered as a number in the range from 1 to 99. The highest priority level is 1, what means that calculations with this priority will be calculated before those using e. g. priority level 2. It is not necessary to use the priority levels as an unbroken row (so a calculation using the priority level 4 may follow another calculation which uses the level 1).

■ **Delay Time**

If the activation method 5 = Delayed is entered in the **Execution Type** field, the desired delay time (minutes, seconds) must be entered here.

■ **Description**

After selecting the formula number, a mouse-click on this field causes the automatic display of description for the specified formula. The variables of the formula are represented by letters of the alphabet, from 'a' to 'z'. These variable letters will be defined later in the source information columns. This field is read-only.

Operands List

With the following source columns the corresponding source information or constant responding to every variable of the formula can be assigned. All columns can be either directly entered or selected from the related List of Values (except the Constant).

■ **Operand**

In this field, the variable letters in the formula ranged from 'a' to 'z' can be entered.

■ **Type**

The operand type can be either

- CON - The variable will be replaced by a Constant Value to be entered in the **Constant** column, or
- TA - The variable will be replaced by information (values or messages) specified by the technological address.

■ **Constant**

A constant is to be entered in this column if the type CON is selected for the specified operand.

■ **B1-Name**

■ **B2-Name**

■ **B3-Name**

■ **Element-Name**

■ **Info-Name**

SCADA Forms

The technological address is to be inserted into these columns, if type TA is selected for the specified operand.

Analog Form

The Analog Form consists of three worksheets for analog attributes, analog info description and analog calculations. They can be selected through a mouse-click on the respective radiobutton in the Analog Form. The first one, the analog attributes form, is the default one and displayed automatically when the Analog Form is opened.

With this form the parameters of analog values are written into the database. Analog values, in the sense of the data model, are elements and are defined with the element form. When these analog value elements are defined, all data sets belonging to this analog value (e. g. instantaneous value, nominal value, gradient limit, etc.) are initialized in the database with information specific default values.

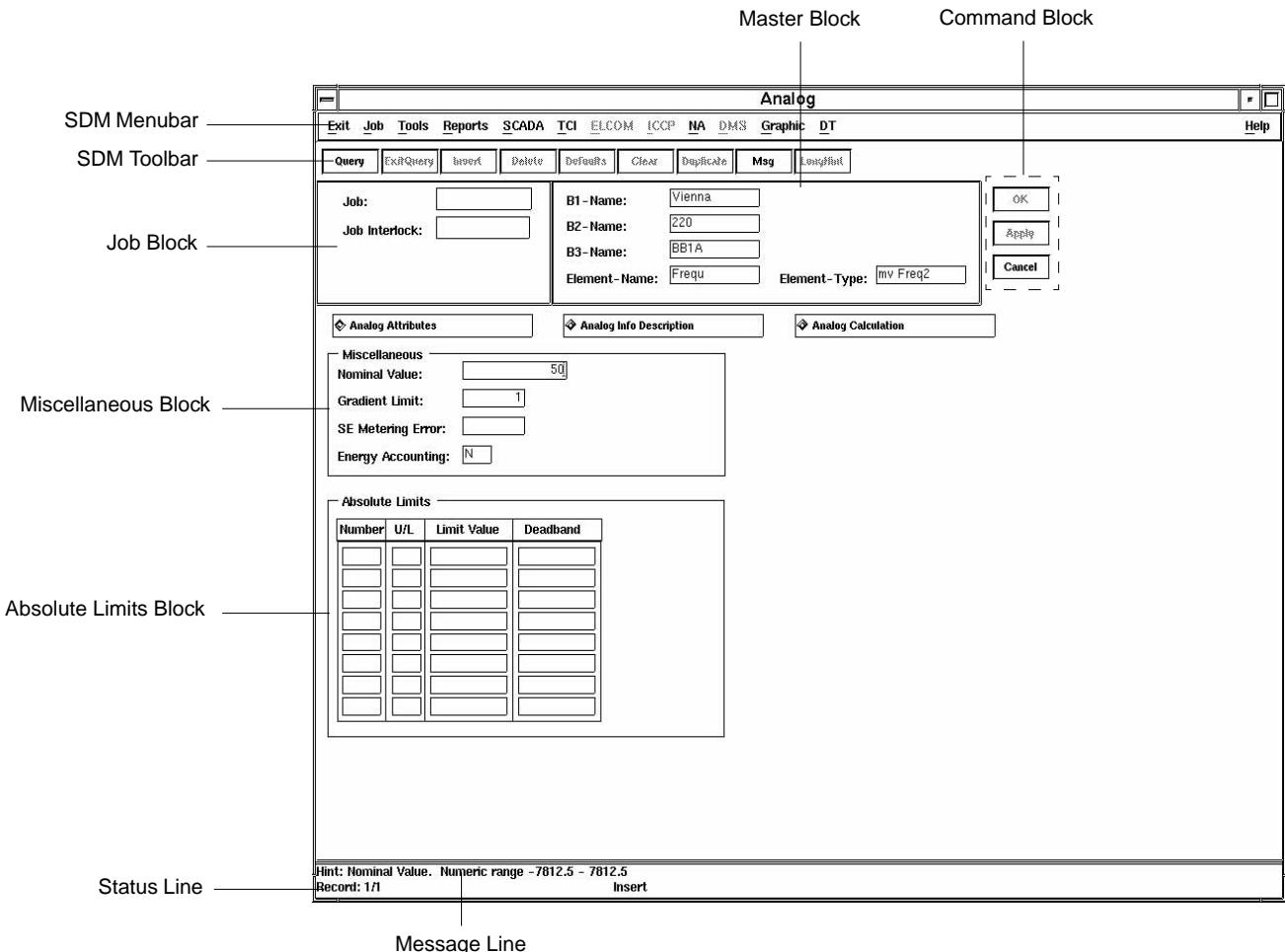
SCADA Forms

Worksheet for Analog Attributes

In this worksheet the attributes for analog values can be entered.

FIGURE 48

Worksheet for Analog Attributes



The Analog Form is composed of the following components:

- SDM Menubar
- Job Block
- SDM Toolbar
- Master Block
- Command Block

- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Command Block

In addition to the standard buttons **OK**, **Apply** and **Cancel** the Command Block of the Analog Form contains button

- **InfoType**

This button is enabled, when the Worksheet for Analog Info Description is selected and an info/info type has been selected in the tabular list. Pressing this button opens the Info Type Definition Form for the selected info/info type (for details about the Info Type Definition Form refer to chapter 11 'Typification Forms' on page 267 in this document).

Miscellaneous Block

- **Nominal Value**

The nominal value can only be entered, if the information Nominal Value was parameterized for the analog value. Changing the nominal value also changes the percentage limit (% Limit) if it is related to the nominal value.

- **Gradient Limit**

Limit for gradient control. The value is entered as physical value per second.

If the value's rise violates the border, a message will be sent to the General Summary. Subsequently the Network Applications – if available in your SINAUT **Spectrum** system – can be parameterized to start a new spontaneous network calculation.

- **SE Metering Error**

This is a value for state estimate metering error.

- **Energy Accounting**

A boolean field to decide whether the info is relevant for the Energy Accounting function.

Absolute Limits Block

- **Number**

This is a number for the limit.

- **U / L**

The displayed limit is either an upper limit (U) or a lower limit (L).

SCADA Forms

- **Limit Value**

Limit values for extreme value monitoring. Input is only possible, if these limits are not percentage limits of the nominal value; otherwise this field is locked against input.

- **Deadband**

Deadband for extreme value monitoring.

SCADA Forms

Worksheet for Analog Info Description

Clicking on the 'Analog Info Description' radiobutton in the Analog Form opens this worksheet which gives a survey of all information for the specified element.

FIGURE 49

Worksheet for Analog Info Description

Info Name	Info Text	Info Type	VA Type	% Limit	% DB
MvGradie	Frequ gradient	Lim graz			
MvLim01L	Frequ 01Limit	LimFDist1	12	97	.01
MvLim01U	Frequ 01Ulimit	LimFDist1	12	103	.01
MvLim02L	Frequ 02Limit	LimFDist2	12	94	.01
MvLim02U	Frequ 02Ulimit	LimFDist2	12	106	.01
MvLim1Lm		ManuLim			
MvLim1Um		ManuLim			
MvLim2Lm		ManuLim			
MvLim2Um		ManuLim			
MvLimGra	Frequ limitgradient	Lim graz			
MvMax01d	Frequ 01dmax	MV int			
MvMin01d	Frequ 01dmin	MV int			
MvMoment	Frequ	MV tele			
MvNomina	Frequ nominal	MV int			

The Detail Block of the Worksheet for Analog Info Description consists of a tabular list with the following columns:

- Info Name
- Info Text
- Info Type
- VA Type

SCADA Forms

- % Limit
- % DB

When you have selected an info in the tabular list, you can display the Info Type Definition Form for this info by selecting button **InfoType** in the Command Block.

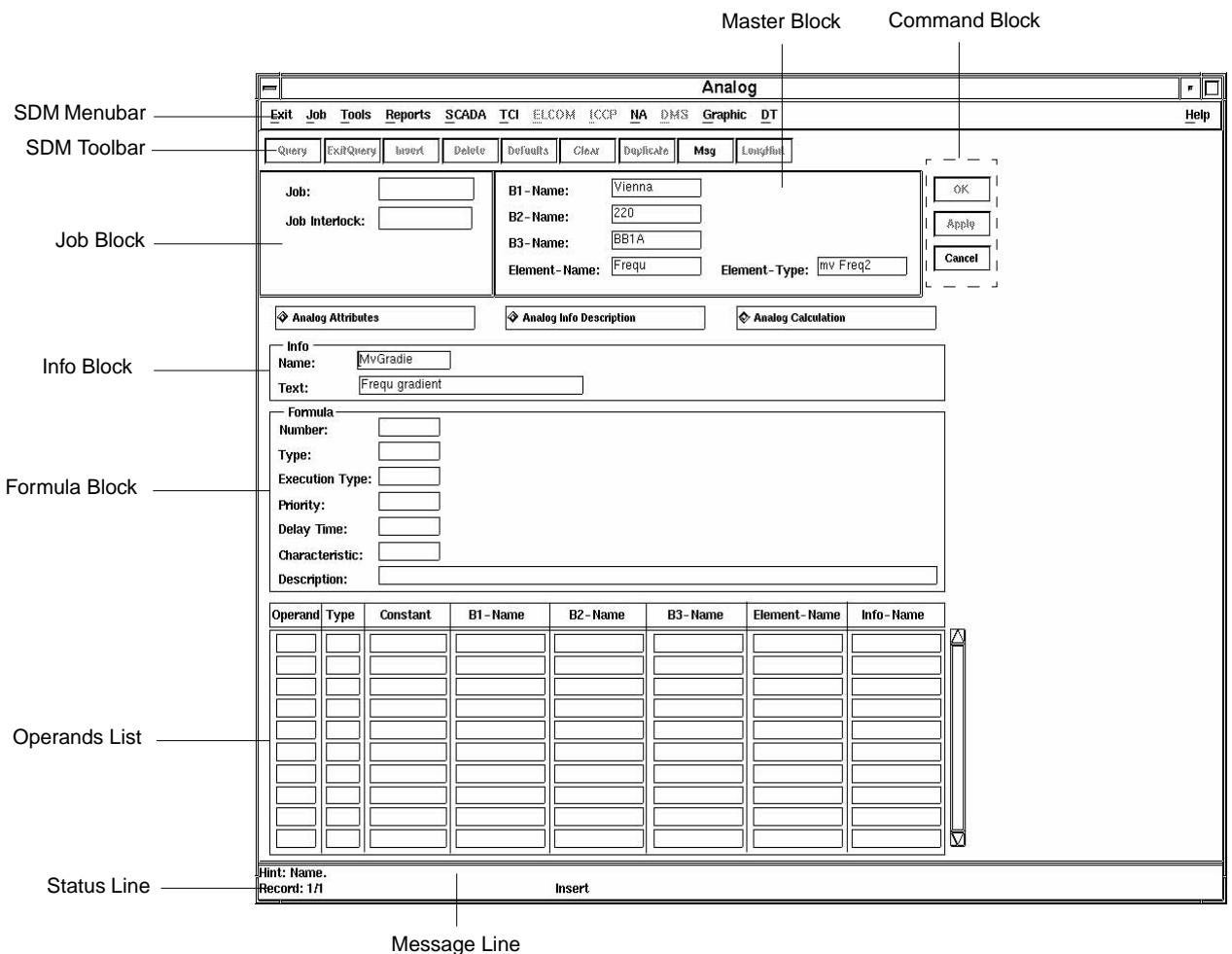
SCADA Forms

Worksheet for Analog Calculation

Clicking on the ‘Analog Calculation’ radiobutton in the Analog Form opens this worksheet for definition of calculation rules to build calculated Information.

It is possible to build various message information about different calculation rules. So you can scroll through all information.

FIGURE 50 Worksheet for Analog Calculation



Info Block

■ **Name**

For those informations of an element which are derived by means of combinations with other sources, the data described below can be entered. The different information belonging to an element can be listed and selected through the List of Values through a double-click on this field. The information required can also be entered directly in the field.

■ **Text**

Description text for the specified Info. This field is read-only.

Formula Block

■ **Number**

The number of a mathematical calculation can now be selected from the related List of Values which shows the formula number and description. All formulas are defined by using the formula editor.

■ **Type**

The type of calculation to be used.

- 0 = Formula
- 1 = Authorization
- 2 = Increment

■ **Execution Type**

The activation type, i. e., the calculation releasing criterion is chosen via the List of Values with values

- 0 = No Processing Type
- 1 = Spontaneous

Calculation is done when a modification of the calculation concerning source information occurs.

- 2 = Cyclic
- Calculation is done periodically
- 3 = External Coordinate

- 4 = Time Controlled
- 5 = Delayed

Calculation is done when a modification of the calculation concerning source information occurs, after the expiration of a time lag, configurable in **Delay Time**.

- 6 = Archived

■ **Priority**

If a finding, resulting from a calculation, enters another calculation as source information, a priority controlled run is essential. The priority is entered as a number in the range from 0 to 99. The highest priority level is 0 or 1 respectively, what means that calculations with this priority will be calculated before those using e. g. priority level 2. It is not necessary to use the priority levels as an unbroken row (so a calculation using the priority level 4 may follow another calculation which uses the level 1).

■ **Delay Time**

If the activation method 5 = Delayed is entered in the **Execution Type** field, the desired delay time (minutes, seconds) must be entered here.

■ **Description**

After selecting the formula number, a mouse-click on this field causes the automatic display of description for the specified formula. The variables of the formula are represented by letters of the alphabet, from 'a' to 'z'. These variable letters will be defined later in the source information columns. This field is read-only.

Operands List

With the following source columns the corresponding source information or constant responding to every variable of the formula can be assigned. All columns can be either directly entered or selected from the related List of Values (except the Constant).

■ **Operand**

In this field, the variable letters in the formula ranged from 'a' to 'z' can be entered.

■ **Type**

The operand type can be either

- CON - The variable will be replaced by Constant Value to be entered in the **Constant** column, or
- TA - The variable will be replaced by information (values or messages) specified by the technological address.

■ **Constant**

A constant is to be entered in this column if the Constant type is selected for the specified operand.

■ **B1-Name**

■ **B2-Name**

■ **B3-Name**

■ **Element-Name**

■ **Info-Name**

SCADA Forms

The technological address is to be inserted into the five hierarchical columns for B1, B2, B3, Element, and Info respectively, if the TA type is selected for the specified operand.

Accumulator Form

The Accumulator Form consists of three worksheets for accumulator attributes, accumulator info description and accumulator calculations. They can be opened through a mouse-click on the respective radiobutton in the Accumulator Form. The first one, the Worksheet for Accumulator Attributes, is the default one and is opened automatically when the Accumulator Form is opened.

With these worksheets the parameters of the accumulators are written into the database. Accumulators are elements in the context of the data model, and are defined using the Element Form. When defining the accumulator elements, all data sets belonging to the accumulator (data from relative accumulator, data from absolute accumulator, limits, etc.) are already set up in the database and are information-specifically prefilled. These data sets are filled with current data using these worksheets.

SCADA Forms

Worksheet for Accumulator Attributes

In this worksheet the attributes for accumulator values can be entered. Worksheet for the description of the accumulator, into which the scaling, the rate group and the limits are entered for every accumulator.

FIGURE 51

Worksheet for Accumulator Attributes

Master Block Command Block

SDM Menubar

SDM Toolbar

Job Block

Miscellaneous Block

Limits Block

Difference Limits Block

Status Line

Message Line

The Accumulator Form is composed of the following components:

- SDM Menubar
- Job Block
- SDM Toolbar

- Master Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Command Block

In addition to the standard buttons **OK**, **Apply** and **Cancel** the Command Block of the Accumulator Form contains button

- **InfoType**

This button is enabled, when the Worksheet for Accumulator Info Description is selected and an info/info type has been selected in the tabular list. Pressing this button opens the Info Type Definition Form for the selected info/info type (for details about the Info Type Definition Form refer to chapter 11 'Typification Forms' on page 267 in this document).

Miscellaneous Block

- **Conversion Factor**

The number by which the value transmitted from the RTU (counted pulses) must be multiplied to determine the scaled value.

- **Rollover**

For relative accumulators this is the maximum raw value reachable by the accumulator + 1.

- **Rate Group**

Tariff rate that will be assigned to the respective info.

- **Energy Accounting**

A boolean field to decide whether the element is relevant to the energy accounting.

Limits Block

- **Lower**

Lower limit for value limit violations.

- **Upper**

Upper limit for value limit violations.

Difference Limits Block

- **Main -Integral**

Maximum permissible difference between the main accumulator and the analog value integral.

- **Main - Control**

Maximum permissible difference between the main accumulator and the control accumulator.

- **Control - Integral**

Maximum permissible difference between the control accumulator and the analog value integral.

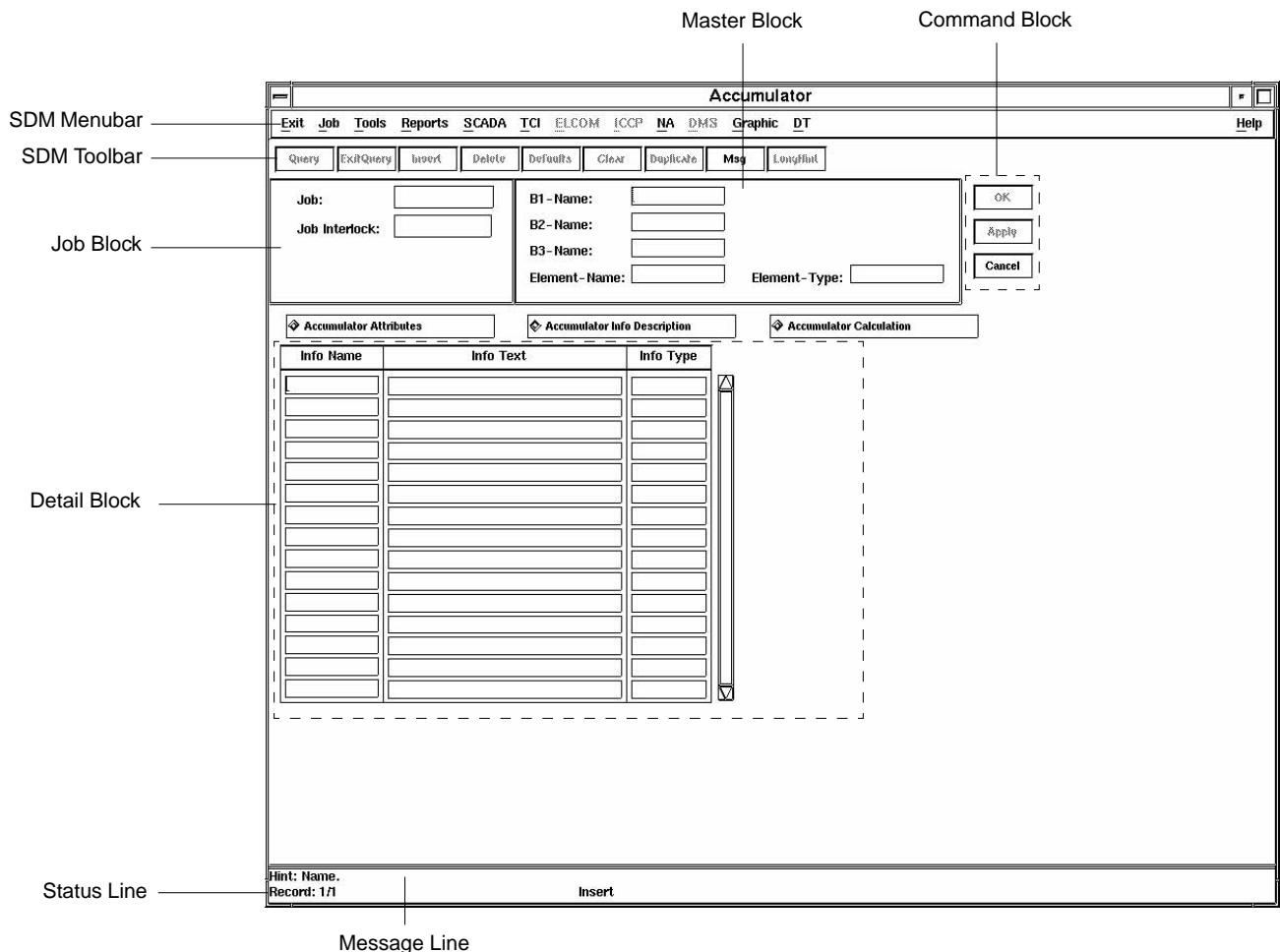
SCADA Forms

Worksheet for Accumulator Info Description

Clicking on the 'Accumulator Info Description' radiobutton in the Accumulator Form opens this worksheet giving a survey of all information for the specified element.

FIGURE 52

Worksheet for Accumulator Info Description



The Detail Block of the Worksheet for Accumulator Info Description consists of a tabular list with the following columns:

- Info Name
- Info Text
- Info Type

SCADA Forms

When you have selected an info in the tabular list, you can display the Info Type Definition Form for this info by selecting button **InfoType** in the Command Block.

SCADA Forms

Worksheet for Accumulator Calculation

Clicking on the 'Accumulation Calculation' radiobutton in the Accumulator Form opens this worksheet for definition of calculation rules to build calculated Information.

It is possible to build various message information about different calculation rules.

FIGURE 53

Worksheet for Accumulator Calculation

The screenshot shows the 'Worksheet for Accumulator Calculation' dialog box. The window title is 'Accumulator'. The menu bar includes Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help. The toolbar includes Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and Load/Flat. The main area is divided into several blocks:

- Master Block:** Contains fields for Job, Job Interlock, B1-Name, B2-Name, B3-Name, Element-Name, and Element-Type, along with OK, Apply, and Cancel buttons.
- Command Block:** Located to the right of the Master Block.
- Job Block:** Associated with the Job and Job Interlock fields.
- Info Block:** Associated with the Info section, which includes Name and Text fields.
- Formula Block:** Associated with the Formula section, which includes Number, Type, Execution Type, Priority, Delay Time, and Description fields.
- Operands List:** A large grid table with 16 rows and 8 columns, labeled Operand, Type, Constant, B1-Name, B2-Name, B3-Name, Element-Name, and Info-Name.
- Status Line:** At the bottom left, showing Hint: Name. Record: 1/1. An Insert button is also present.
- Message Line:** At the bottom center.

Info Block

■ **Name**

For those informations of an element which are derived by means of combinations with other sources, the data described below can be entered. The different information belonging to an element can be listed and selected through the List of Values through a double-click on this field. The information required can also be entered directly in the field.

■ **Text**

Description text for the specified Info. This field is read-only.

Formula Block

■ **Number**

The number of a mathematical calculation can now be selected from the related List of Values which shows the formula number and description. All formulas are defined by using the formula editor.

■ **Type**

The type of calculation to be used.

- 0 = Formula
- 1 = Authorization
- 2 = Increment

■ **Execution Type**

The activation type, i. e., the calculation releasing criterion is chosen via the List of Values with values

- 0 = No Processing Type
- 1 = Spontaneous

Calculation is done when a modification of the calculation concerning source information occurs

- 2 = Cyclic
- Calculation is done periodically
- 3 = External Coordinate

- 4 = Time Controlled
- 5 = Delayed

Calculation is done when a modification of the calculation concerning source information occurs, after the expiration of a time lag, configurable in **Delay Time**.

- 6 = Archived

■ **Priority**

If a finding, resulting from a calculation, enters another calculation as source information, a priority controlled run is essential. The priority is entered as a number in the range from 0 to 99. The highest priority level is 0 or 1 respectively, what means that calculations with this priority will be calculated before those using e. g. priority level 2. It is not necessary to use the priority levels as an unbroken row (so a calculation using the priority level 4 may follow another calculation which uses the level 1).

■ **Delay Time**

If the activation method 5 = Delayed is entered in the **Execution Type** field, the desired delay time (minutes, seconds) must be entered here.

■ **Description**

After selecting the formula number, a mouse-click on this field causes the automatic display of description for the specified formula. The variables of the formula are represented by letters of the alphabet, from 'a' to 'z'. These variable letters will be defined later in the source information columns. This field is read-only.

Operands List

With the following source columns the corresponding source information or constant responding to every variable of the formula can be assigned. All columns can be either directly entered or selected from the related List of Values (except the Constant).

■ **Operand**

In this field, the variable letters in the formula ranged from 'a' to 'z' can be entered.

■ **Type**

The operand type can be either

- CON - The variable will be replaced by Constant Value to be entered in the Constant column, or
- TA - The variable will be replaced by information (values or messages) specified by the technological address.

■ **Constant**

A constant is to be entered in this column if the Constant type is selected for the specified operand.

■ **B1-Name**

■ **B2-Name**

■ **B3-Name**

■ **Element-Name**

■ **Info-Name**

SCADA Forms

The technological address is to be inserted into the five hierarchical columns for B1, B2, B3, Element, and Info respectively, if the TA type is selected for the specified operand.

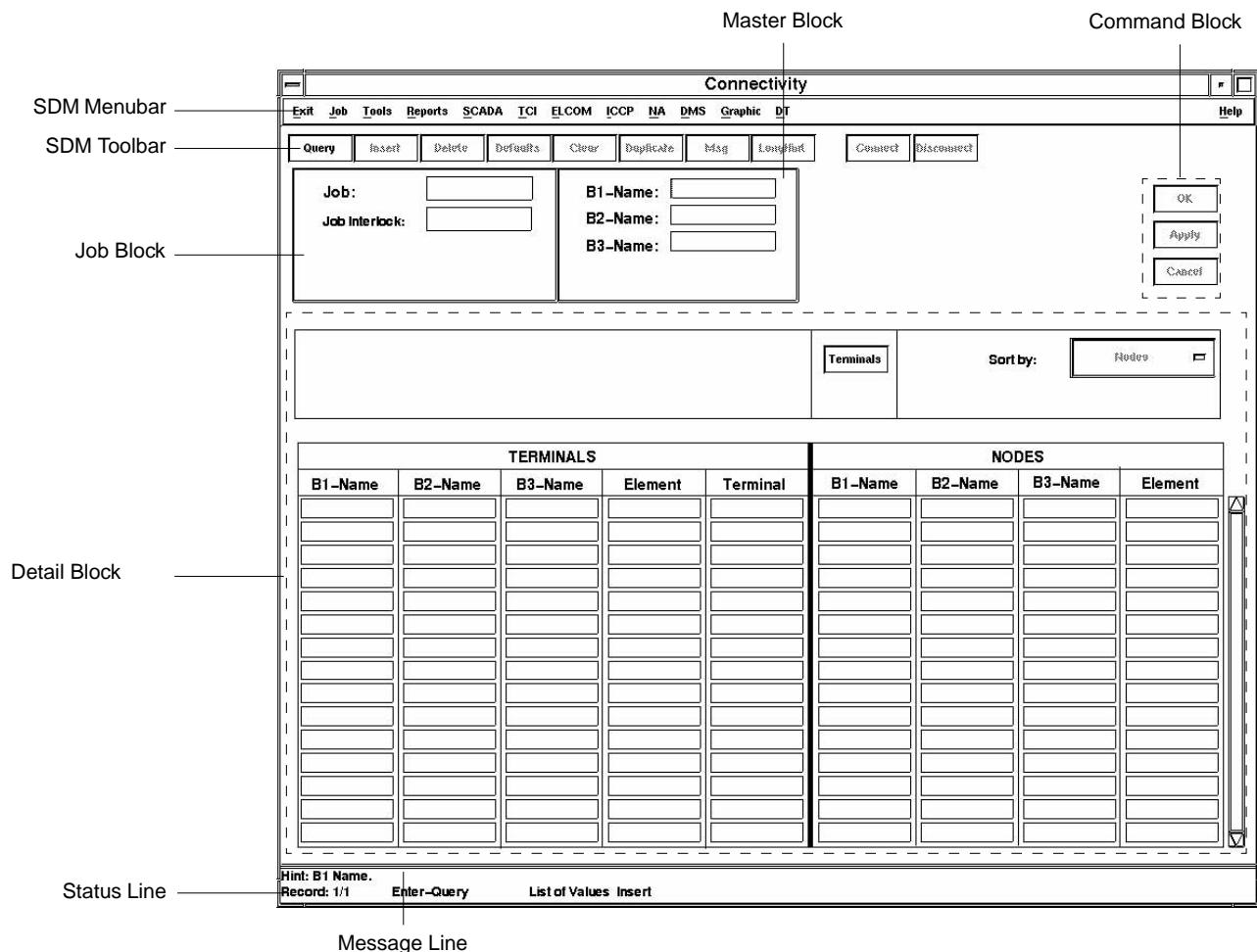
SCADA Forms

Connectivity Form

This form allows definition of connections between elements.

FIGURE 54

Basic structure of the Connectivity Form



The Connectivity Form is composed of the following components:

- SDM Menubar
- Job Block
- Master Block
- Command Block

- Message Line
- Status Line
- SDM Toolbar
- Detail Block

SDM Toolbar of the Connectivity Form

Additionally to the standard buttons described in section 'The Basic Structure of SDM Forms' on page 19 in this document, the SDM Toolbar of the Connectivity Form contains the following buttons for creating and deleting a connection:

- **Connect**
Selecting this button creates a connection between two terminals. For this purpose select the first terminal, press button **Connect** and then select the second terminal. After pressing button **Connect** the Connection Block is added to the Detail Block (see Figure 55).
- **Disconnect**
Selecting this button removes an existing connection. When selecting this button during the creation of a new connection, creation is cancelled.

Detail Block of the Connectivity Form

The Detail Block of the Connectivity Form consists of the following components:

- **Terminals**
Selecting this button opens the Terminal Query Window for selecting a terminal of another B3 block.
- **Sort by:**
 - Nodes
 - Terminals

With this popup list you can determine, whether the lists shall be displayed sorted by nodes or by terminals.

Terminals List

This list shows all connected terminals of the nodes of the selected B3 block, even if terminals are from another B3 block. The list consists of the following columns:

SCADA Forms

- **B1-Name**
Contains the B1 name of the connected terminal.
- **B2-Name**
Contains the B2 name of the connected terminal.
- **B3-Name**
Contains the B3 name of the connected terminal.
- **Element**
Contains the element name of the connected terminal.
- **Terminal**
Contains the identification of the connected terminal.

Nodes List

This list shows all connected nodes of the selected B3 block. It consists of the following columns:

- **B1-Name**
Contains the B1 name of the connected node.
- **B2-Name**
Contains the B2 name of the connected node.
- **B3-Name**
Contains the B3 name of the connected node.
- **Element**
Contains the element name of the connected node.

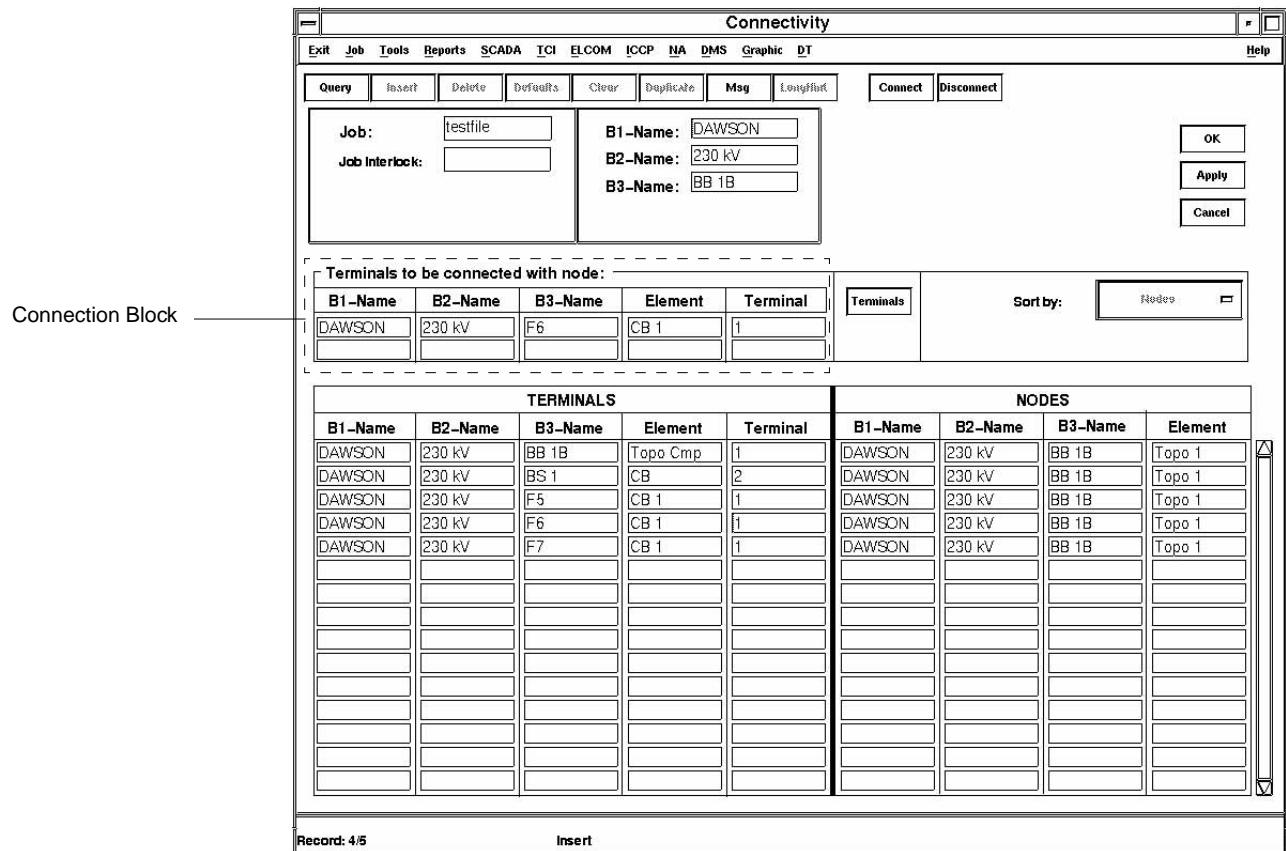
When connecting two terminals, select the first terminal to be connected, then press button **Connect** and select the second terminal. After pressing button **Connect**, the Connection Block showing the terminals to be connected is added to the Detail Block of the Connectivity Form.

SCADA Forms

Connection Block

FIGURE 55

Connectivity Form showing the block for connecting terminals



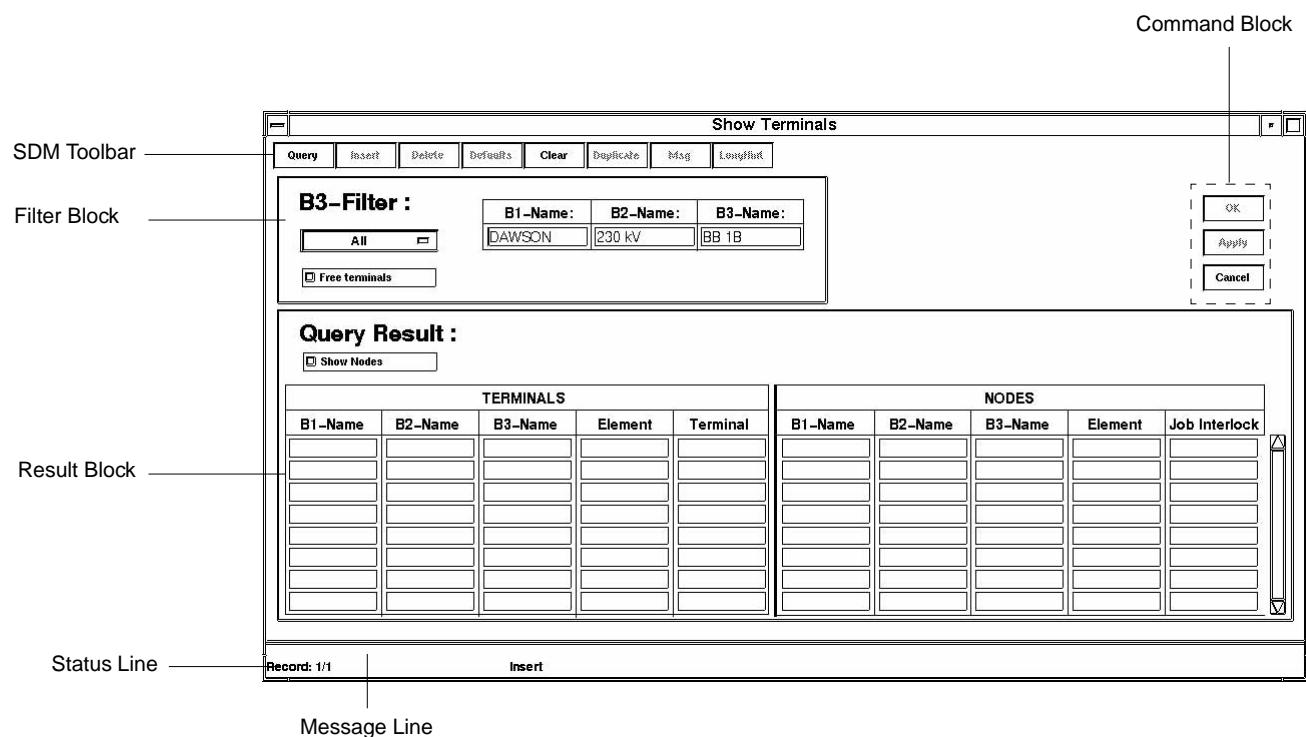
The Connection Block shows the terminals to be connected by a node during creation of a new connection.

If you want to connect a terminal of the selected B3 block with a terminal of another B3 block, press button **Terminals** to open the Terminal Query Window for performing a query for terminals.

Terminal Query Window

FIGURE 56

Basic structure of the Terminal Query Window



Filter Block

This block contains the following elements for defining a query:

■ **Filter popup list**

By setting this filter only certain types of elements will be displayed. The following selections are possible:

- All
- Busbar
- Transformer
- Line
- Generator
- Injection
- Load
- Equivalent Branch
- Shunt

- **Switching Field**
 - **TA Filter**

These fields serve for definition of the query. The following fields are provided:

 - **B1-Name**
 - **B2-Name**
 - **B3-Name**
 - **Free terminals checkbox**

If this checkbox is selected, then only free terminals will be displayed as result of the query.
- Result Block**
- This block consists of the following elements:
- **Show Nodes checkbox**

When this checkbox is selected, also the Nodes List is displayed. Otherwise only the Terminals List is displayed.
 - **Terminals List**

This list shows the technological addresses of all terminals corresponding to the query entered in the Filter Block:

 - **B1-Name**
 - **B2-Name**
 - **B3-Name**
 - **Element**
 - **Terminal**
 - **Nodes List**

This list shows all nodes connected to the terminals in the Terminals List:

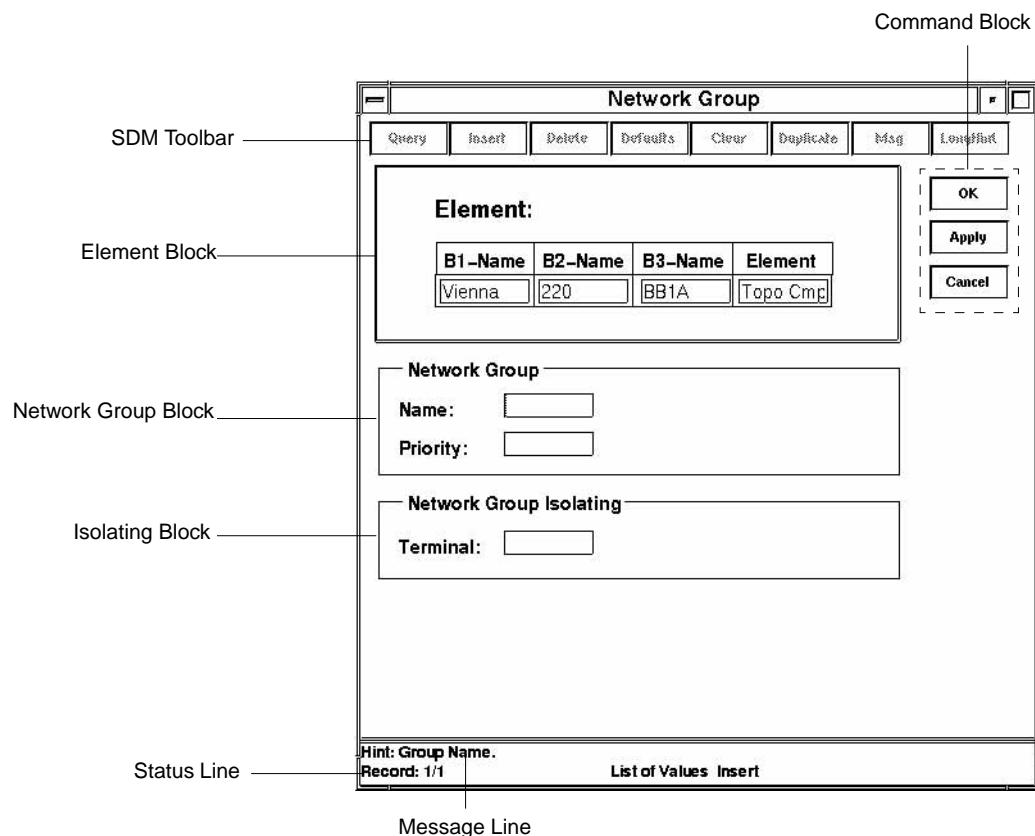
 - **B1-Name**
 - **B2-Name**
 - **B3-Name**
 - **Element**
 - **Job Interlock**

This field shows the name of the interlocking job, if it is different from the currently connected job.

Network Group Form

FIGURE 57

Basic structure of the Network Group Form



The Network Group Form is composed of the following components:

- SDM Toolbar
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Element Block

This block shows the technological address of the selected element:

- **B1-Name**
- **B2-Name**
- **B3-Name**
- **Element**

Network Group Block

This block consists of the following input fields:

- **Name**

In this field the name of the organizational network group can be entered, or selected from a list of values. An element can be removed as network group determinant by removing the network group name from this field.

 *If you enter a name of a network group that does not yet exist, a network group with this name is created.*

- **Priority**

In this field a priority can be entered for the element. If no value is entered, then the next free priority of the network group will be assigned to the element.

Isolating Block

This block contains the following field:

- **Terminal**

In this field you can define a terminal of the element as network group isolating by entering its terminal identification.

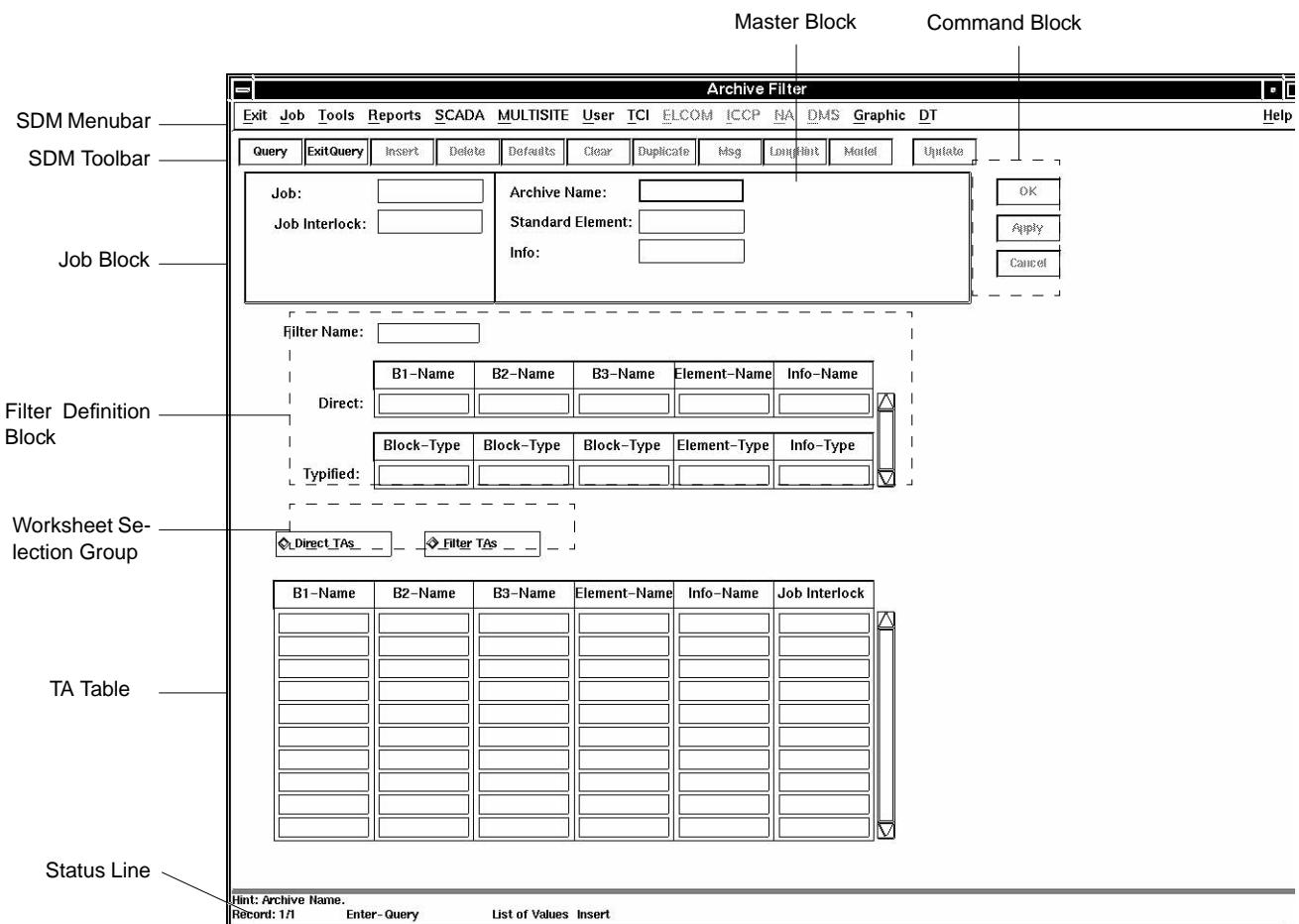
Archive Filter Form

Archive data filters define which data entries will be stored within the specified archive in which sequence. They may only be defined for existing archives and are always assigned to a certain archive. Thus, filter definitions are specified via the respective unique archive name.

Archive Filter Form

FIGURE 58

Basic structure of the Archive Filter Form (Direct TAs Worksheet)



- SDM Menubar
- Job Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For more information on these form components, refer to the section 'The Basic Structure of SDM Forms' on page 19 in this document.

Master Block

■ Archive Name

Shows the name of the selected archive. You can select another archive by entering its name or by selecting its name from a list of values.

The following two fields display the restrictions regarding standard element and info, which have been defined during archive definition:

■ Standard Element

■ Info

Both fields are read-only.

☞ **Note:**

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

SDM Toolbar

In addition to the standard toolbar buttons described in section 'The Basic Structure of SDM Forms' on page 19 in this document, the SDM Toolbar of the Archive Filter Form contains the following button:

■ Update

When this button is pressed, all TAs matching the filter criteria defined in the Filter Definition Block are entered into the TA Table of the Filter TAs Worksheet.

Filter Definition Block

■ Filter Name

In this line a name for the filter can be entered.

The following two lines serve for the definition of filter criteria that are used to determine a number of appropriate technological addresses for the TA Table. These technological addresses are visible in the TA Table when the Filter TAs Worksheet is selected. For updating the TA Table after the filter definition has been changed, press button **Update**.

Address syntax specifications may consist both of block names (substation names, feeder names, etc.) and block type names.

For each parameter of both lines, the wildcard symbol ("*") may be used. Usage of a wildcard symbol means that the technological addresses must be determined with all available network image entries of the respective parameter. The explicitly specified parameters remain unchanged.

Archive Filter Form

The mixed usage of both input lines and usage of the wildcard symbol is subject to the following restrictions:

- Usage of a wildcard symbol for the parameter **B1** is not possible and will be rejected.
- Inputs in fields located one below the other are mutually exclusive.

Direct TA Input

- **B1-Name**
- **B2-Name**
- **B3-Name**
- **Element-Name**
- **Info-Name**

In this line only block names may be specified.

Typified TA Input

- **Block-Type (B1)**
- **Block-Type (B2)**
- **Block-Type (B3)**
- **Element-Type**
- **Info-Type**

In this line only block type names are allowed.

Worksheet Selection Group

The Worksheet Selection Group contains two radiobuttons for selecting either the Direct TAs Worksheet or the Filter TAs Worksheet.

TA Table

The TA Table consists of the following columns:

- **B1-Name**
- **B2-Name**
- **B3-Name**
- **Element-Name**

Archive Filter Form

- **Info-Name**
- **Job Interlock**

The content of the TA Table depends on the selected worksheet.

Direct TAs Worksheet

In this worksheet you can directly insert or delete a technological address (a modification is not possible).

The five parameters specify the technological address of a filter entry, i.e., the technological address of a data entry that will be stored.

Operating of the parameters **Elem** and **Info** is subject to the following restrictions:

- For value archives, only elements with the appropriate standard element type (pre-defined during archive definition) may be selected or entered. Element specifications without the appropriate standard element type are automatically replaced by the first element found in the database having the pre-defined standard element type.
Also, the input field for the parameter **Info** is locked as this parameter is pre-defined during archive definition. For message archives, this input field is released.
The standard element type and info pre-defined during archive definition are displayed in the Master Block.
- In case of special value archives, the input field of the parameter **Info** is operable only if the parameter **Info** has been marked as irrelevant during archive definition (usage of the wildcard symbol).
If the parameters **Standard Element** and **Info** have not been marked as irrelevant during archive definition (usage of a valid standard element and/or info), they are subject to the restrictions described for regular value archives (see previous bullet).

Filter TAs Worksheet

In this worksheet the TA Table displays all technological addresses matching the criteria entered in the Filter Definition Block.

Application Data Forms

SDM provides a variety of forms and features for the configuration of application data. These facilities deal with application data infos, application data references, application data characteristic groups, application data characteristics and schedules.

Separate forms are provided for each of the application data classes mentioned above to maintain their individual attributes and characteristics. The available forms are listed below:

- Application Data Info Form
The Application Data Info Form deals with attributes of application data infos, associated additional information and application data references (refer to the description in section 'Application Data Info Form' on page 155 for further details).
- Application Data Characteristic Groups Form
The Application Data Characteristic Groups Form provides facilities for the handling of application data characteristic groups (refer to the description in section 'Application Data Characteristic Groups Form' on page 180 for further details).
- Application Data Characteristics Form
The Application Data Characteristics Form provides facilities for the handling of attributes of application data characteristics and application data characteristic segments (refer to the description in section 'Application Data Characteristics Form' on page 187 for further details).
- Schedule Form
The Schedule Form provides facilities for the configuration of schedules (refer to the description in section 'Schedule Form' on page 207 for further details).

Application Data Info Form

The Application Data Info Form deals with application data infos and application data references. The facilities provided by the Application Data Info Form can be used to perform the following operations on these application data classes:

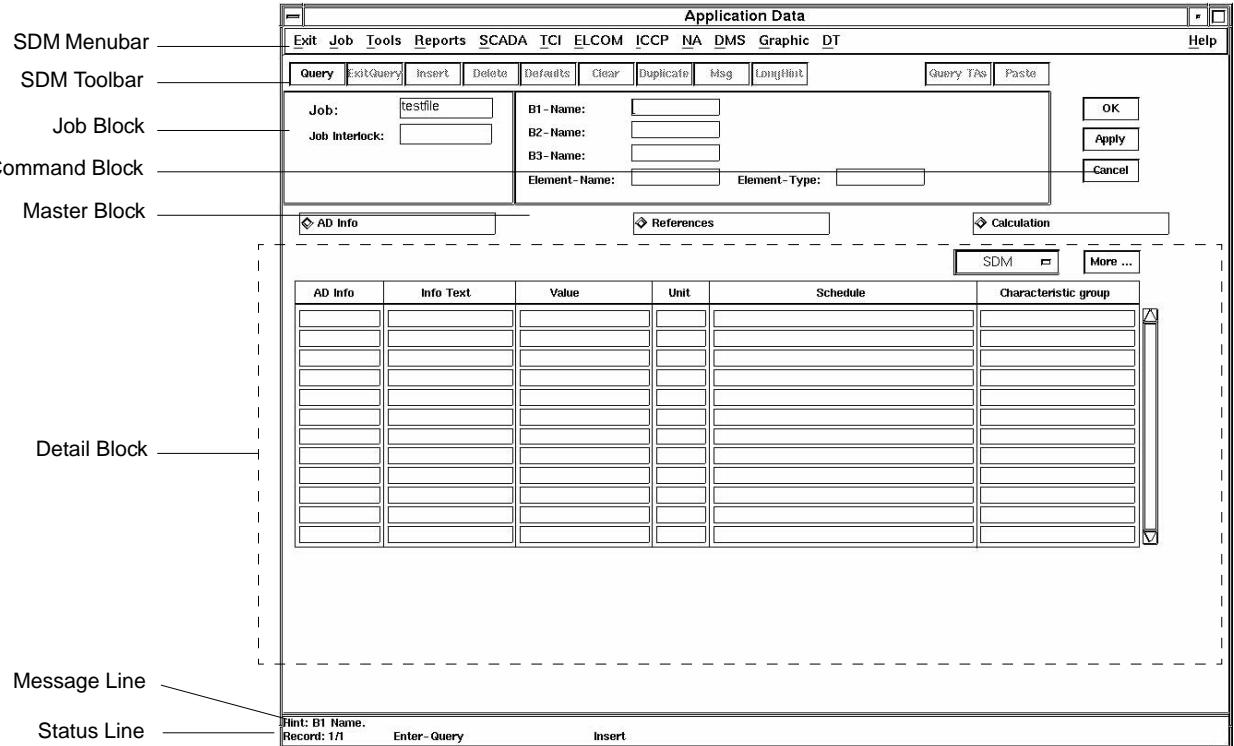
- View or modify attributes of application data infos
- Enter or modify additional information associated with application data infos
- View, enter or modify calculation attributes of calculated application data infos
- View, enter or modify application data references.

Structure of the Application Data Info Form

The Application Data Info Form supports the above described features by a hierarchically structured Detail Block using worksheets and other graphical form components grouped in a feature-oriented way. The basic structure of the Application Data Info Form is shown in figure 59:

FIGURE 59

Basic Structure of the Application Data Info Form



Application Data Forms

The Application Data Info Form is composed of the following components:

- SDM Menubar
- Message Line
- Job Block
- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 3, section 'SDM Basics' on page 3 in this document.

- SDM Toolbar

Besides the seven standard toolbar buttons (see section 'SDM Toolbar' on page 21 for more details), the SDM Toolbar of the Application Data Info Form provides the following additional buttons:

- **Query TAs**
Opens the Query Window.
- **Paste**
Inserts technological addresses from the internal clipboard.

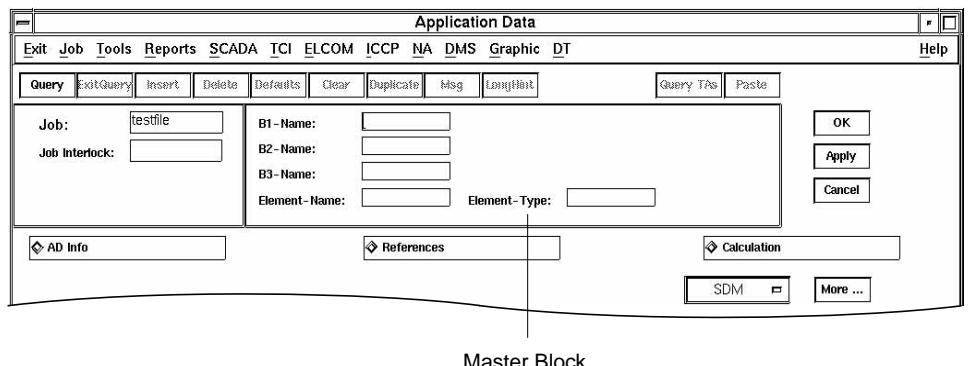
 **Note:**

These two buttons will only be enabled when working with application data references.
For more details on the Query Window and on copying technological addresses from the Query Window refer to the section 'Query Window' on page 8.

- Master Block

FIGURE 60

Master Block of the Application Data Info Form



The Master Block of the Application Data Info Form contains four attributes (**B1-Name**, **B2-Name**, **B3-Name** and **Element-Name**) showing the technological address (primary

Application Data Forms

database key) and the attribute **Element-Type** showing the element type of the currently selected application data element to which the listed application data infos belong. These attributes can be used to enter query criteria if performing a query.

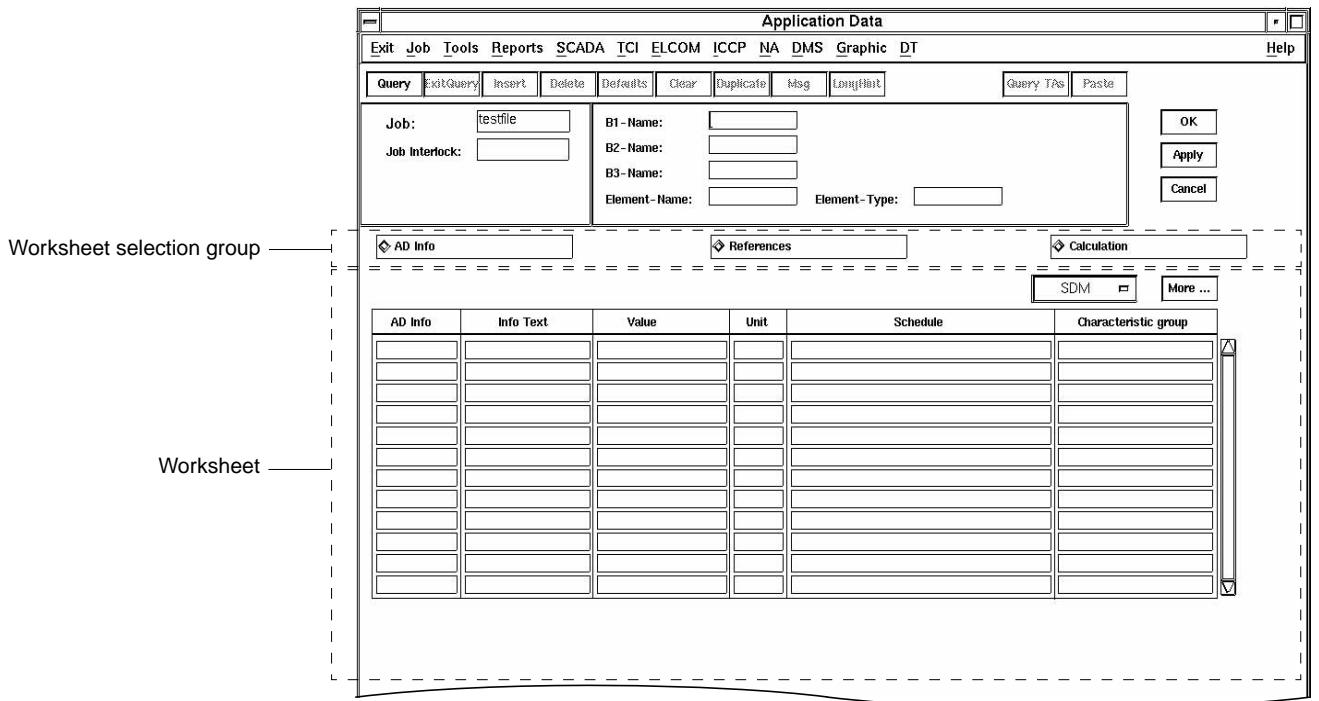
For more information on Master Blocks, refer to the section 'Master Block' on page 25. Further details on queries can be obtained from the section 'Queries' on page 6.

■ Detail Block

The Detail Block provides all facilities necessary to perform the above mentioned operations on application data infos and application data references.

FIGURE 61

Structure of the Detail Block



The Detail Block shows one of three different worksheets (Application Data Info Worksheet, Application Data Reference Worksheet, Calculation Worksheet) and a group of radio buttons for the worksheet selection.

A worksheet usually contains a tabular list showing the requested data. Depending on the selected worksheet, additional form components for specific worksheet operations may appear with the tabular list. For example, if the Application Data Info Worksheet is selected, a Worksheet View Selection Pop-List appears together with the Application Data Info Tabular List.

Viewing and Modifying Attributes of Application Data Infos

Attributes of application data infos can be viewed and modified via the Application Data Info Worksheet presented in the Detail Block of the Application Data Info Form.

Modifying Attributes of Application Data Infos

1. Select the Application Data Info Worksheet by clicking the radio button **AD Info** in the worksheet selection group.

 **Note:**

After the Application Data Info Form has been selected from the SDM Menubar, the Application Data Info Worksheet is automatically presented in the Detail Block.

2. Select an application data element.

Application data elements may be selected either by setting a technological address in the Presets Block of the Job Management Form or by entering a technological address in the Master Block of the Application Data Info Form in query mode. For more details on the usage of preset values and the query mode, refer to the section 'SDM Basics' on page 3 in this document.

3. SDM performs a query on the application data infos of the selected application data element. The available application data infos will be listed in the Application Data Info Tabular List of the Application Data Info Worksheet.

 **Note:**

If application data infos are available for the chosen application data element, the first application info is automatically selected from the Application Data Info Tabular List.

4. Select the desired application data info and the desired attribute from the Application Data Info Tabular List by clicking on the text field of the respective row in the Application Data Info Tabular List. The concerned text field will be surrounded by a rectangle indicating that the focus has been set on this field.

5. Modify the selected attribute.

Enter the new attribute value into the selected text field or double-click on the concerned text field to open a list of values and choose the desired value from the list of values.

 **Note:**

Be aware that some attributes cannot be modified. A possible reason for this behavior may be the setting of the Worksheet View Selection Pop-List (see description on page 159). For further information on application data info attributes and the associated text fields, refer to the subsequent section 'Application Data Info Worksheet' on page 159.

Modifications of additional information associated with application data infos are possible, too. For more information on this topic, refer to the sections 'Additional Information' on page 159 and 'Modifying Application Data Infos' on page 160.

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tion Window Button' on page 160 and 'Handling of Additional Information' on page 171.

6. Apply your modifications by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Info Form. Pressing the **Cancel** button in the Command Block of the Application Data Info Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

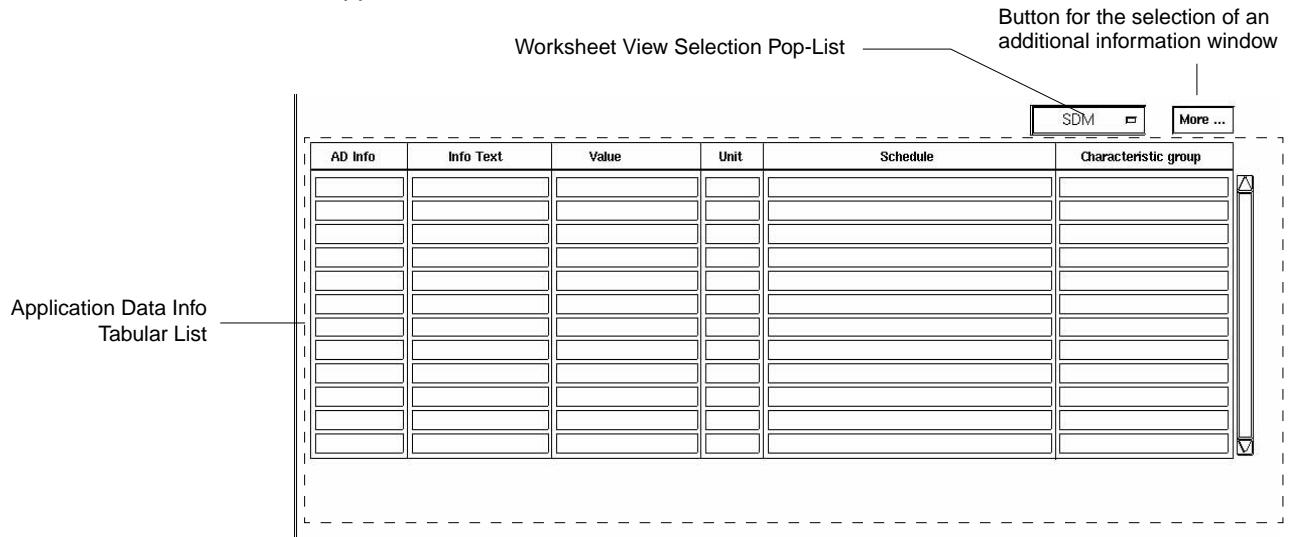
*It is not necessary to press the button **Apply** each time you have entered a single attribute value. You may also perform all desired data modifications on a single data record first and then press the button **Apply** to apply all data modifications.*

Application Data Info Worksheet

The Application Data Info Worksheet may be selected in the Detail Block of the Application Data Info Form by clicking the radio button **AD Info** in the worksheet selection group. The Application Data Info Tabular List and the Worksheet View Selection Pop-List appear. After the selection of an application data info from the Application Data Info Tabular List, a button for the selection of an additional information window may appear, too.

FIGURE 62

Application Data Info Worksheet



Worksheet View Selection Pop-List

The Worksheet View Selection Pop-List can be used to limit the number of application data infos shown in the Application Data Info Tabular List. The available pop-list options are:

- **all**

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Show all application data infos assigned to the selected application data element.

■ **SDM**

Show only those application data infos containing attributes that can be entered via the application data form at any time.

Additional Information Window Button

A button for the selection of an additional information window may appear above the Application Data Info Tabular List after an application data info has been selected (for example, see figure 62 above). Clicking this button opens the related additional information window.

Depending on the application data type, one of the following buttons may appear:

■ **TA ...**

Opens the technological address window.

■ **Time ...**

Opens the time stamp window.

■ **TFrm ...**

Opens the time format window.

■ **Limit ...**

Opens the limits window.

■ **Figure ...**

Opens the figure group/text group window.

☞ **Note:**

If no button appears after the selection of an application data info, the selected application data info is configured to have no associated additional information.

A description of the available additional information windows can be obtained from section 'Additional Information Windows' on page 172.

For more information on the handling of addition information associated with application data infos, refer to the section 'Handling of Additional Information' on page 171

Application Data Info Tabular List

The Application Data Info Worksheet contains a tabular list that shows the attributes of the application data infos of the selected application data element. Each line of the tabular list represents a single application data info record. The columns **AD Info**, **Info Text**, **Value**, **Unit**, **Schedule** and **Characteristic group** contain the associated attribute values of the respective application data info.

■ **AD Info**

Name of the respective application data info. Read-only display field.

■ **Info Text**

Info text of the selected application data info. Read-only display field.

■ **Value**

The main value of the respective application data info.

The possibility to enter a value for an application data info depends on the configured input mode and the application data type of the respective application data info.

The input mode of an application data info is set during the system configuration phase and cannot be modified via SDM at a later time. One of three input modes can be configured:

- SDM

Info value can be entered or modified via SDM at any time. The entered value will replace the current info value immediately after the job has been executed.

- UI

A value can be entered via SDM at any time. The entered value is a preset value that replaces the current info value only after a system run-up. While the system is up in online realtime mode, the info value can be modified via substation displays or tabular displays using the Value Selection and Value Operations feature of the UI. Those value modifications become effective immediately.

- IO

Info value is the result of a calculation or is set by an application and cannot be entered via SDM.

An info value can be entered only for those application data infos whose application data type does not specify an associated technological address as an additional information (button **TA ...** must not appear after an application data info has been selected - see section 'Additional Information Window Button' on page 160, too).

In the other case (application data info is configured to have an associated technological address as an additional information, i.e., button **TA ...** appears after the application data info has been selected), the database record number of the info specified by the associated technological address is automatically taken as the main application data info value. Those application data info values cannot be modified via SDM.



Note:

The main info value of an application data info can be entered/modified via SDM at any time only, if

- *input mode is SDM and application data type does not specify a technological address as an additional information.*

The main info value of an application data info cannot be entered/modified via SDM, if

- *input mode is SDM and application data type specifies a technological address as an additional information*

- *input mode is UI and a value has been entered already*
- *input mode is IO*

■ **Unit**

The engineering unit of the respective application data info. Read-only display field.

☞ **Note:**

The engineering unit has been assigned to an application data info during the system's configuration phase and cannot be modified via SDM at a later time.

■ **Schedule**

Shows the name of the assigned schedule.

A schedule can be assigned to the selected application data info by entering the name of an available schedule into the respective text field in the column **Schedule** or by selecting a schedule name from the corresponding list of values. The list of values window pops up after a double-click in the respective text field in the column **Schedule**.

☞ **Note:**

The list of values shows only those schedules that have been assigned for the selected combination of application data element and application data info. If the operator attempts to enter the name of a schedule that has not been assigned to the selected combination of application data element and application data info, the input will be rejected and an appropriate system message will appear in the Message Line.

■ **Characteristic group**

The attribute **Characteristic group** shows the name of the assigned application data characteristic group.

Handling of Application Data References

Application data references define relations between application data elements. Each application data element provides a number of reference “terminals” that may point to other application data elements. This can be achieved by assigning a technological address to a reference “terminal” of the respective application data element. The Application Data Info Form supports this feature by providing a separate Application Data Reference Worksheet that can be used to view, enter or modify the technological addresses of referenced application data elements (for further details on the Application Data Reference Worksheet, refer to the section ‘Application Data Reference Worksheet’ on page 164).

List Available Application Data References

1. Select the Application Data Reference Worksheet by clicking the radio button **References** in the worksheet selection group.
2. Select an application data element (either by previously setting a technological address as a preset value in the Presets Block of the Job Management Form or by en-

- tering a technological address in the Master Block of the Application Data Info Form in query mode).
3. SDM performs a query on the application data references of the selected application data element and lists the available application data references in the Application Data Reference Tabular List of the Application Data Reference Worksheet.

Creating Application Data References

1. Select an application data element and bring up the Application Data Reference Worksheet as described in the section 'List Available Application Data References' above.
2. Create a reference between a reference "terminal" of the selected application data element and another application data element by entering the technological address of the concerned application data element in that line of the Application Data Reference Tabular List that shows the name of the desired reference "terminal" in the column **Reference**.
3. Apply your entry by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Info Form. Pressing the **Cancel** button in the Command Block of the Application Data Info Form dismisses the data entry. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26

Modifying Application Data References

1. Select an application data element and bring up the Application Data Reference Worksheet as described in the section 'List Available Application Data References' above.
2. Modify the technological address of a referenced application data element.
Enter the new values for B1, B2, B3 or Elem into the concerned text fields or double-click on the concerned text field to open a list of values and choose the desired value for B1, B2, B3 or Elem from the list of values.

 **Note:**

*Names of reference "terminals" shown in the column **Reference** cannot be modified. For more details on the text fields of the Application Data Reference Worksheet, refer to the section 'Application Data Reference Worksheet' below.*

Instead of manually entering each technological address into the respective line of the tabular list, you may also use the Query Window to select and insert a number of technological addresses with one operation. For more details on the Query Window, refer to the section 'Query Window' on page 8.

3. Apply your entry by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Info Form. Pressing the **Cancel** button in the Command Block of the Application Data Info Form dismisses the data entry. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Application Data Reference Worksheet

Clicking the radio button References in the worksheet selection group selects the Application Data Reference Worksheet in the Detail Block of the Application Data Info Form.

The Application Data Reference Worksheet consists of an Application Data Reference Tabular List that contains the available reference “terminals” of the selected application data element and the associated technological addresses of the referenced application data elements. Each line of the tabular list represents an available reference “terminal”. The column **Reference** shows the name of the reference “terminal”, the columns **B1-Name** ... **Element-Name** contain the technological address of the referenced application data element.

FIGURE 63

Application Data Reference Worksheet

Reference	B1-Name	B2-Name	B3-Name	Element-Name

Application Data Reference Tabular List

■ **Reference**

The attribute **Reference** shows the name of a reference “terminal”. Its settings are pre-defined and cannot be modified.

■ **B1-Name**

■ **B2-Name**

■ **B3-Name**

■ **Element-Name**

These 4 attributes contain the technological address of the referenced application data element.

Handling Attributes of Calculated Application Data Infos

Some application data infos may be configured as “calculated application data infos”, i.e., they are results of a formula calculation. The Application Data Info Form supports this feature by providing a separate Calculation Worksheet that can be used to assign a formula to an application data info or to enter or to modify the attributes of the calculation operands of the assigned formula. For further details on the Calculation Worksheet, refer to the section ‘Calculation Worksheet’ on page 167).

Assigning a formula to an application data info

1. Select the desired application data info.

 **Note:**

The selected application data info must be a calculated application data info, i.e., the input mode of the selected application data info must have been set to IO.

The application data info can be selected from the Application Data Info Tabular List of the Application Data Info Worksheet or from the pop-list **Info Name** in the Result Block of the Calculation Worksheet. In both cases, the desired worksheet and an application data element must be selected before the application data info can be chosen.

For details on how to select the Application Data Info Worksheet and an application data element, refer to the section ‘Modifying Attributes of Application Data Infos’ on page 158.

The Calculation Worksheet can be selected by clicking the radio button **Calculation** in the worksheet selection group of the Detail Block (see figure 61 on page 157).

2. Select the Calculation Worksheet by clicking the radio button **Calculation** in the worksheet selection group of the Detail Block.

 **Note:**

This step may be omitted if the Calculation Worksheet has already been selected in step 1.

3. Select the desired application data info from the pop-list **Info Name** in the Result Block of the Calculation Worksheet.

 **Note:**

This step may be omitted if the application data info has already been selected from the Application Data Info Tabular List of the Application Data Info Worksheet in step 1.

4. SDM performs a query on the calculation attributes of the selected application data info. The available calculation attributes will be listed in the Operands Tabular List of the Calculation Worksheet.
5. Assign a calculation formula to the selected application data by entering the name of the desired formula into the text field of the attribute **Formula** or double-click on the

text field of the attribute **Formula** to open a list of values and choose the desired name from the list of values.

 **Note:**

The desired formula must have been defined via SDM before the name of the concerned formula can be assigned.

The data type of the result of the chosen formula must match the application data type of the selected application data info. For example, if the application data type of the selected application data info specifies the application data info to be a binary value, the result of the chosen formula must also be a binary value, etc. .

An attempt to assign a formula whose result data type does not match with the data type of the selected application data info will be rejected.

Modifying a formula assignment

1. Select the desired application data info.
2. Select the Calculation Worksheet by clicking the radio button **Calculation** in the worksheet selection group of the Detail Block.
3. SDM performs a query on the calculation attributes of the selected application data info. The available calculation attributes will be listed in the Operands Tabular List the of the Calculation Worksheet.

 **Note:**

Refer to section 'Assigning a formula to an application data info' on page 165 for more information on these steps.

If the selected application data info has an assigned formula, the name of that formula is shown in the text field of the attribute **Formula**. The ability to modify this name depends on the definition of the required calculation operands:

If calculation operands have been defined already, the formula assignment may not be modified. In this case the text field of the attribute **Formula** is read-only.

If no calculation operands have been defined so far, the formula assignment may be modified. In this case, the number of the assigned formula may be modified.

4. If calculation operands have been defined already and the formula assignment must be modified, first empty the Operands Tabular List. Select each row of the list by clicking on any of the respective text fields and press the button **Delete** in the SDM Toolbar.
5. If no calculation operands have been defined (the Operands Tabular List is empty), modify the value of the attribute **Formula**. Enter the name of the desired formula into the text field of the attribute **Formula** or double-click on the text field of the attribute **Formula** to open a list of values and choose the desired name from the list of values.

 **Note:**

Refer to section '*Assigning a formula to an application data info*' on page 165 for more information on this step.

Configuring calculation operands for an application data info

1. Select the desired application data info.
2. Select the Calculation Worksheet by clicking the radio button **Calculation** in the worksheet selection group of the Detail Block.
3. SDM performs a query on the calculation attributes of the selected application data info. The available calculation attributes will be listed in the Operands Tabular List of the Calculation Worksheet.
4. Assign a calculation formula to the selected application data info.

 **Note:**

This step may be omitted if a calculation formula has been assigned already.

*For more information on assigning a formula, refer to section '*Assigning a formula to an application data info*' on page 165.*

5. Enter the calculation operand data.

For each operand, enter a unique operand identifier into the concerned text field of the column **Operand** and a operand type into the concerned text field of the column **Type** in the Operands Tabular List or choose these information from the related lists of values.

 **Note:**

The required number of operands and the individual operand types depend on the used formula. Be aware that some operand types might not be applicable for an operand of a certain formula.

The ability to enter values for the attributes **Constant** and **B1-Name ... Info-Name** also depends on the operand type.

 **Note:**

*For detailed information on the text fields of the Calculation Worksheet, their relations and dependencies, refer to the subsequent section '*Calculation Worksheet*' on page 167.*

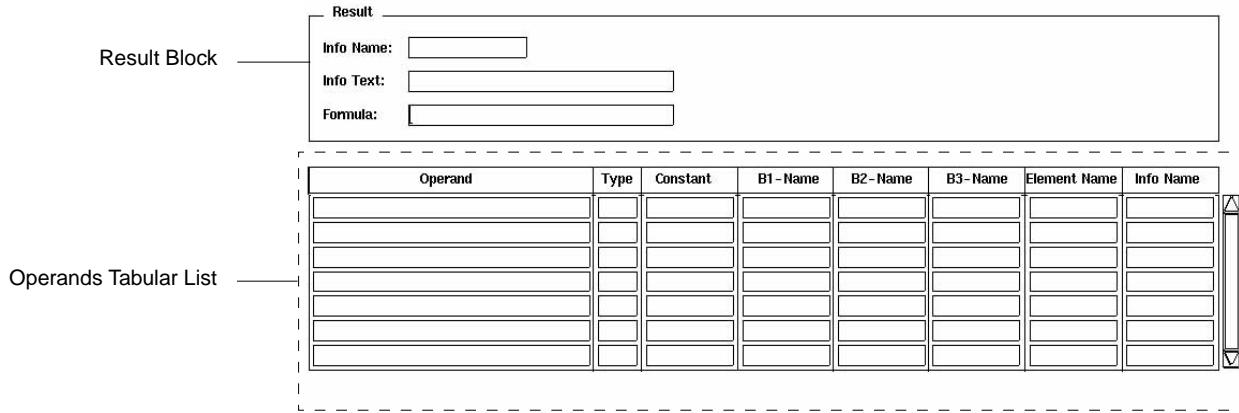
Calculation Worksheet

Clicking the radio button **Calculation** in the worksheet selection group selects the Calculation Worksheet in the worksheet block.

Application Data Forms

FIGURE 64

Calculation Worksheet



The Calculation Worksheet consists of the Result Block and the Operands Tabular List. Each line of the tabular list of operands contains the attribute settings of one single calculation operand. The column **Operand** shows the name of the respective calculation operand, the columns **Type**, **Constant**, and **B1-Name ... Info-Name** contain the attribute settings of the respective calculation operand.

Result Block

■ **Info Name**

A pop-list that contains the names of the available application data infos. The list item shows the name of the selected application data info. Another application data info may be selected from this pop-list at any time.



Note:

*The pop-list **Info Name** contains only calculated application data infos, i.e., application data infos whose input mode has been set to **SDM** (see input mode description on page 161 for further details). The number of the contained application data infos is not affected by the selected worksheet view (see description of the Worksheet View Selection Pop-List in the section 'Worksheet View Selection Pop-List' on page 159 in this document).*

■ **Info Text**

Info text of the selected application data info. Read-only display field.

■ **Formula**

Contains the name of the assigned calculation formula.



Note:

*The formula assignment can only be modified if no operand has been specified (i.e., the Operands Tabular List is empty). After a calculation formula has been selected and at least one calculation operand has been specified, the text field of the attribute **Formula** will be protected and the assigned formula cannot be modified.*

A calculation formula can be assigned to the selected application data info by entering the name of an available calculation formula into the text field of the attribute **Formula** or by selecting a formula name from the corresponding list of values. The list of values window pops up after a double-click in the respective text field of the attribute **Formula**.



Note:

The list of values shows only those formulae whose result data type corresponds to the data type of the selected application data info. For example, if the main info value of the selected application data info is a boolean value, the list of values shows only those formulae whose result is a boolean.

Operands Tabular List

■ **Operand**

Contains the name of the respective calculation operand.

A calculation operand can be specified by entering the operand's name into the respective text field in the column **Operand** or by selecting an operand name from the corresponding list of values. The list of values window pops up after a double-click in the respective text field in the column **Operand**.



The number of calculation operands is pre-defined and may vary depending on the selected formula. The list of values shows only those calculation operands that are required for the calculation of the selected formula.

If all required calculation operands have been specified, the definition of further calculation operands will be rejected. An appropriate system message will appear.

■ **Type**

Contains the operand type. The operand type specifies whether the value of the operand is a constant or is taken from a separate info specified by a technological address. In the latter case, the attribute setting also specifies whether the value must be negated or not.

The operand type can be specified by entering the name of the operand type into the respective text field in the column **Type** or by selecting an operand type name from the corresponding list of values. The list of values window pops up after a double-click in the respective text field in the column **Type**.



Note:

The possibility to use a certain operand type for the respective operand depends on the definition of the selected formula. Be aware that some operand types may not be supported by any formula.

The available operand types are:

- **Con**

The operand is a constant. The constant value must be entered in the text field of the attribute **Constant** (see description of the attribute **Constant** below). In this case, the input fields of the attributes **B1-Name ... Info-Name** will be protected and read-only.

- **+TA**

- **-TA**

These operand types indicate that the value of the operand is taken from another info. The technological address of that info must be specified by the attributes **B1-Name ... Info-Name**. In both cases, the input field of the attribute **Constant** will be protected and read-only.

If the type **+TA** is used, the operand value will remain unchanged when used in the calculation of the formula. If the type **-TA** is used, the value of the respective operand will be negated (multiplied by -1) when used in the calculation of the formula.

- **On**

- **Off**

The operand types **On** and **Off** are available for application data infos with a binary value. Both types indicate that the value of the respective operand is taken from another info. The technological address of that info must be specified by the attributes **B1-Name ... Info-Name**. In both cases, the text field of the attribute **Constant** will be protected and read-only.

If the operand type **On** is used, the value of the respective operand will remain unchanged when used in the calculation of the formula. If the operand type **Off** is used, the value of the respective operand will be inverted before used in the calculation.

- **Constant**

Contains the value of the constant.



Note:

A constant value can be entered only if the respective calculation operand is configured to be a constant, i.e., if the attribute **Type** has been set to **Con** (see description of the attribute **Type** on page 169).

- **B1-Name**
- **B2-Name**
- **B3-Name**
- **Element-Name**
- **Info-Name**

These 5 attributes specify the technological address of the info whose value will be taken as the value of the respective operand.

 **Note:**

*A technological address can be specified only if the respective calculation operand is not configured to be a constant, i.e., if the attribute **Type** has been set to **+TA**, **-TA**, **On** or **Off** (see description of the attribute **Type** on page 169).*

Handling of Additional Information

Depending on their application data type, some application data infos may have associated additional information, such as a technological address, a time stamp, two limit values, etc. These additional information are maintained via separate additional information windows.

Maintaining Additional Information

1. Select an application data info from the Application Data Info Tabular List by clicking on the text field of the respective row in the Application Data Info Tabular List. The concerned text field will be surrounded by a rectangle indicating that the focus has been set on this field.
If the selected application data info is configured to have associated additional information, the Additional Information Window Button appears above the Application Data Info Tabular List. Refer to the section 'Additional Information Window Button' on page 160 for more information on the Additional Information Window Button.
2. Click the Additional Information Window Button to open the related additional information window.
3. Modify the desired additional information in the additional information window.
Enter the new additional information value into the concerned text field or double-click on the concerned text field to open a list of values and choose the desired value from the list of values.

 **Note:**

Be aware that some additional information cannot be modified. For further information on additional information and the related additional information windows, refer to the subsequent section 'Additional Information Windows' on page 172.

4. Apply your modifications by pressing the **Apply** button or the **OK** button in the Command Block of the concerned additional information window. Pressing the **Cancel** button in the Command Block of the concerned additional information window dismisses the attribute modifications.

☞ **Note:**

The buttons in the Command Block of an additional information window have same meaning as those of the Command Block in a form. For more details on the buttons of the Command Block in a form, refer to the section 'Command Block' on page 26.

Additional Information Windows

☞ **Note:**

*Depending on the input mode of the selected application data info, some input fields of attributes presented in additional information windows may be locked or the button **Apply** in the Command Block of the concerned additional information window may be disabled.*

Technological Address Window

This additional information window is opened by clicking on the button **TA ...** (see section 'Additional Information Window Button' on page 160). It is used to maintain the technological address of an info that is associated with the selected application data info. The database record number of the specified info is automatically taken as the main info value of the selected application data info (see description of the attribute **Value** on page 161).

☞ *Using this window only existing TAs may be entered.*

Nevertheless it is possible that non existing TAs may be displayed.

These nonexistent TAs will be detected by running job- or global-validation.

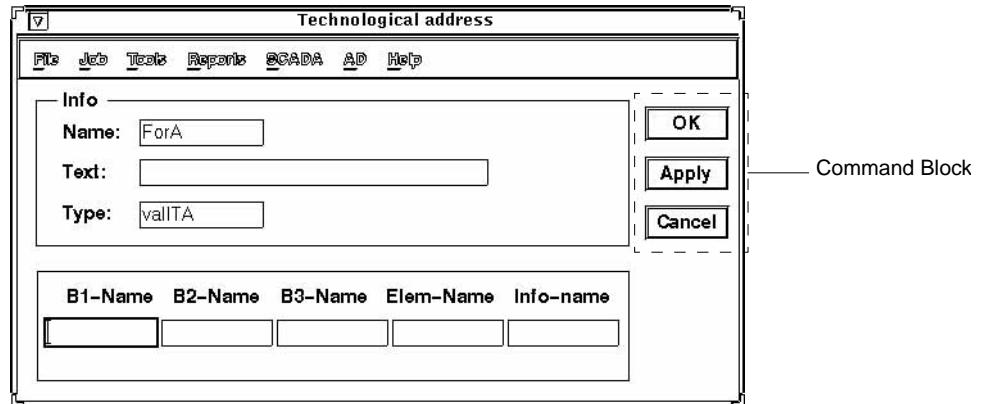
These nonexistent TAs have been specified by and imported from IDDug files.

As a IDDug file may contain cyclic references (which is allowed), a TA might not exist when referenced first. So the existence check cannot be performed during IDDug file import , but only by running job- or global-validation.

Application Data Forms

FIGURE 65

Technological Address Window



■ **Name**

Name of the selected application data info. Read-only display field.

■ **Text**

Info text of the selected application data info. Read-only display field.

■ **Type**

Type of the selected application data info. Read-only display field.

Possible attribute values:

- valITA

■ **B1-Name**

■ **B2-Name**

■ **B3-Name**

■ **Elem-Name**

■ **Info-Name**

These 5 attributes specify a technological address associated with the selected application data info.

Time Window

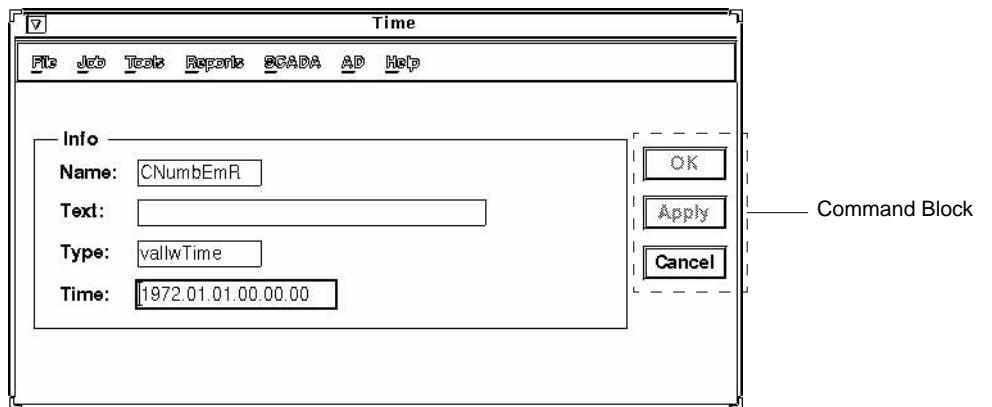
The Time Window is opened by clicking on the button **Time ...** (see section 'Additional Information Window Button' on page 160). It can be used to view a time information associated with the selected application data info.

☞ **Note:**

The information presented in this window is read-only. None of the attributes can be modified.

FIGURE 66

Time Window



■ **Name**

Name of the selected application data info. Read-only display field.

■ **Text**

Info text of the selected application data info. Read-only display field.

■ **Type**

Type of the selected application data info. Read-only display field.

Possible attribute values:

- valIwTime
- valRwTime

■ **Time**

Time information associated with the selected application data info. Read-only display field.

Time Format Window

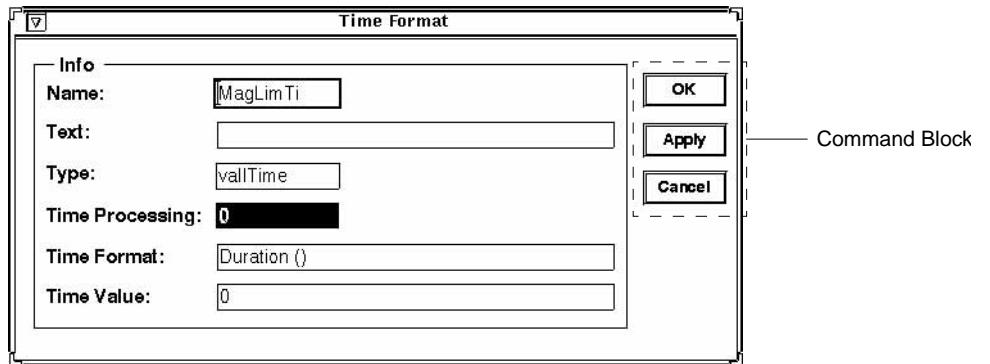
The time format window is opened by clicking on the button **Tfrm ...** (see section 'Additional Information Window Button' on page 160). It is used to view the time format and time processing attributes associated with the selected application data info whose main info value is a time value.

 **Note:**

The attributes shown in this window have already been set during the system configuration phase and cannot be modified via SDM. The information presented in this window is read-only.

FIGURE 67

Time Format Window



■ **Name**

Name of the selected application data info. Read-only display field.

■ **Text**

Info text of the selected application data info. Read-only display field.

■ **Type**

Type of the selected application data info. Read-only display field.

Possible attribute values:

- valITime

■ **Time Processing**

Time type. The time type is an integer number that specifies if the main info value (time value) is a duration or a single time point. Read-only display field.

■ **Time Format**

Shows the name of the time format used to represent the main info value in a specific time format (for example: DDD : hh : mm : ss). Read-only display field.

Application Data Forms

■ Time Value

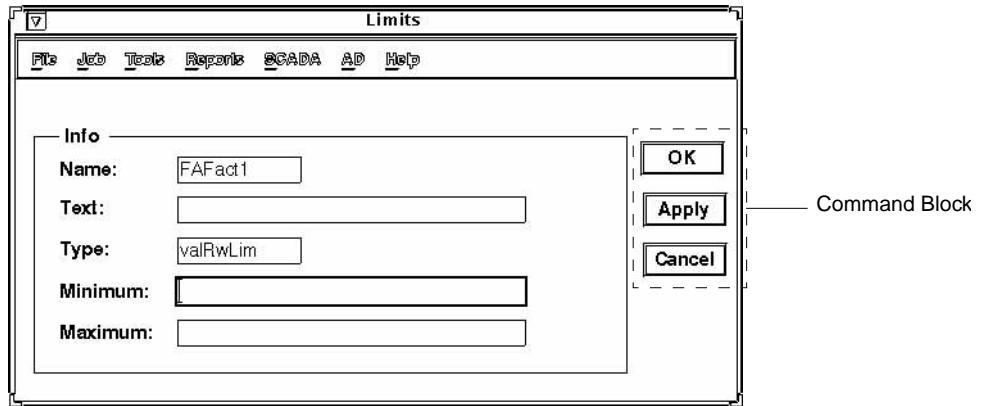
Time interpretation indicator. The time interpretation indicator is an integer number that specifies how the main info value (time value) will be interpreted. For example: Time value will be processed as seconds, as hour and minutes, as hours, minutes and seconds, etc. Read-only display field.

Limits Window

The limits window is opened by clicking on the button **Limit ...** (see section 'Additional Information Window Button' on page 160). It is used to enter or modify limit values associated with an application data info.

FIGURE 68

Limits Window



■ Name

Name of the selected application data info. Read-only display field.

■ Text

Info text of the selected application data info. Read-only display field.

■ Type

Type of the selected application data info. Read-only display field.

Possible attribute values:

- valRwLim Real value
- valRwHlim Real value
- valIwLim Integer value
- valIwHlim integer value

■ Minimum

Lower limit value.

Application Data Forms

☞ Note:

Depending on the configured application data info type (see description of the attribute **Type** above), integer or real values may be entered for the lower limit value. Invalid entries are rejected. An appropriate system message will appear.

■ **Maximum**

Upper limit value.

☞ Note:

Depending on the configured application data info type (see description of the attribute **Type** above), integer values or real values may be entered for the upper limit value. Invalid entries are rejected. An appropriate system message will appear.

The effectively used upper limit value is **Maximum** * 100.

Figure Group/Text Group Window

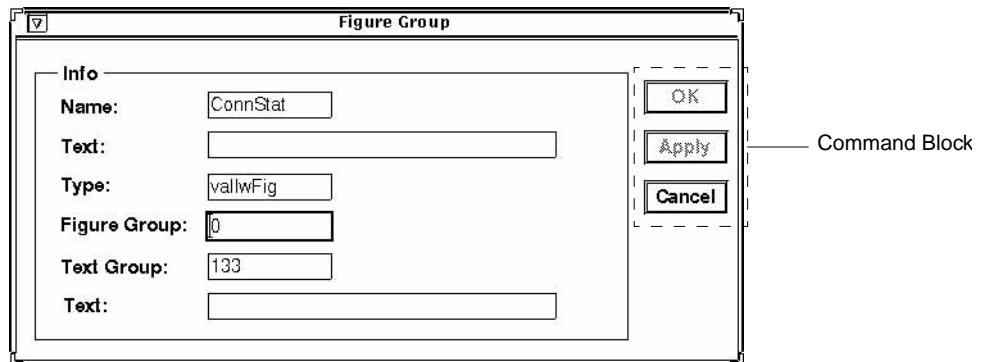
The figure group/text group window is opened by clicking on the button **Figure ...** (see section 'Additional Information Window Button' on page 160). It is used to enter or modify a figure group number, a text group number and/or a text alternative associated with an application data info.

☞ Note:

The attributes shown in this window have already been set during the system configuration phase and cannot be modified via SDM. The information presented in this window is read-only.

FIGURE 69

Figure Group/Text Group Window



■ **Name**

Name of the selected application data info. Read-only display field.

■ **Text**

Info text of the selected application data info. Read-only display field.

■ **Type**

Type of the selected application data info. Read-only display field.

Possible attribute values:

- valIwFig

■ **Figure Group**

Figure group number that refers to the figure group containing the figure to be displayed.

If a figure group number is shown, then it is used in preference to a text group. If no figure group number is shown, then the shown text group number is used (see description of attribute **Text Group** below).

The figure to be displayed is selected from the specified figure group via the main info value of the respective application data info. The main info value represents the number of the figure alternative to be selected from the specified figure group.

 **Note:**

The decision upon the usage of a figure group or a text group has been made already in the system configuration phase. Also, appropriate figure group/text group numbers must have been configured.

Thus, the displayed figure group number should not be modified. If a modification is required, it is recommended to contact a system engineer prior to the modification.

■ **Text Group**

Number of a text group that contains the text to be displayed.

 **Note:**

The decision upon the usage of a figure group or a text group has been made already in the system configuration phase. Also, appropriate figure group/text group numbers must have been configured.

Thus, the displayed text group number should not be modified. If a modification is required, it is recommended to contact a system engineer prior to the modification.

■ **Text**

Shows the text of the currently selected text alternative.

The text to be displayed is selected from the specified text group via the main info value of the respective application data info. The main info value represents the number of the text alternative to be selected from the specified text group. The main info value and the text alternative affect each other mutually, i.e., if one of the attributes is changed, the other is changed accordingly.

 **Note:**

The decision upon the usage of a particular text alternative has been made already in the system configuration phase. Also, an appropriate main info value has been configured.

Application Data Forms

Thus, neither the main info value nor the chosen text alternative should be modified. If a modification is required, it is recommended to contact a system engineer prior to the modification.

Application Data Characteristic Groups Form

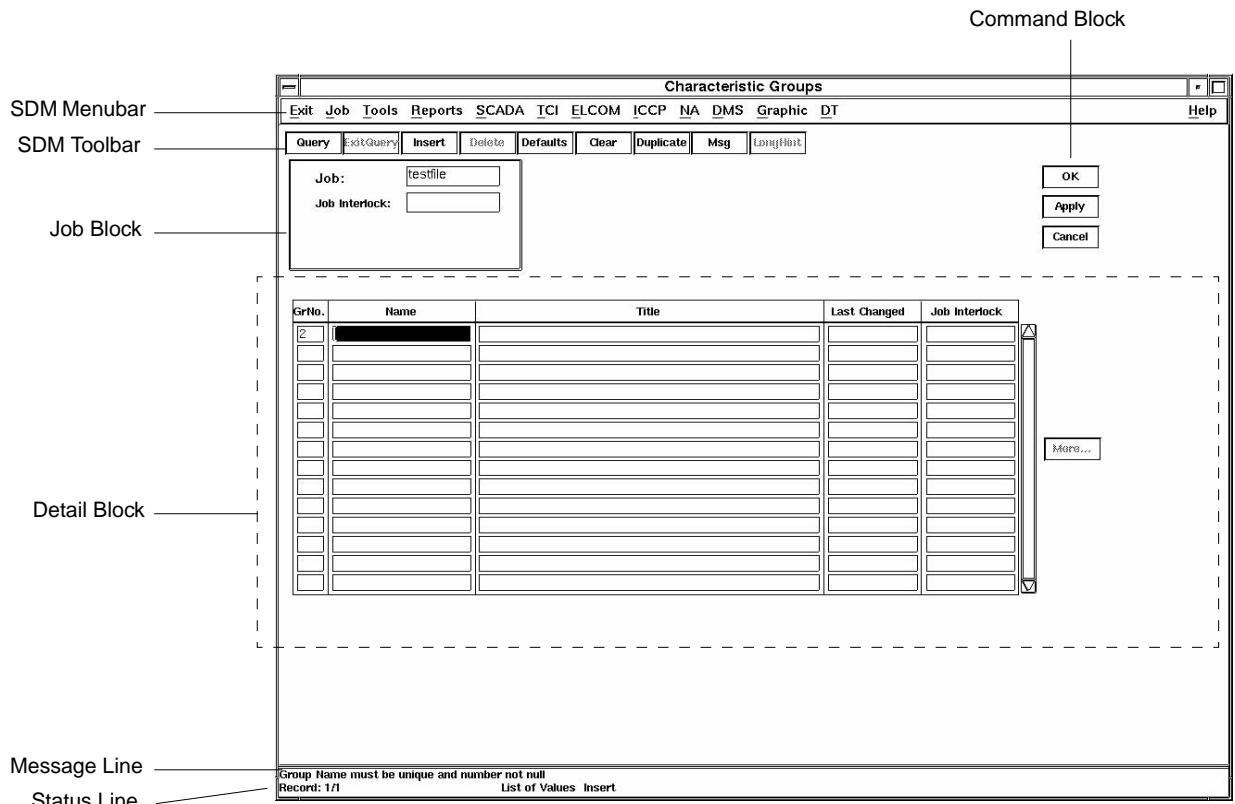
This section describes the facilities provided by the Application Data Characteristic Groups Form to view, create or modify application data characteristic groups and their associated application data characteristics.

Structure of the Application Data Characteristic Groups Form

The Application Data Characteristic Groups Form supports the above described application data characteristic groups features by a hierarchically structured Detail Block that uses worksheets and other graphical form components grouped in a feature-oriented way (see description of the Detail Block on page 181). The basic structure of the Application Data Characteristic Groups Form is shown in figure 70:

FIGURE 70

Basic structure of the Application Data Characteristic Groups Form



Application Data Forms

The Application Data Characteristic Groups Form is composed of the following form components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Message Line
- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the respective subsection of chapter 3, section 'SDM Basics' on page 3 in this document which contains a comprehensive description of the SDM basics.

■ Detail Block

The Detail Block provides all facilities necessary to perform the above mentioned operations on application data characteristic groups. Figure 71 (below) shows the Detail Block of the Application Data Characteristic Groups Form containing the Application Data Characteristic Groups Worksheet.

FIGURE 71

Structure of the Detail Block

The screenshot displays the 'Characteristic Groups' application window. At the top is a menu bar with items: Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help. Below the menu is a toolbar with buttons: Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and LongHint. The main area is divided into two sections by a dashed line. The upper section is labeled 'Job:' and contains two input fields: 'testfile' and 'Job Interlock'. To the right of these fields are three buttons: OK, Apply, and Cancel. The lower section is labeled 'Application Data Characteristic Groups Worksheet' and contains a tabular list labeled 'Application Data Characteristic Groups Tabular List'. This list has columns: GrNo., Name, Title, Last Changed, and Job Interlock. A vertical scroll bar is on the right side of the list. A button labeled 'More...' is located at the bottom right of the list area. A large bracket on the left side of the list area points to the label 'Application Data Characteristic Groups Worksheet'. Another bracket below it points to the label 'Application Data Characteristic Groups Tabular List'. At the very bottom center of the window is a button labeled 'Button for the Selection of the Application Data Characteristic Form'.

Handling Application Data Characteristic Groups

Attributes of application data characteristic groups can be created and modified via the Application Data Characteristic Groups Worksheet presented in the Detail Block of the Application Data Characteristic Groups Form.

Creating Application Data Characteristic Groups

1. Select an application data characteristic group from the Application Data Characteristic Groups Tabular List by clicking on any of the text fields in the concerned row of the Application Data Characteristic Groups Tabular List and press the button **Insert** in the SDM Toolbar to create an empty line in the Application Data Characteristic Groups Tabular List below the selected application data characteristic group.

 **Note:**

After the Application Data Characteristic Groups Form has been entered the very first time during a SDM session, the Application Data Characteristic Groups Worksheet shows an empty Application Data Characteristic Groups Tabular List. The Application Data Characteristic Groups Form is in query mode.

*Press the button **Query** in the SDM Toolbar to query of the available application data characteristic groups from the database. The query results will be shown in the Application Data Characteristic Groups Tabular List. If the Application Data Characteristic Groups Tabular List remains empty, no application data characteristic groups are available in the database. An appropriate system message will appear.*

2. Enter a unique number for the new application data characteristic group into the concerned text field of the column **GrNo.** .
3. Enter a unique name for the new application data characteristic group into the concerned text field of the column **Name**.

 **Note:**

If application data characteristic group data are reverse transferred from the Operational Database (ODB) and then imported into the source database after application data characteristic groups have been defined, the names of the available application data characteristic groups will be removed and replaced in the source database by a combination of group number and group title.

4. Enter a unique description for the new application data characteristic group into the concerned text field of the column **Title**.

 **Note:**

*An attempt to enter an ambiguous value for any of the attributes **GrNo.**, **Name** or **Title** will be rejected. An appropriate system message will appear.*

 **Note:**

The following steps 5, 6, 7, 8, 9 and 10 deal with application data characteristics and may be omitted and can be performed at a later time, too. In this case, continue with step 11.

For more information on application data characteristics, refer to the section 'Application Data Characteristics Form' on page 187.

5. Add application data characteristics to your new application data characteristic group. Press the button **More ...** to bring up the Application Data Characteristics Form and configure the associated application data characteristics.

 **Note:**

For more information on how to create application data characteristics, refer to the section 'Appending Application Data Characteristics To An Available Application Data Characteristic Group' on page 190.

6. Configure the basic group attributes of your new application data characteristic group. Press the button **More ...** to bring up the Application Data Characteristics Form.
7. Specify a group slope for your new application data characteristic group by entering a valid value in the text field of the attribute **Group Slope**.
8. Specify the abscissa usage for the associated application data characteristics of your new application data characteristic group by entering a valid value in the text field of the attribute **Abscisse**.
9. Specify a common characteristic size restriction for the associated application data characteristics of your new application data characteristic group by entering a valid value in the text field of the attribute **Size**.

 **Note:**

*Either enter the values of the attributes **Group Slope**, **Abscisse** or **Size** directly into the text field of the respective attribute in the Characteristic Group Attributes Block or double-click on any of these text field to open a list of values and choose the desired attribute from this list of values.*

10. Apply your modifications in the Application Data Characteristics Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

11. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form.

Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Modifying Application Data Characteristic Groups

1. Select an application data characteristic group from the Application Data Characteristics Tabular List by clicking on any of the text fields in the concerned row of the Application Data Characteristics Tabular List.

 **Note:**

After the Application Data Characteristic Groups Form has been entered the very first time during a SDM session, the Application Data Characteristic Groups Worksheet shows an empty Application Data Characteristics Tabular List. The Application Data Characteristic Groups Form is in query mode.

*Press the button **Query** in the SDM Toolbar to query of the available application data characteristic groups from the database. The query results will be shown in the Application Data Characteristics Tabular List. If the Application Data Characteristics Tabular List remains empty, no application data characteristic groups are available in the database. An appropriate system message will appear.*

2. Modify the desired attributes of the selected application data characteristic group in the Characteristic Group Attributes Block.

 **Note:**

For more information on the text fields of the Application Data Characteristics Tabular List refer to the description of the Application Data Characteristics Tabular List in the section 'Application Data Characteristic Groups Tabular List' on page 186.

The following steps 3 and 4 may be omitted and can be performed at a later time, too. In this case, continue with step 5.

3. If the group slope, the abscissa usage, the size restriction or any of the associated application data characteristic need to be modified, press the button **More ...** to bring up the Application Data Characteristics Form and modify the desired attributes in the Application Data Characteristics Form.
4. Apply your modifications in the Application Data Characteristics Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Application Data Forms

☞ **Note:**

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

5. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Removing Application Data Characteristic Groups

1. Select an application data characteristic group from the Application Data Characteristics Tabular List by clicking on any of the text fields in the concerned row of the Application Data Characteristics Tabular List.

☞ **Note:**

After the Application Data Characteristic Groups Form has been entered the very first time during a SDM session, the Application Data Characteristic Groups Worksheet shows an empty Application Data Characteristics Tabular List. The Application Data Characteristic Groups Form is in query mode.

*Press the button **Query** in the SDM Toolbar to query of the available application data characteristic groups from the database. The query results will be shown in the Application Data Characteristics Tabular List. If the Application Data Characteristics Tabular List remains empty, no application data characteristic groups are available in the database. An appropriate system message will appear.*

2. Press the button **Delete** in the SDM Toolbar to remove the selected application data characteristic group.

☞ **Note:**

This action removes the associated application data characteristics, too.

3. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Application Data Characteristic Groups Worksheet

The Application Data Characteristic Groups Worksheet contains a tabular list showing the available application data characteristic groups and a button for the selection of the application data characteristics form.

Application Data Characteristic Groups Tabular List

The Application Data Characteristic Groups Worksheet contains a tabular list that shows general information about the available application data characteristic groups. Each line of the tabular list represents a single application data characteristic group record. The columns **GrNo.**, **Name**, **Title**, **Last changed** and **Job interlock** contain the associated attribute settings of the respective application data characteristic group.

- **GrNo.**
Number of the respective application data characteristic group.
- **Name**
Name of the respective application data characteristic group.
- **Title**
A character string that describes the respective application data characteristic group.
- **Last changed**
Shows date and time of the latest change of the respective application data characteristic group. Read-only display field.
- **Job interlock**
Shows the name of the job locking this list, if such an interlock exists. Read-only display field.

Button for the Selection of the Application Data Characteristic Form

Application data characteristics are maintained via a separate application data characteristic form (refer to section 'Application Data Characteristics Form' on page 187). To call up the application data characteristic form, the operator must choose an application data characteristic from the Application Data Characteristic Groups Tabular List and press the button for the selection of the application data characteristics form (see figure 71 on page 181).

☞ Note:

After the application data characteristic groups form has been called up initially, the first application data characteristic group of the Application Data Characteristic Groups Tabular List is automatically selected and the button for the selection of the application data characteristics form is enabled.

If no application data characteristic groups are available, the button for the selection of the application data characteristics form will be disabled.

Application Data Characteristics Form

This section describes the Application Data Characteristics Form that deals with basic application data characteristic group attributes, attributes of application data characteristics associated with an application data characteristic group and attributes of application data characteristic segments. The facilities provided by the Application Data Characteristics Form can be used to perform the following operations:

- View or modify attributes of application data characteristic groups
- View, specify or modify application data characteristics associated with an application data characteristic group
- View, specify or modify segments of application data characteristics

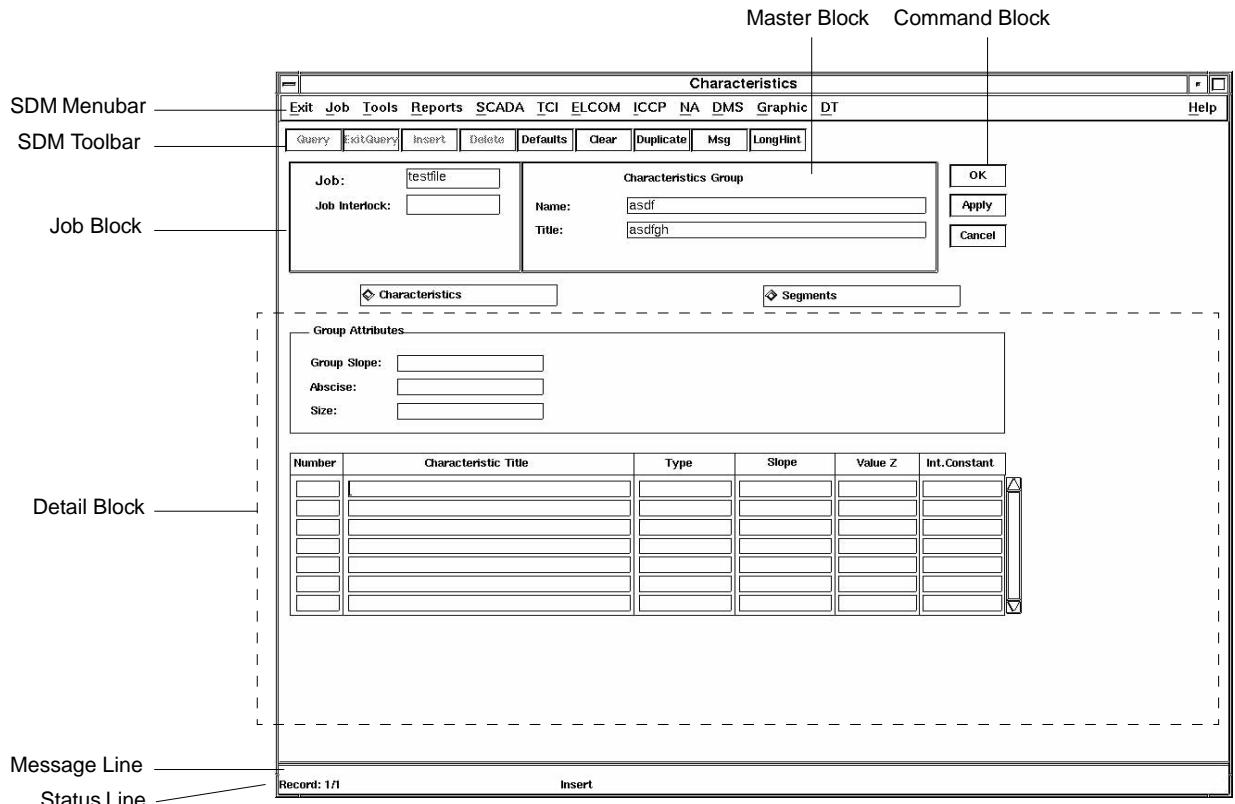
Structure of the Application Data Characteristics Form

The Application Data Characteristics Form supports the above described application data features by a hierarchically structured Detail Block that uses worksheets and other graphical form components grouped in a feature-oriented way (see description of the Detail Block on page 188). The basic structure of the Application Data Characteristic Groups Form is shown in figure 72 on page 188.

Application Data Forms

FIGURE 72

Basic structure of the Application Data Characteristics Form



The Application Data Characteristics Form is composed of the following form components:

- SDM Menubar
- SDM Toolbar
- Job Block
- Message Line
- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the respective subsection of chapter 3, section 'SDM Basics' on page 3 in this document.

- Master Block

For further information on the Master Block of the Application Data Characteristics Form, refer to the section 'Master Block' on page 194.

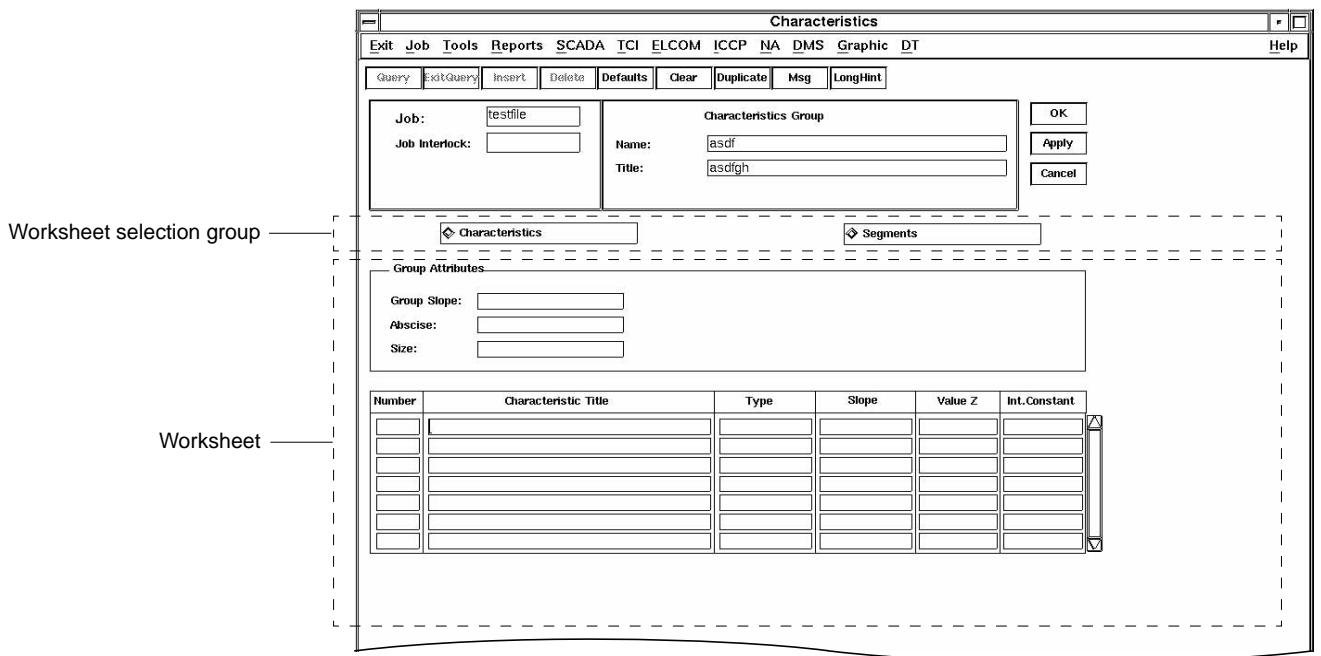
- Detail Block

Application Data Forms

The Detail Block provides all facilities necessary to perform the above mentioned operations on application data characteristics. Figure 73 (below) shows the Detail Block of the Application Data Characteristics Form containing the Application Data Characteristics Worksheet.

FIGURE 73

Structure of the Detail Block



The Detail Block consists of one of two different worksheets (Application Data Characteristics Worksheet, Characteristic Segments Worksheet) and a group of radio buttons for the worksheet selection.

A worksheet usually contains a tabular list showing the requested data. Depending on the selected worksheet, additional form components for specific worksheet operations may appear with the tabular list. For example, if the Application Data Characteristics Worksheet is selected, the Characteristic Group Attributes Block appears together the Application Data Characteristics Tabular List.

 **Note:**

The content of the Master Block changes depending on the selected worksheet. See the following worksheet descriptions for details.

Modifying Application Data Characteristic Group Attributes

The facilities provided by the Characteristic Group Attributes Block in the Application Data Characteristics Form can be used to modify attributes of application data characteristic groups.

For a detailed description of the related actions, refer to the description of the steps 3 and 4 in the section 'Modifying Application Data Characteristic Groups' on page 184.

Handling of Application Data Characteristics

The Application Data Characteristics Form can be used to view, specify and modify application data characteristics via the Application Data Characteristics Worksheet and to view, specify and modify segments of application data characteristics via the Application Data Characteristics Form.

Appending Application Data Characteristics To An Available Application Data Characteristic Group

 **Note:**

*If the Application Data Characteristics Form is already visible, the steps 1 to 3 may be omitted. In this case, the desired application data characteristic group may also be selected from the pop-list **Name** in the Master Block of the Application Data Characteristics Form.*

1. Open the Application Data Characteristic Groups Form.
2. Select the desired application data characteristic group.
3. Press the button **More ...** to bring up the Application Data Characteristics Form.

 **Note:**

For further details on the procedures described in step 1 to step 3, please refer to the description of the corresponding steps in the section 'Modifying Application Data Characteristic Groups' on page 184

4. Select an empty row from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
If no empty rows are available, select an available row by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List and press the button **Insert** in the SDM Toolbar to create an empty line in the Application Data Characteristics Tabular List below the selected application data characteristic.
5. Enter a unique title for the new application data characteristic into the concerned text field of the column **Title**.

 **Note:**

The number of the new application data characteristic will be generated automatically and needs not to be entered.

6. Specify an application data characteristic type for your new application data characteristic by entering a valid value into the concerned text field of the attribute **Type**.

 **Note:**

For further details on the attributes and text fields of the Application Data Characteristics Worksheet, please refer to the section 'Application Data Characteristics Worksheet' on page 194.

7. Specify the individual characteristic slope for your new application data characteristic by entering a valid value into the concerned text field of the attribute **Slope**.

 **Note:**

*Either enter the values of the attributes **Type** or **Slope** directly into the text fields of the respective attribute in the Application Data Characteristics Tabular List or double-click on any of these text fields to open a list of values and choose the desired attribute from this list of values.*

*Be aware that there is a relation between the individual characteristic slope and the common group slope. For more information, please refer to the description of the attribute **Group Slope** on page 195 and the description of the attribute **Slope** on page 198.*

 **Note:**

The following steps 8, 9, 10, and 11 may be omitted and can be performed at a later time, too. In this case, continue with step 11.

8. Enter a valid value for the attribute **Value Z**.
9. Enter a valid value for the attribute **Int. Constant**.
10. Specify application data characteristic segments for your new application data characteristic. Bring up the Characteristic Segments Worksheet by pressing the radio button **Segments** in the worksheet selection group of the Application Data Characteristics Form and configure the segments of the currently selected application data characteristic.

 **Note:**

For more information on how to specify segments of an application data characteristic, refer to the section 'Specifying Segments for an Available Application Data Characteristic' on page 199.

11. Apply your modifications in the Characteristic Segments Worksheet by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application

Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

12. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Modifying Application Data Characteristics

 **Note:**

*If the Application Data Characteristics Form is already visible, the steps 1 to 3 may be omitted. In this case, the desired application data characteristic group may also be selected from the pop-list **Name** in the Master Block of the Application Data Characteristics Form.*

1. Open the Application Data Characteristic Groups Form.
2. Select the desired application data characteristic group.
3. Press the button **More ...** to bring up the Application Data Characteristics Form.

 **Note:**

For further details on the procedures described in step 1 to step 3, please refer to the description of the corresponding steps in the section 'Modifying Application Data Characteristic Groups' on page 184

4. Select the desired application data characteristic from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
5. Modify the desired attributes of the selected application data characteristic in the Application Data Characteristics Tabular List.

Application Data Forms

-  **Note:**
For more information on the text fields of the Application Data Characteristics Tabular List refer to the description of the Application Data Characteristics Tabular List in the section 'Application Data Characteristic Groups Tabular List' on page 186.
The following steps 6 and 7 may be omitted and can be performed at a later time, too. In this case, continue with step 8.
6. If the associated segments of the selected application data characteristic need to be modified, press the radio button **Segments** in the worksheet selection group to bring up the Characteristic Segments Worksheet and modify the desired attributes in the Characteristic Segments Tabular List.

 **Note:**
Further details on the attributes and text fields of the Characteristic Segments Worksheet, please refer to the section 'Characteristic Segments Worksheet' on page 203.

 7. Apply your modifications in the Characteristic Segments Worksheet by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**
Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

 8. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Removing Application Data Characteristics

-  **Note:**
If the Application Data Characteristics Form is already visible, the steps 1 to 3 may be omitted. In this case, the desired application data characteristic group may also be selected from the pop-list **Name** in the Master Block of the Application Data Characteristics Form.
1. Open the Application Data Characteristic Groups Form.
 2. Select the desired application data characteristic group.
 3. Press the button **More ...** to bring up the Application Data Characteristics Form.

 **Note:**

Application Data Forms

For further details on the procedures described in step 1 to step 3, please refer to the description of the corresponding steps in the section 'Modifying Application Data Characteristic Groups' on page 184

4. Select the desired application data characteristic from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
5. Press the button **Delete** in the SDM Toolbar to remove the selected application data characteristic group.

 **Note:**

This action removes the associated application data characteristic segments, too.

6. Apply your modifications in the Application Data Characteristics Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

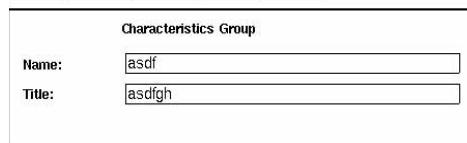
Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

Application Data Characteristics Worksheet

Clicking the radio button **Characteristics** in the worksheet selection group selects the Application Data Characteristics Worksheet. The Characteristic Group Attributes Block and the Application Data Characteristics Tabular List appear. The content of the Master Block changes.

FIGURE 74

Content of the Master Block if the Application Data Characteristics Worksheet is selected



Characteristics Group	
Name:	asdf
Title:	asdfgh

Master Block

 **Note:**

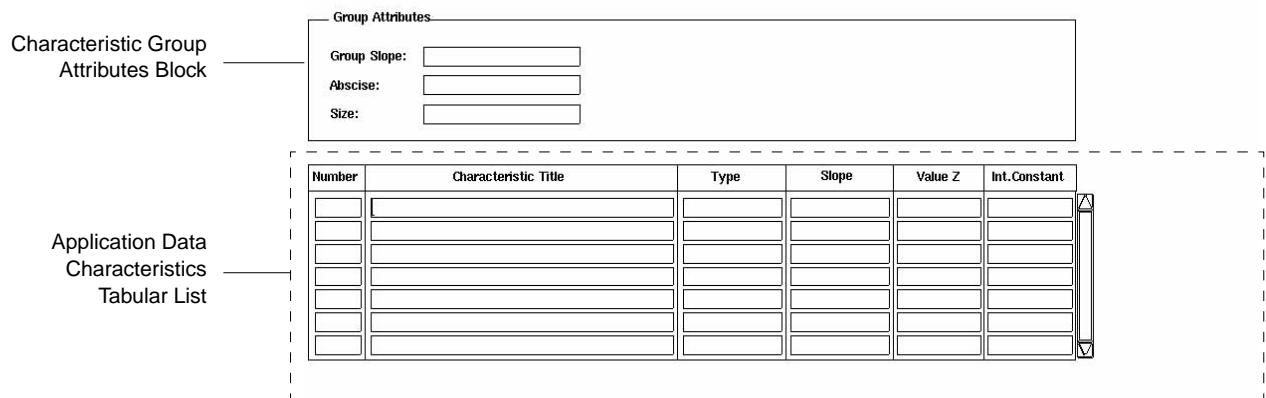
Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

Application Data Forms

- **Name**
Contains the names of the available application data characteristic groups. Another application data characteristic group may be selected from this input field at any time.
- **Title**
Shows the title of the selected application data characteristic group. Read-only display field.

FIGURE 75

Application Data Characteristics Worksheet



Characteristic Group Attributes Block

- **Group Slope**

The value of the attribute **Group Slope** provides the maximum constraint on the slope of any of member characteristics of the selected application data characteristic group.

The possible attribute values are:

- **0 (Free)**
Free Slope refers to a characteristic without any slope constraints.
- **1 (Free Continuous)**
A free continuous slope is one in which the beginning of one segment is the same as the end of the previous segment.
- **2 (Increasing)**
An increasing slope is always positive.
- **3 (IncrStrict)**
A strictly increasing slope is not only positive as described above (refer to the option **2 (Increasing)**), but it is also one in which the slope is not less than or not greater than that of the previous segment respectively.
- **4 (IncrCont)**

An continuously increasing slope is one in which the beginning of one segment is the same as the end of the previous segment.

- **5 (IncrStrictCont)**

A strictly increasing slope is not only positive as described above (refer to the options **2 (Increasing)**), but it is also one in which the slope is not less than or not greater than that of the previous segment respectively.

- **6 (Decreasing)**

A decreasing slope is always negative.

- **7 (DecrStrict)**

A strictly decreasing slope characteristic is not only negative as described above (refer to the option **6 (Decreasing)**), but it is also one in which the slope is not less than or not greater than that of the previous segment respectively.

- **8 (DecrCont)**

A continuously decreasing slope is one in which the beginning of one segment is the same as the end of the previous segment.

- **9 (DecrStrictCont)**

A strictly decreasing slope characteristic is not only negative as described above (refer to the option **6 (Decreasing)**), but it is also one in which the slope is not less than or not greater than that of the previous segment respectively.



Note:

*The setting of the attribute **Group Slope** can be overridden by an individual curve slope characteristic defined by the attribute **Slope** (for more details, refer to the description of the attribute **Slope** on page 198 of this document).*



Abscisse

If all characteristics of an application data characteristic group share the same abscissa specification, then the data storage can be optimized. Otherwise each characteristic must have its own abscissa specification.

The following attribute values are possible:

- **0 (Other X)**

Each characteristic of an application data characteristic group has its own individual abscissa specification.

Application Data Forms

- **1 (Same X)**

All of the characteristics of an application data characteristic group have the same abscissa specification.

- **Size**

The sizing restriction specifies whether the respective application data characteristic is completely defined by the available characteristic segments or whether the characteristic simply continues on after the last segment with its value (i.e., extrapolation behavior). The possible attribute values are:

- **0 (Unlimited)**

The application data characteristic continues on after the last segment. In case of a value request outside the available characteristic segments, it will be extrapolated with the slope of the last available characteristic segment.

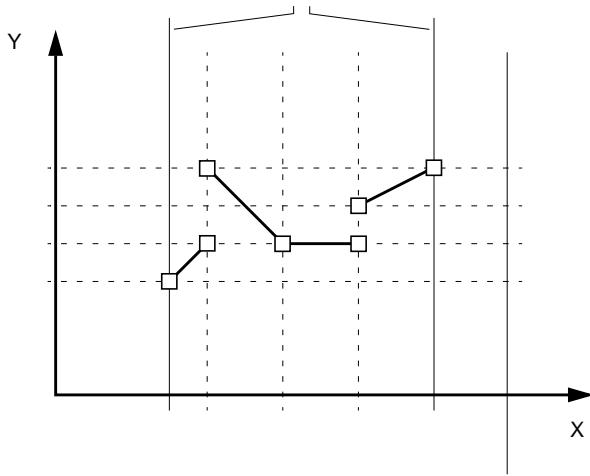
- **1 (Limited)**

The application data characteristic is completely defined by the available characteristic segments. In case of a value request outside the available characteristic segments, no value will be returned.

FIGURE 76

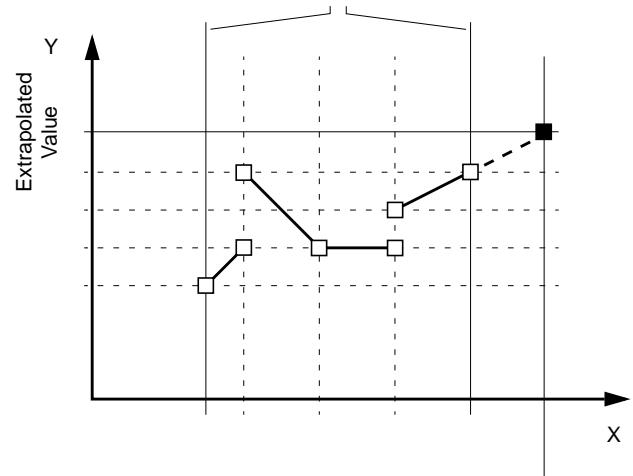
Examples for the extrapolation behavior

Limits of the application data characteristic



Value request outside the last available characteristic segment;
No value will be returned

Limits of the application data characteristic



Note:

The extrapolation itself is carried out by the concerned application rather than the Application Data Characteristics Form.

Application Data Characteristics Tabular List

The Characteristic Segments Worksheet contains a tabular list that shows the available application data characteristics of the selected application data characteristic group. Each line of the tabular list represents one characteristic record. The columns **Number ... Int. Constant** contain the attribute values of the respective application data characteristic.

■ **Number**

Contains the consecutive number of the currently selected X/Y curve within the respective group. This number is generated automatically and cannot be modified. Read-only display field.

■ **Title**

Shows the title of the respective application data characteristic (max. 40 characters).

■ **Type**

The attribute **Type** specifies how the specified characteristic segments are connected. The available attribute values are:

- **1 (Discrete)**

All characteristic segments will consecutively be “linked together” with no gap. No gap may occur between characteristic segments.

- **2 (Discrete with Additional Information)**

This value indicates that gaps may occur between segments of the application data characteristic. Within a gap, the application data characteristic is interrupted.

Gaps can be specified when defining the individual segments of an application data characteristic with the Characteristic Segments Worksheet. For more details, refer to the description of the attribute **Additional** on page 205 in this document.

■ **Slope**

Specifies an individual slope restriction for the currently selected application data characteristic.



Note:

*Be aware that the value of this attribute overrides the common group slope characteristic defined by the attribute **Group Slope** in the Characteristic Group Attributes Block (for details, refer to the description of the attribute **Group Slope** on page 195 in this document).*

Basically, the attribute **Slope** provides the same options as the attribute **Group Slope**, but the availability of certain slope options for this attribute is restricted by setting of the attribute **Group Slope**.

For a description of the supported slope options, refer to the description of the attribute **Group Slope** on page 195 of this document.

■ **Value Z**

Specifies a value that can be used as an additional access key to the selected application data characteristic.

■ **Int. Constant**

For application data characteristics that represent the derivative of a function, the attribute **Int. Constant** can be used to specify a constant necessary to obtain the source function by integration.

Handling Segments of Application Data Characteristics

Specifying Segments for an Available Application Data Characteristic

☞ **Note:**

*If the Application Data Characteristics Form is already visible, the steps 1 to 4 may be omitted. In this case, the desired application data characteristic group and the desired application data characteristic may also be selected from the pop-list **Name** (application data characteristic group) and the pop-list **Charac** (application data characteristic) in the Master Block of the Application Data Characteristics Form.*

1. Open the Application Data Characteristic Groups Form.
2. Select the desired application data characteristic group.
3. Press the button **More ...** to bring up the Application Data Characteristics Form.

☞ **Note:**

For further details on the procedures described in step 1 to step 3, please refer to the description of the corresponding steps in the section 'Modifying Application Data Characteristic Groups' on page 184

4. Select the desired application data characteristic from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
5. Click the radio button **Segments** in the worksheet selection group of the Application Data Characteristics Form to bring up the Characteristic Segments Worksheet.
Each line of the Characteristic Segments Tabular List represents one segment.
6. Select an empty row from the Characteristic Segments Tabular List by clicking on the text field of the column **X-Begin** in the concerned row of the Application Data Characteristics Tabular List.
If no empty rows are available, select an available row by clicking on the text field of the column **X-Begin** in the concerned row of the Characteristic Segments Tabular List and press the button **Insert** in the SDM Toolbar to create an empty line in the Characteristic Segments Tabular List below the selected application data characteristic.

7. Enter valid coordinate values for segment begin coordinates (attributes **X-Begin** and **Y-Begin**).
8. Enter valid coordinate values for segment begin coordinates (attributes **X-End** and **Y-End**).

 **Note:**

*The valid values for the attribute **X-End** are restricted by the attribute **Abscisse** that specifies the abscissa usage for all application data characteristics of an application data characteristic group.*

*The valid values for the attribute **Y-End** are restricted by the group slope (attribute **Group Slope**) and the individual characteristic slope (attribute **Slope**).*

*For more details on this topic, refer to the corresponding descriptions of the attributes **X-End** and **Y-End** in the section 'Characteristic Segments Tabular List' on page 204, the corresponding description of the attribute **Group Slope** in the section 'Characteristic Group Attributes Block' on page 195 and the corresponding description of the attribute **Slope** in the section 'Application Data Characteristics Tabular List' on page 198.*

9. If required, specify a gap between two successive segments by entering an appropriate value for the attribute **Additional**.

 **Note:**

*The ability to enter a value for the attribute **Additional** is restricted by the setting of the application data characteristic type (attribute **Type**). For further details, please refer to the corresponding description of this attribute in the section 'Application Data Characteristics Tabular List' on page 198.*

10. Apply your modifications in the Characteristic Segments Worksheet by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

11. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Modifying Segments of Application Data Characteristics

☞ **Note:**

*If the Application Data Characteristics Form is already visible, the steps 1 to 4 may be omitted. In this case, the desired application data characteristic group and the desired application data characteristic may also be selected from the pop-list **Name** (application data characteristic group) and the pop-list **Charac** (application data characteristic) in the Master Block of the Application Data Characteristics Form.*

The steps 1 to 5 may be omitted also if the Characteristic Segments Worksheet is already visible.

1. Open the Application Data Characteristic Groups Form.
2. Select the desired application data characteristic group.
3. Press the button **More ...** to bring up the Application Data Characteristics Form.
4. Select the desired application data characteristic from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
5. Click the radio button **Segments** in the worksheet selection group of the Application Data Characteristics Form to bring up the Characteristic Segments Worksheet.
6. Select the desired segment by clicking on the text field of the column **X-Begin** in the concerned row of the Characteristic Segments Tabular List.
7. Modify the desired attributes of the selected segment in the Characteristic Segments Tabular List.

☞ **Note:**

For more information on the text fields of the Characteristic Segments Tabular List, their relations and dependencies, refer to the description of the Characteristic Segments Tabular List in the section 'Characteristic Segments Tabular List' on page 204.

Application Data Forms

8. Apply your modifications in the Characteristic Segments Worksheet by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

 **Note:**

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.
9. Apply your modifications in the Application Data Characteristic Groups Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristic Groups Form. Pressing the **Cancel** button in the Command Block of the Application Data Characteristic Groups Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.

Removing Segments of Application Data Characteristics

-  **Note:**
- If the Application Data Characteristics Form is already visible, the steps 1 to 4 may be omitted. In this case, the desired application data characteristic group and the desired application data characteristic may also be selected from the pop-list **Name** (application data characteristic group) and the pop-list **Charac** (application data characteristic) in the Master Block of the Application Data Characteristics Form.*
- The steps 1 to 5 may be omitted also if the Characteristic Segments Worksheet is already visible.*
1. Open the Application Data Characteristic Groups Form.
 2. Select the desired application data characteristic group.
 3. Press the button **More ...** to bring up the Application Data Characteristics Form.
 4. Select the desired application data characteristic from the Application Data Characteristics Tabular List by clicking on the text field of the column **Title** in the concerned row of the Application Data Characteristics Tabular List.
 5. Click the radio button **Segments** in the worksheet selection group of the Application Data Characteristics Form to bring up the Characteristic Segments Worksheet.
 6. Select the desired segment by clicking on the text field of the column **X-Begin** in the concerned row of the Characteristic Segments Tabular List.
 7. Press the button **Delete** in the SDM Toolbar to remove the selected segment.
 8. Apply your modifications in the Application Data Characteristics Form by pressing the **Apply** button or the **OK** button in the Command Block of the Application Data Characteristics Form. Pressing the **Cancel** button in the Command Block of the Application

Application Data Forms

Data Characteristics Form dismisses the attribute modifications. For more details on the buttons of the Command Block, refer to the section 'Command Block' on page 26.



Note:

Any of these actions will close the Application Data Characteristics Form. The Application Data Characteristic Groups Form will appear again.

Characteristic Segments Worksheet

Clicking the radio button **Segments** in the worksheet selection group selects the Characteristic Segments Worksheet. The characteristic segments tabular list appears and the content of the Master Block changes.

FIGURE 77

Content of the Master Block if the Characteristic Segments Worksheet is selected

Characteristics Group	
Name:	IHR Paris A
Title:	IHR Paris A
Characteristic:	Without Valve Points

FIGURE 78

Characteristic Segments Worksheet

Application Data Characteristics Worksheet

Master Block



Note:

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

Application Data Forms

■ Name

Contains the names of the available application data characteristic groups. Another application data characteristic group may be selected from this input field at any time.

 **Note:**

If an application data characteristic group is selected from this pop-list, the Application Data Characteristics Worksheet is automatically selected in the Detail Block and the other fields of the Master Block are updated, too.

■ Title

Shows the title of the selected application data characteristic group. Read-only display field.

■ Charac

Contains the name of the available application data characteristics of the selected application data characteristic group. Other application data characteristics may be selected from this input field at any time.

 **Note:**

If another application data characteristic is selected, the Characteristic Segments Tabular List is automatically updated with the values of the newly selected application data characteristic.

Characteristic Segments Tabular List

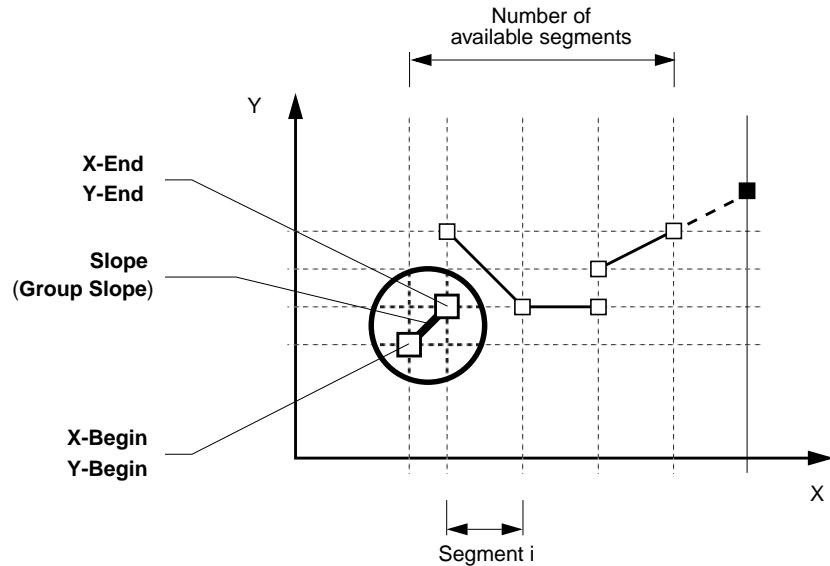
The Characteristic Segments Worksheet consists of a tabular list that contains the available segments of the selected application data characteristic. Each line of the tabular list represents one segment record. The columns **Segment**, **X-Begin**, **Y-Begin**, **X-End**, **Y-End** and **Additional** contain the associated attribute settings of the respective application data characteristic.

For a better understanding of the attributes described in this section, figure 79 shows how the described attributes affect definition of application data characteristics:

Application Data Forms

FIGURE 79

Influence of the attributes on the definition of application data characteristics



Individual segments of an application data characteristic are identified by a consecutive segment number and are entered in terms of the X/Y coordinates of the begin and end of the segment.

■ **Segment**

Contains the number of the respective characteristic segment. Segment numbers are generated automatically and cannot be modified. Read-only display field.

■ **X-Begin**

■ **Y-Begin**

The coordinate specified by the values of the attributes **X-Begin** and **Y-Begin** represents the starting point of the respective segment.

■ **X-End**

■ **Y-End**

The coordinate specified by the values of the attributes **X-End** and **Y-End** represents the end point of the respective segment.

Note:

*The values of the attributes **Slope** (see description on page 198) or **Group Slope** (see description on page 195) affect the definition of the attribute **Y-End**. Only appropriate values for the attribute **Y-End** can be entered. Invalid **Y-End** values will be highlighted in striking color and must be corrected before leaving the form.*

■ **Additional**

Application Data Forms

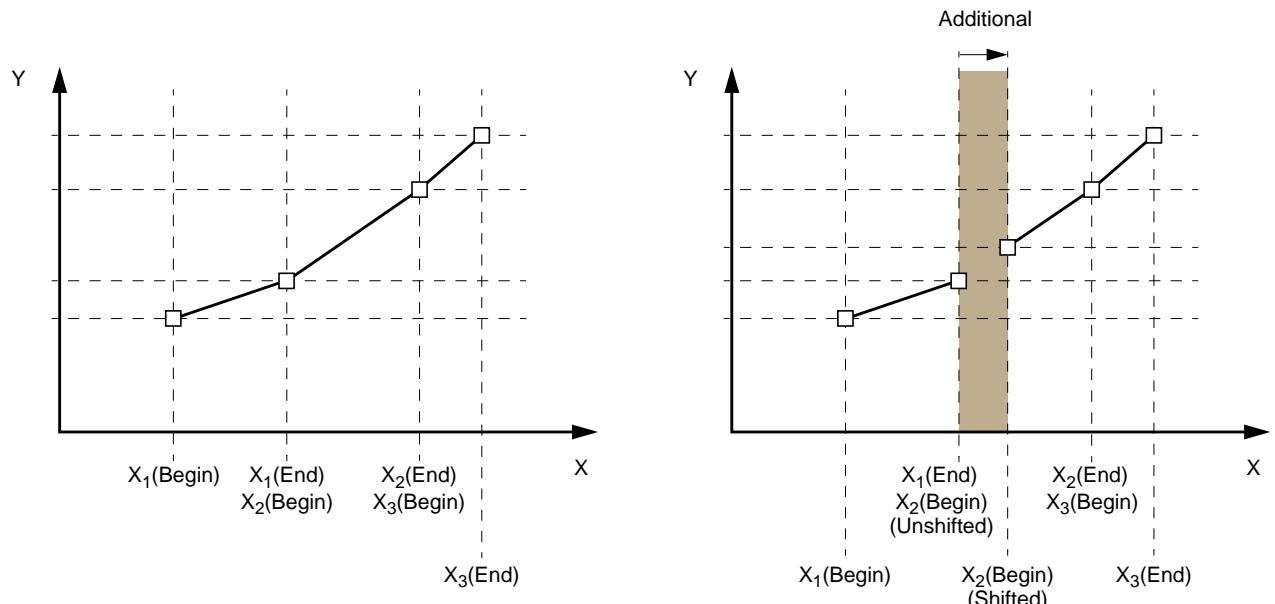
A value that shifts the X-coordinate of the respective segment starting point (attribute **X-Begin**) along the X-axis into the positive direction. Thus, the attribute **Additional** can be used to specify a gap within the respective characteristic segment.



Note:
The attribute **Additional** can only be modified if the type of the respective application data characteristic (attribute **Type**) has been set to **2 (Discrete with Additional Information)**. If the attribute **Type** has been set to another value, the text field of this attribute will be read-only. For more details on the type of the respective application data characteristic refer to the description of the attribute **Type** on page 198 of this document.

FIGURE 80

Examples for application data characteristics with and without gap



Type = 1 (Discrete)

Segments are linked together without a gap.

Type = 2 (Discrete with Additional Information)

Characteristic is interrupted by a gap.
Gap reaches from $X_2(\text{Begin})$ (Unshifted) to $X_2(\text{Begin})$ (Shifted)

Note: $X_2(\text{Begin})$ (Unshifted) is the value that has been specified in the Characteristic Segments Tabular List for the segment starting point. $X_2(\text{Begin})$ (Shifted) is calculated automatically as: $X_2(\text{Begin})$ (Unshifted) + Additional

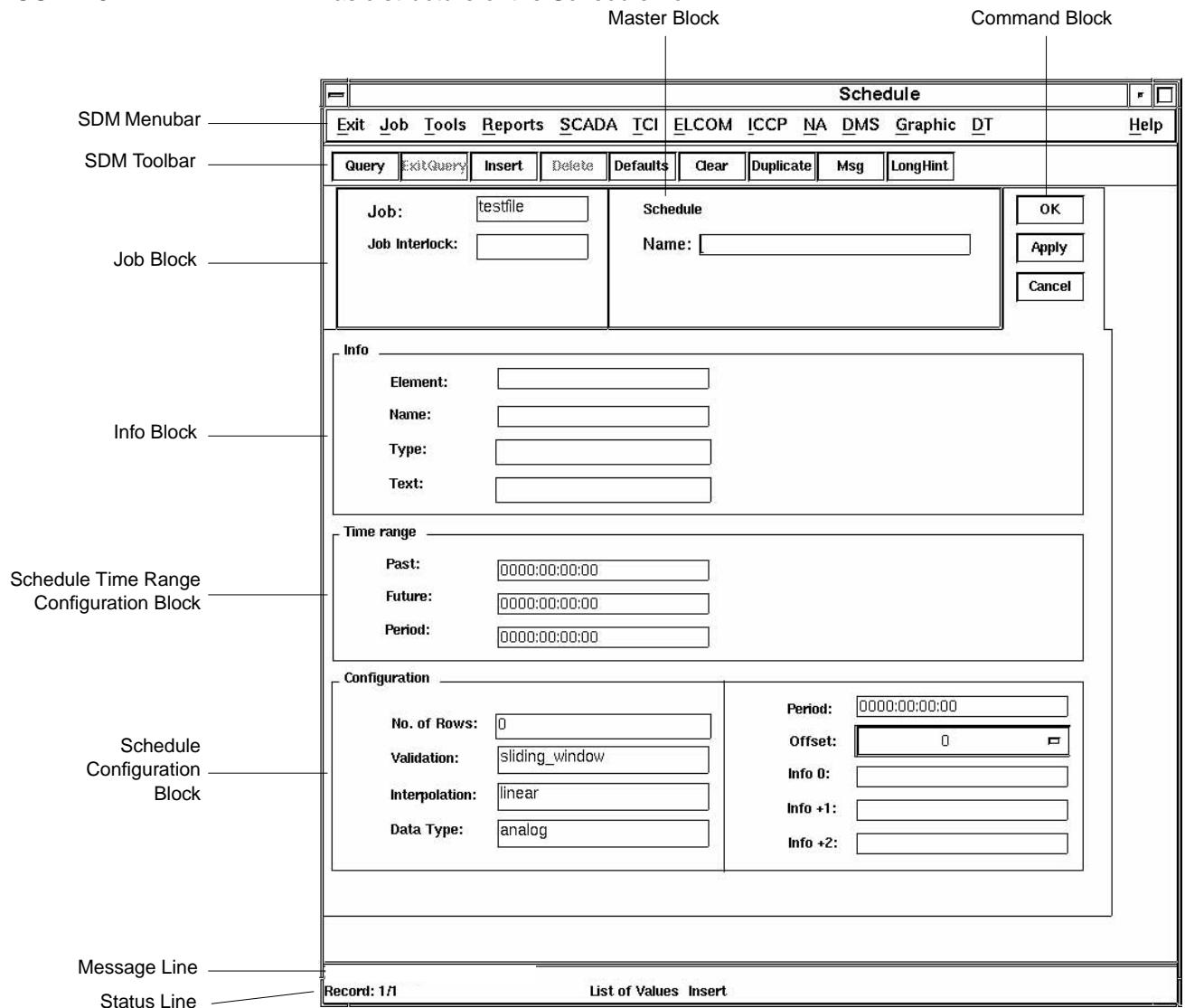
Application Data Forms

Schedule Form

The Schedule Form deals with application data schedules. The facilities provided by the Schedule Form can be used to create schedules, to view or modify the basic schedule configuration and to view, or modify the schedule time range configuration of a schedule.

FIGURE 81

Basic structure of the Schedule Form



The Schedule Form is composed of the following form components:

- SDM Menubar
- SDM Toolbar
- Message Line
- Status Line
- Job Block
- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the respective subsection of chapter 3, section 'SDM Basics' on page 3 in this document which contains a comprehensive description of the SDM basics.

- Master Block
- Info Block
- Schedule Time Range Configuration Block
- Schedule Configuration Block

Master Block

 **Note:**

Before you can use the Master Block, you must switch to Query Mode. For more details on the Query Mode, refer to the section 'Query Mode' on page 7.

- **Name**

Shows the name of the selected schedule. Another schedule may be selected from this text field by entering its name or by selecting its name from a list of values. The list of values is opened after a double-click on the concerned text field.

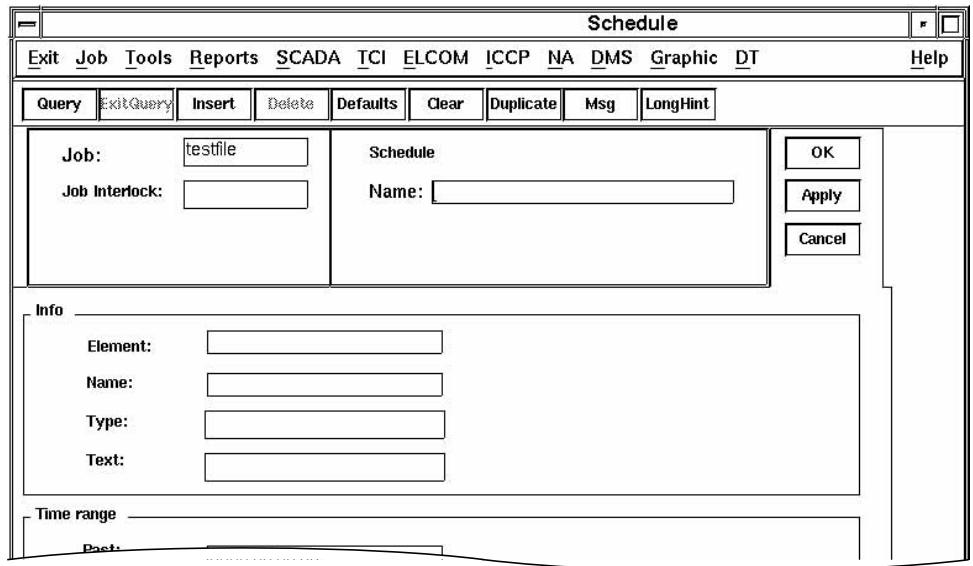
Info Block

The Info Block of the schedule form provides general information on the selected schedule. Its text fields are read-only display fields.

Application Data Forms

FIGURE 82

Structure of the Info Block



■ **Element**

Shows the name of the application data element to which the schedule has been assigned. Read-only display field.

■ **Name**

Shows the name of the application data info to which the schedule has been assigned. Read-only display field.

■ **Type**

Application data type of the application data info identified by the attribute **Name**. Read-only display field.

■ **Text**

Shows the info text of the application data info specified by the attribute **Name**.

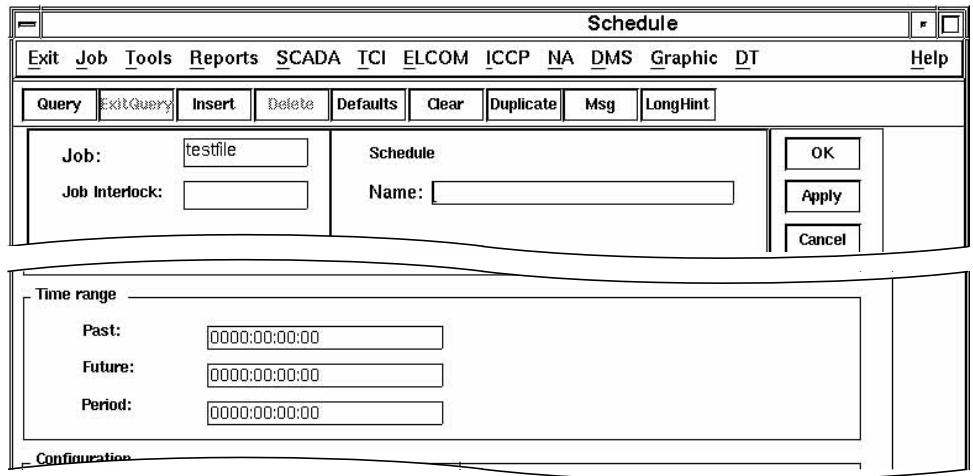
Schedule Time Range Configuration Block

The Schedule Time Range Configuration Block of the schedule form provides information on the schedule time range.

Application Data Forms

FIGURE 83

Structure of the Schedule Time Range Configuration Block



■ Past

Specifies the portion of the schedule time range in the past which is kept on records before it is considered no longer current (see description of the attribute **Validation** on page 212 and figure 85 on page 212, too).

The time range value entered is relative to the current time and must be composed as follows:

DDD : hh : mm : ss

DDD . . . Days	[0-365]
hh . . . Hours	[0-24]
mm . . . Minutes	[0-60]
ss . . . Seconds	[0-60]

■ Future

Specifies the future portion of the schedule time range.

The time range value entered is relative to the current time and must be composed as follows:

DDD : hh : mm : ss

DDD . . . Days	[0-365]
hh . . . Hours	[0-24]
mm . . . Minutes	[0-60]
ss . . . Seconds	[0-60]

Application Data Forms

■ Period

The time value entered in this text field represents the time difference between two points in a schedule and determines the schedule type.

Period	Schedule Type
000:00:00:00	non-periodic schedule
other values greater than zero	periodic schedule

The entered time value must be composed as follows:

DDD : hh : mm : ss

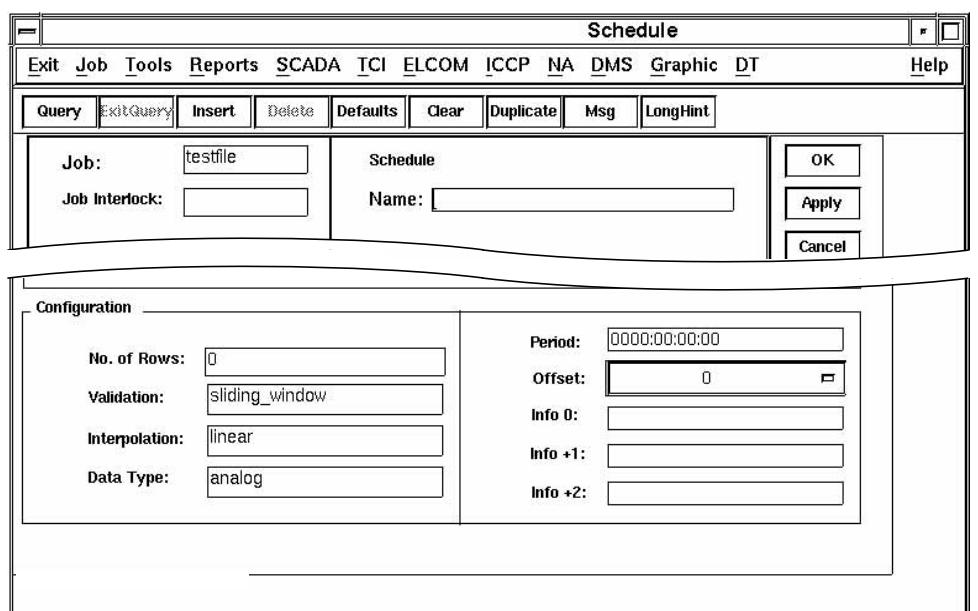
DDD Days [0-365]
hh Hours [0-24]
mm Minutes [0-60]
ss Seconds [0-60]

Schedule Configuration Block

The Schedule Configuration Block of the schedule form provides information on the schedule time range. Its text fields are read-only display fields.

FIGURE 84

Structure of the Schedule Configuration Block



Application Data Forms

■ No. of Rows

Specifies the number of the schedule entries for the chosen schedule time range. The attribute value is calculated automatically:

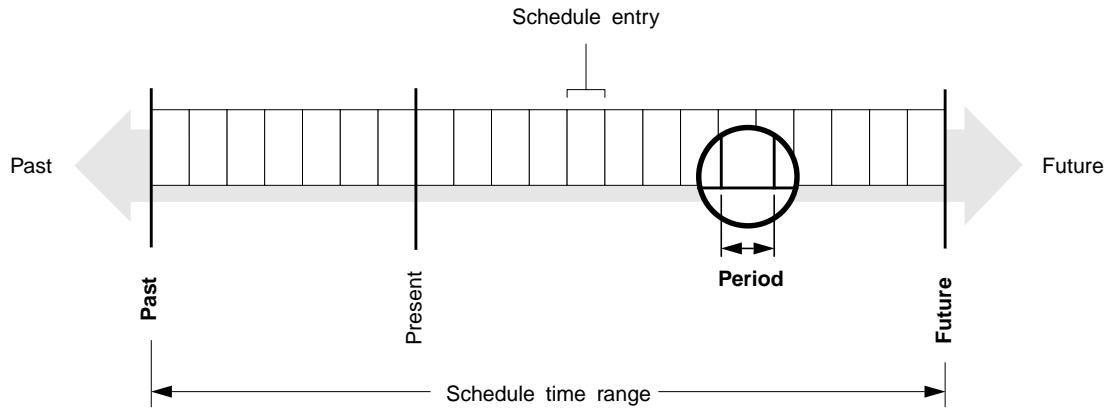
$$\text{No. of Rows} = (\text{Past} + \text{Future}) / \text{Period}$$

The text fields of the attribute **No. of Rows** are protected and read-only.

For a better understanding, the following illustration shows how the above described attributes affect the definition of a schedule:

FIGURE 85

Influence of the schedule configuration attributes on the definition of schedules



■ Validation

The attribute **Validation** specifies what happens to a schedule value when it moves in the past outside the defined schedule time range. The available options are:

- **Sliding Window**

The value moving out of the schedule time range becomes invalid and will be dismissed.

- **Round Robin**

The respective value will be recycled and becomes valid again at the same time in the next schedule cycle.

■ Interpolation

Specifies how the schedule value progresses from point to point in the schedule. The available options are:

- **Linear**

The schedule value changes in an interpolated fashion between two points in the schedule.

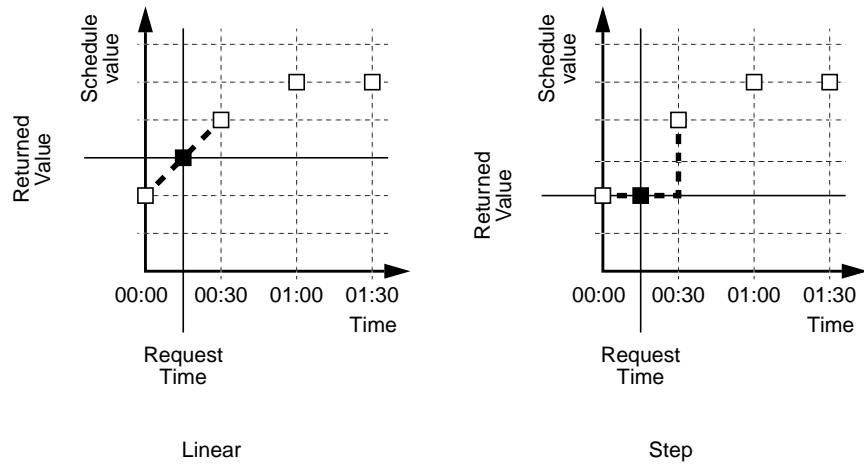
Application Data Forms

- Step

The schedule value changes step-wise, i.e., the value will be updated only at the beginning of a new time period and remains unchanged for the complete period.

FIGURE 86

Supported interpolation methods



■ Data Type

The attribute **Data Type** specifies in which form the schedule value will be stored in the schedule file. The available pop-list options are:

Without Flags	With Flags	With Flags and Time Stamp (Date and Time)
real value only	analog value	analog value
longreal value only	accumulator value	accumulator value
integer value only	status information	status information
	anlong value	real value
		longreal value
		integer value
		anlong value

Values with time stamps are used for non-periodic schedules where the time of each scheduled point is stored along with the point.

■ Period

Specifies the update period for the update of the schedule value.

The entered time value must be composed as follows:

DDD : hh : mm : ss

DDD	... Days	[0-365]
hh	... Hours	[0-24]
mm	... Minutes	[0-60]
ss	... Seconds	[0-60]



Note:

*The update period is represented by an absolute time value (for example “every 10:00 min”) rather than an offset that must be added to the schedule period (see description of the attribute **Period** in the section ‘Schedule Time Range Configuration Block’ on page 211).*



Offset

A pop-list that specifies the starting schedule entry of a schedule portion that covers three consecutive schedule entries. The schedule values of this schedule portion are used to update the infos identified by the attributes

Info 0, **Info +1** and **Info +2** (see description below). When updating, the update procedure uses the interpolation method specified by the setting of the attribute **Interpolation** (see description on page 212).

The starting schedule entry represented by the attribute **Offset** is relative to the current schedule entry, i.e., the current schedule time point (see figure 87 on page 215). The available pop-list options are:

- -3, -2, -1, 0, 1, 2 and 3



Info 0

An info name that identifies an application data info whose value will be updated with the value of the schedule entry identified by the attribute **Offset**.

The value of the attribute **Info 0** can be set or modified by entering the name of an application data info or by choosing an info name of a list of values. The list of values pops up after a double-click on the concerned text field. The list of values contains only those applications infos that have been assigned to the selected application data element.



Note:

*An attempt to use the name of an application data info that has not been assigned to the selected application data element will be rejected. The same entry procedure and restrictions apply to the attributes **Info +1** and **Info +2**.*

Application Data Forms

- **Info +1**

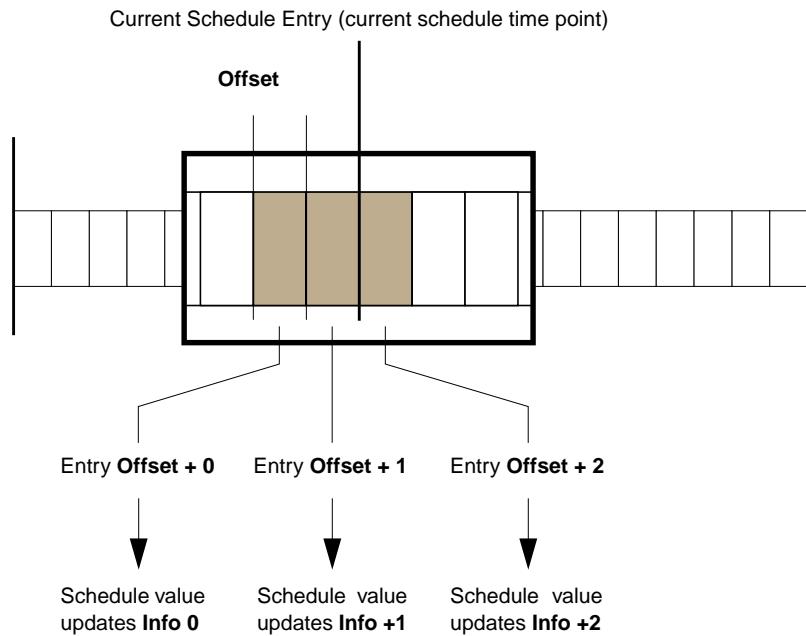
An info name that identifies an application data info whose value will be updated with the value of the schedule entry at the schedule time point **Offset** + 1.

- **Info +2**

An info name that identifies an application data info whose value will be updated with the value of the schedule entry at the schedule time point **Offset** + 2.

FIGURE 87

Example for the meaning of the attributes **Offset** and **Info 0 ... Info +2**



Decision Table Forms

Decision tables are divided into two types:

- Combination decision tables and
- Interlocking decision tables.

Forms for combination decision tables allow the definition of rules for logical operations and the coordination of alternatives to those rules. These decision tables are used to decide which variable e. g. is displayed in a picture. When actual network states are logically connected, then (depending on the special rule which is fulfilled in this case and the respective alternatives) certain figures and/or attributes are selected from the alternative groups of figures and attributes, to display this network state. The following forms are provided for combination decision tables:

- Circuit Specific Combinations Form
- Element Specific Combinations Form
- Individual (1:1) Combinations Form

Furthermore the following forms for defining interlocking decision tables are provided:

- Superior Interlocking Conditions Form
- Global Area Interlocking Conditions Form
- Local Area Interlocking Conditions Form
- Function Specific Interlocking Conditions Form

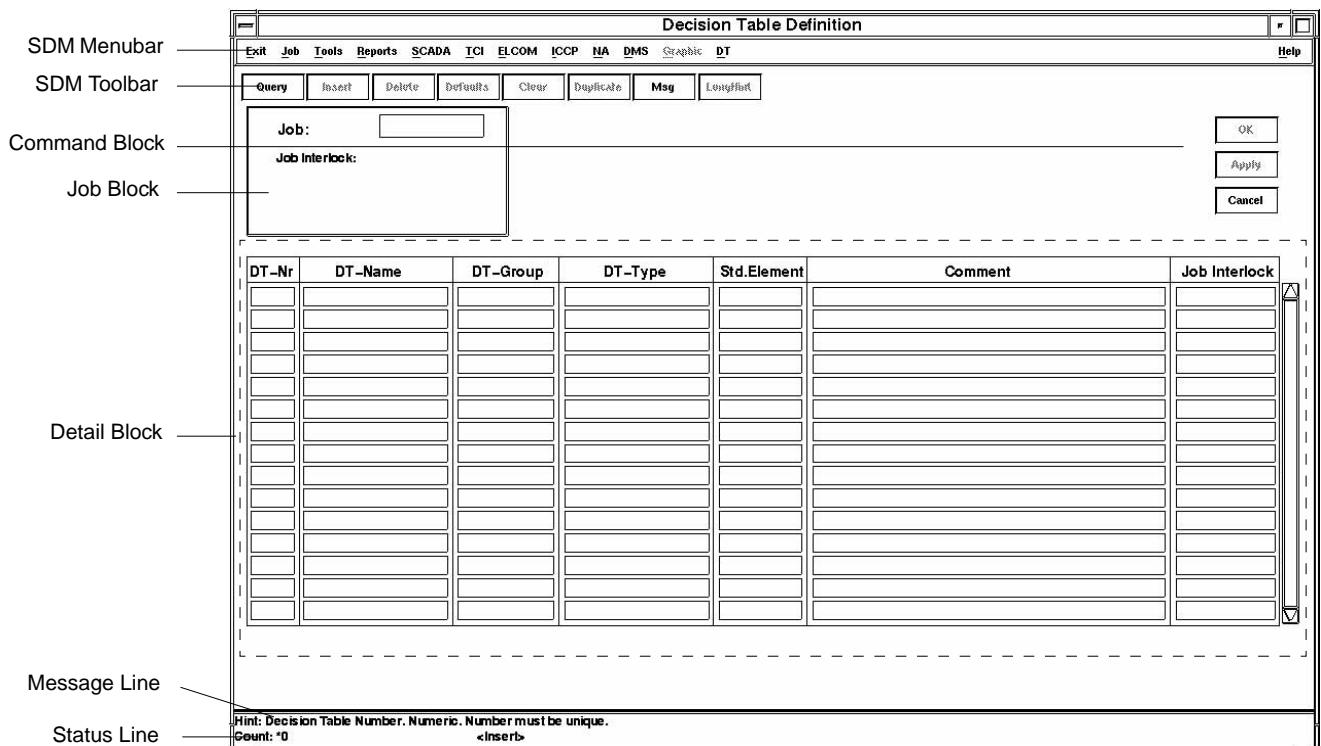
Before defining conditions for a decision table, the decision table first has to be defined with its general attributes in the Decision Table Definition Form.

Decision Table Forms

Decision Table Definition Form

When creating a new decision table, at first its general attributes have to be defined in the Decision Table Definition Form. Only after creating the decision table in this form, the respective decision table type-specific form can be used for defining conditions.

FIGURE 88 Basic structure of the Decision Table Definition Form



The Decision Table Definition Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Message Line
- Status Line
- Job Block
- Command Block

Decision Table Forms

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Detail Block

Detail Block of the Decision Table Definition Form

The Detail Block of the Decision Table Definition Form contains a tabular list for defining general attributes of a decision table. This tabular list consists of the following columns:

- **DT-Nr**
Number of the decision table, which must be unique for all decision table types.
- **DT-Name**
This column indicates the name of the decision table.
- **DT-Group**
In this column the group the decision table belongs to can be defined. Possible input is either "interlocking" or "combinations".
- **DT-Type**
This column defines the type of the decision table. Depending on the decision table group the following input is possible:
 - for group "interlocking":
 - funcspec-interl.
 - superior-interl.
 - local-interl.
 - global-interl.
 - for group "combinations":
 - circuit-comb
 - elemspec-comb
 - individual-comb
- **Std.Element**
Name of the standard element type, whose information shall be logically connected. This field is only valid for decision tables of type "element-specific combinations".
- **Comment**
In this column a free comment can be entered for each decision table.
- **Job Interlock**
Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

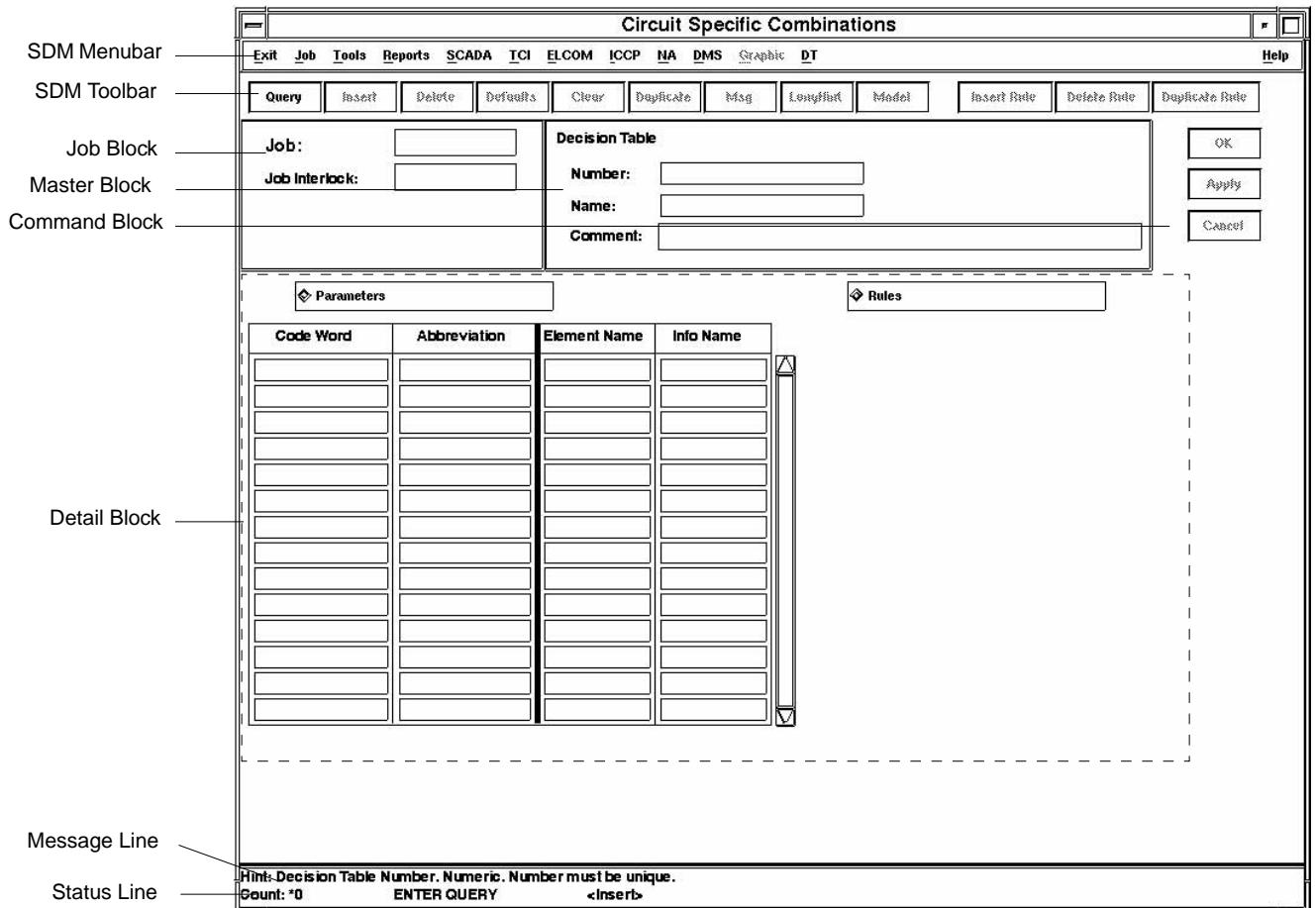
Decision Table Forms

Circuit Specific Combinations Form

This form is used for handling decision tables for standardized logical operations. It is possible to define rules to combine any informations within a block (block B1, block B2, block B3). If a network state is to be displayed on-line, the information is derived from the technological address of the respective block identification. The block identification for on-line access, when displaying a network state, is derived from the technological address of the information to be displayed. This decision table is preferably to used for all different logical operations within one network element group.

FIGURE 89

Basic structure of the Circuit Specific Combinations Form - Parameters Worksheet



The Circuit Specific Combinations Form is composed of the following components:

- SDM Menubar

Decision Table Forms

- SDM Toolbar
 - Message Line
 - Status Line
 - Job Block
 - Command Block
- These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.
- Master Block
 - Detail Block

Master Block of the Circuit Specific Combinations Form

The Master Block of the Circuit Specific Combinations Form contains fields displaying general attributes of the currently selected decision table:

- **Number**
This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.
For details about performing a query please refer to section 'Queries' on page 6.
- **Name**
This field shows the name of the decision table.
- **Comment**
This field shows the comment that has been entered for the decision table.

Detail Block of the Circuit Specific Combinations Form

The Detail Block of the Circuit Specific Combinations Form consists of a worksheet selection group and two worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet and the Rules Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 89. It consists of a tabular list with the following columns:

Decision Table Forms

- **Code Word**

The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. name of the element and/or name of the information, are necessary.

- **Abbreviation**

Optional text used for identification of element and information in the Rules Worksheet.

- **Element Name**

- **Info Name**

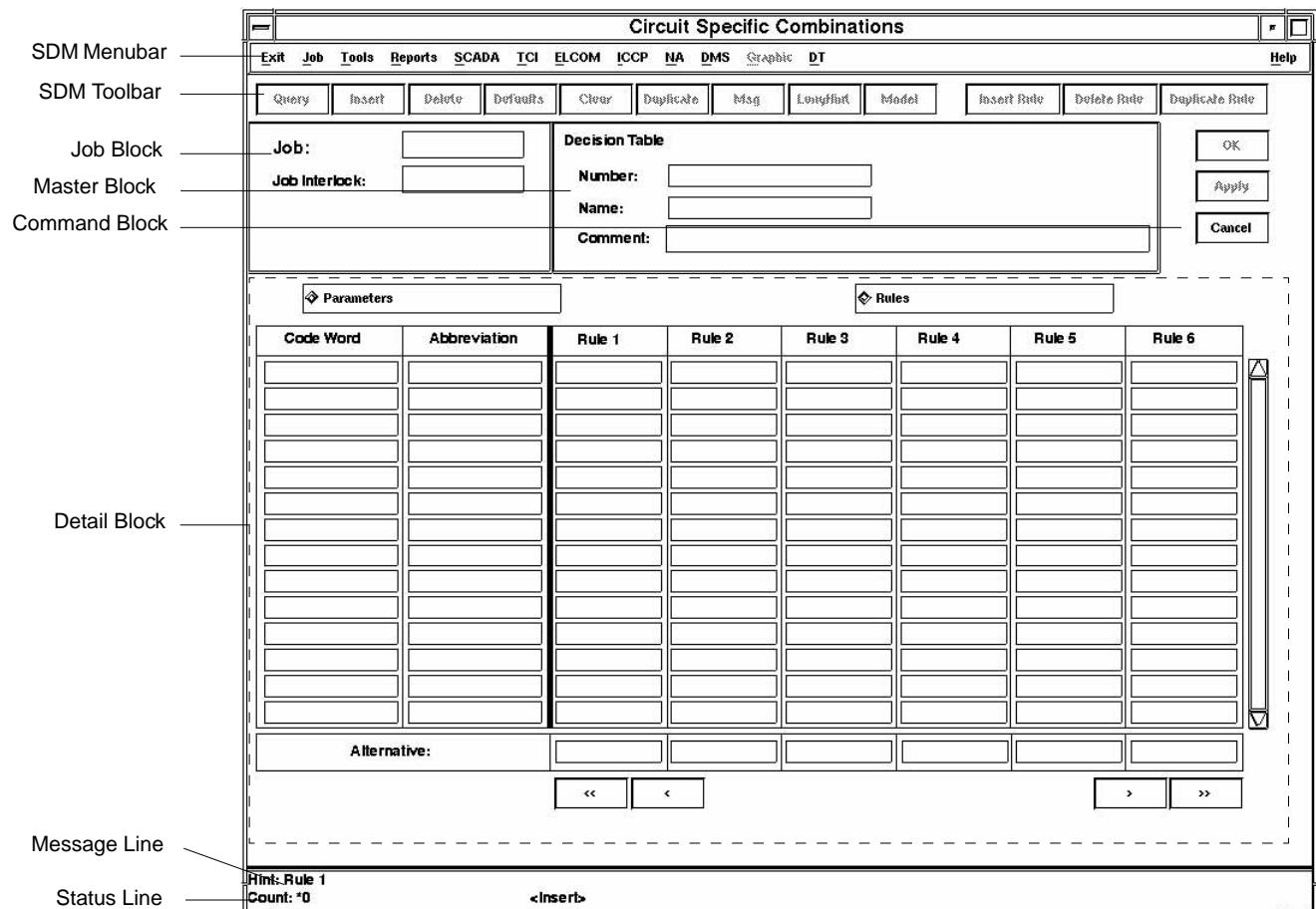
Element name and Info name of the information used in the decision table. In standardized logical connections the names of B1, B2 and B3 of that information, which is displayed in the picture, are added dynamically to the technological address.

Decision Table Forms

Rules Worksheet

FIGURE 90

Basic structure of the Circuit Specific Combinations Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested and a line for entering an alternative for each rule. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **Code Word**

- **Abbreviation**

These two columns show the codewords and abbreviations defined in the Parameters Worksheet. These fields cannot be modified in this worksheet.

- **Rule <n>**

Decision Table Forms

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

- ☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

Beneath the tabular list the following line is displayed:

- **Alternative**

For each rule an alternative must be defined. Different rules can have the same alternative.

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

- **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

- **Delete Rule**

Selecting this button deletes the currently selected rule (column).

- **Duplicate Rule**

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

Decision Table Forms

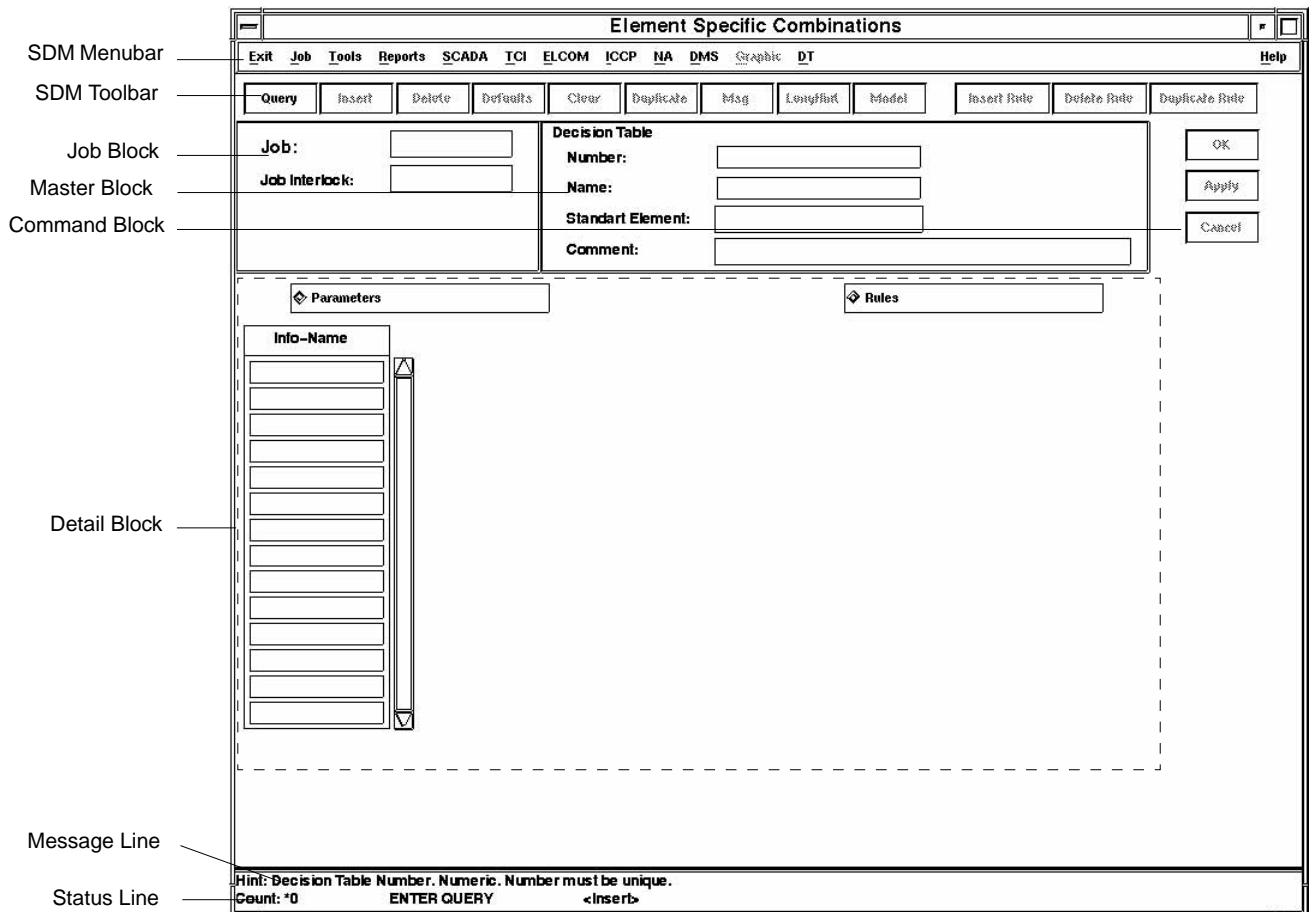
Element Specific Combinations Form

This form is used for handling decision tables for elementary logical operations. It is possible to define rules to combine any information of a standard element type with any other of the same type.

Working with element specific decision tables in the on-line system is less time consuming than using individual or circuit specific decision tables.

FIGURE 91

Basic structure of the Element Specific Combinations Form - Parameters Worksheet



The Element Specific Combinations Form is composed of the following components:

- SDM Menubar

Decision Table Forms

- SDM Toolbar
 - Message Line
 - Status Line
 - Job Block
 - Command Block
- These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.
- Master Block
 - Detail Block

Master Block of the Element Specific Combinations Form

The Master Block of the Element Specific Combinations Form contains fields displaying general attributes of the currently selected decision table:

- **Number**
This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.
For details about performing a query please refer to section 'Queries' on page 6.
- **Name**
This field shows the name of the decision table.
- **Standard Element**
This field shows the name of the standard element type, whose information shall be logically connected.
- **Comment**
This field shows the comment that has been entered for the decision table.

Detail Block of the Element Specific Combinations Form

The Detail Block of the Element Specific Combinations Form consists of a worksheet selection group and two worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet and the Rules Worksheet respectively.

Decision Table Forms

Parameters Worksheet

The Parameters Worksheet is shown in Figure 91. It contains a tabular list with the following column:

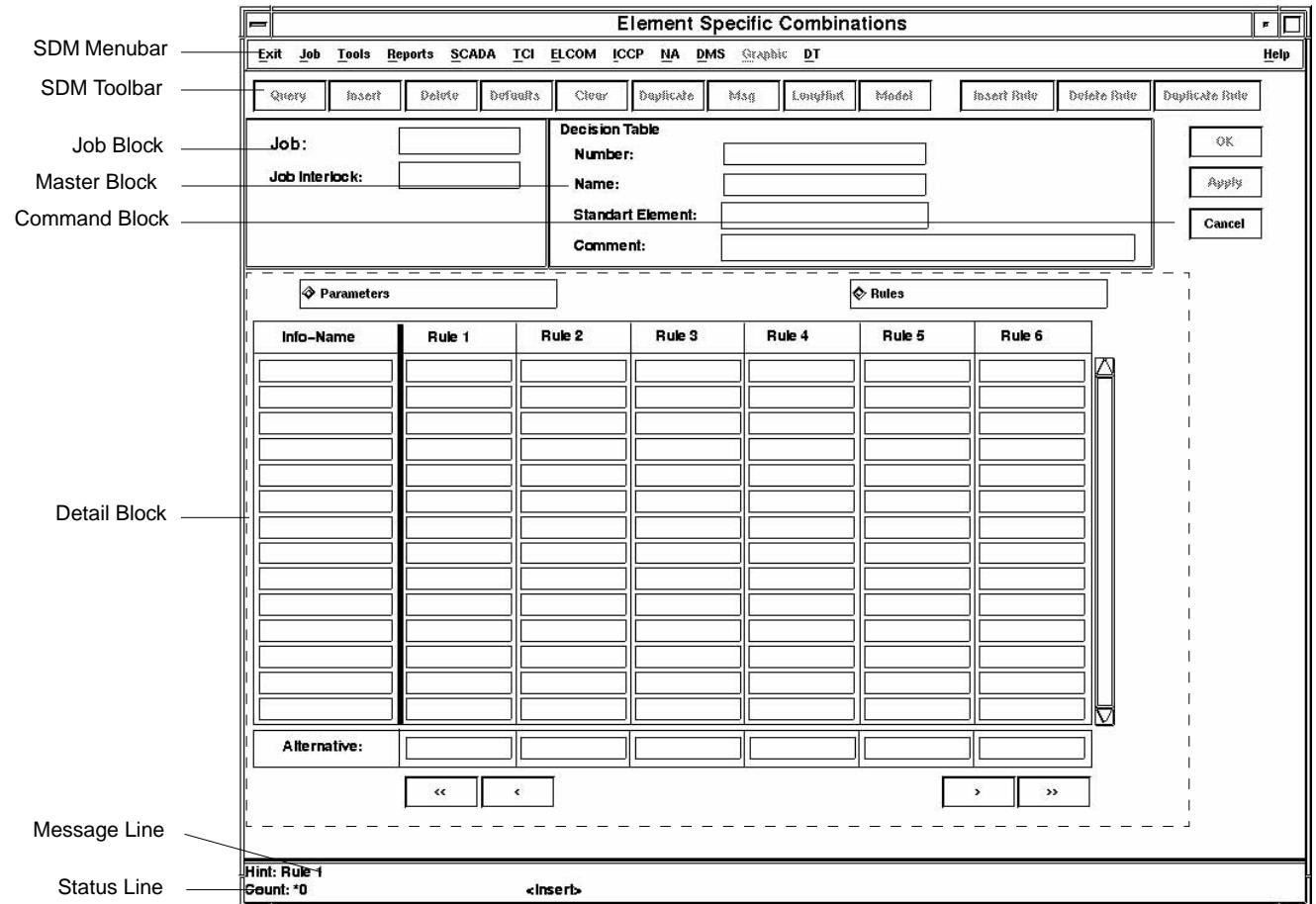
■ Info-Name

In this column the names of all informations are listed, which have to be considered in the decision table.

Rules Worksheet

FIGURE 92

Basic structure of the Element Specific Combinations Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested and a line for entering an alternative for each rule. It is not possible to add or delete

Decision Table Forms

condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

■ **Info-Name**

This column shows the information names defined in the Parameters Worksheet. These fields cannot be edited in this worksheet.

■ **Rule <n>**

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

 *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

Beneath the tabular list the following line is displayed:

■ **Alternative**

For each rule an alternative must be defined. Different rules can have the same alternative.

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ **Delete Rule**

Selecting this button deletes the currently selected rule (column).

■ **Duplicate Rule**

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

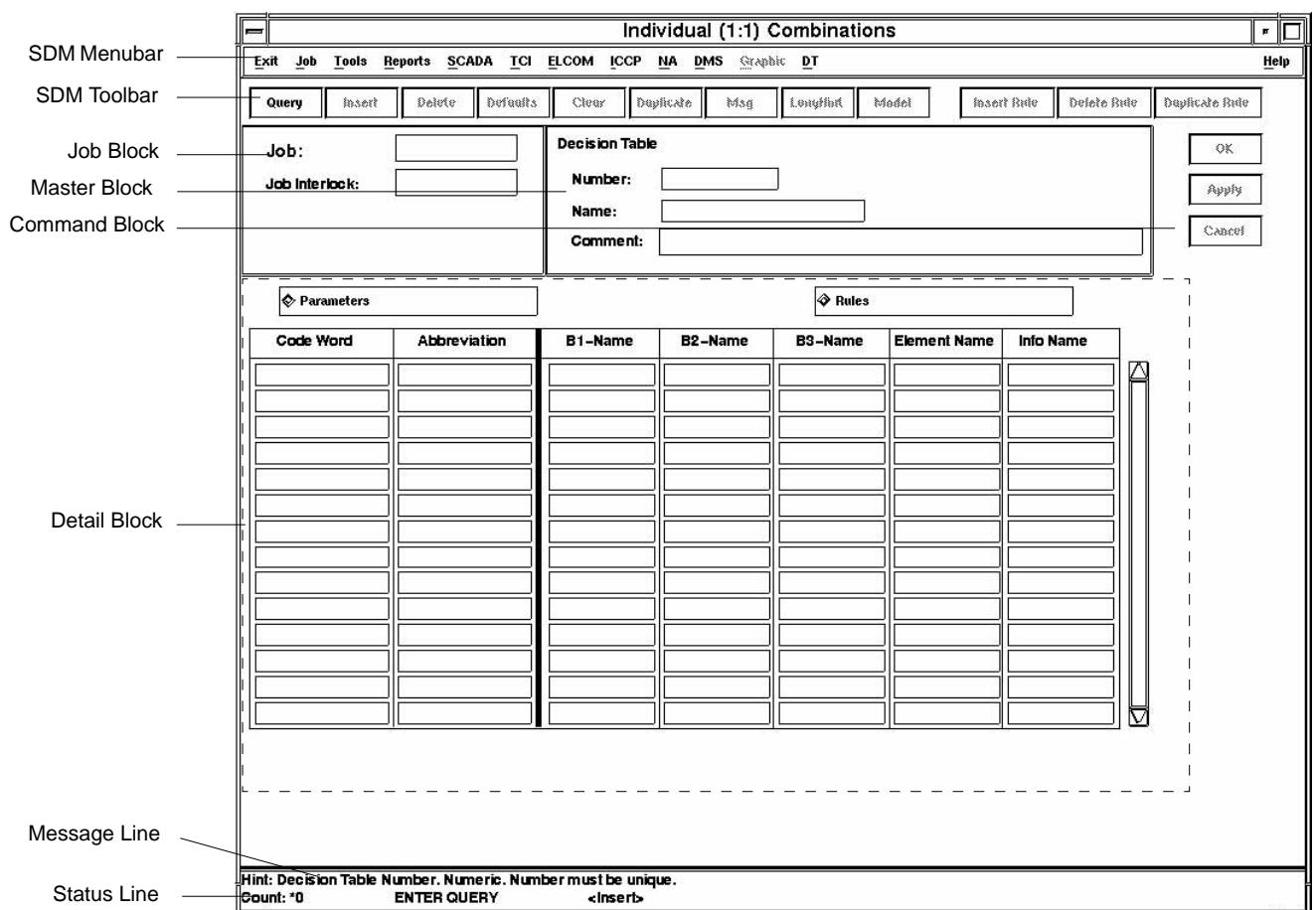
Decision Table Forms

Individual (1:1) Combinations Form

This form is used for editing decision tables for 1:1 logical operations. It is possible to define rules to combine any informations within the network. This decision table should only be used, if the desired logical connections cannot be defined with the elementary or standardized decision tables.

FIGURE 93

Basic structure of the Individual (1:1) Combinations Form - Parameters Worksheet



The Individual (1:1) Combinations Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Message Line

Decision Table Forms

- Status Line

- Job Block

- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Master Block

- Detail Block

Master Block of the Individual (1:1) Combinations Form

The Master Block of the Individual (1:1) Combinations Form contains fields displaying general attributes of the currently selected decision table:

- **Number**

This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.

For details about performing a query please refer to section 'Queries' on page 6.

- **Name**

This field shows the name of the decision table.

- **Comment**

This field shows the comment that has been entered for the decision table.

Detail Block of the Individual (1:1) Combinations Form

The Detail Block of the Individual (1:1) Combinations Form consists of a worksheet selection group and two worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet and the Rules Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 93. It consists of a tabular list with the following columns:

- **Code Word**

The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. B1-, B2-, B3-name, name of the element and/or name of the information, are necessary.

- **Abbreviation**

Optional text used for identification of element and information in the Rules Worksheet.

- **B1-Name**

B1 name of the information used in the decision table.

- **B2-Name**

B2 name of the information used in the decision table.

- **B3-Name**

B3 name of the information used in the decision table.

- **Element Name**

Element name of the information used in the decision table.

- **Info Name**

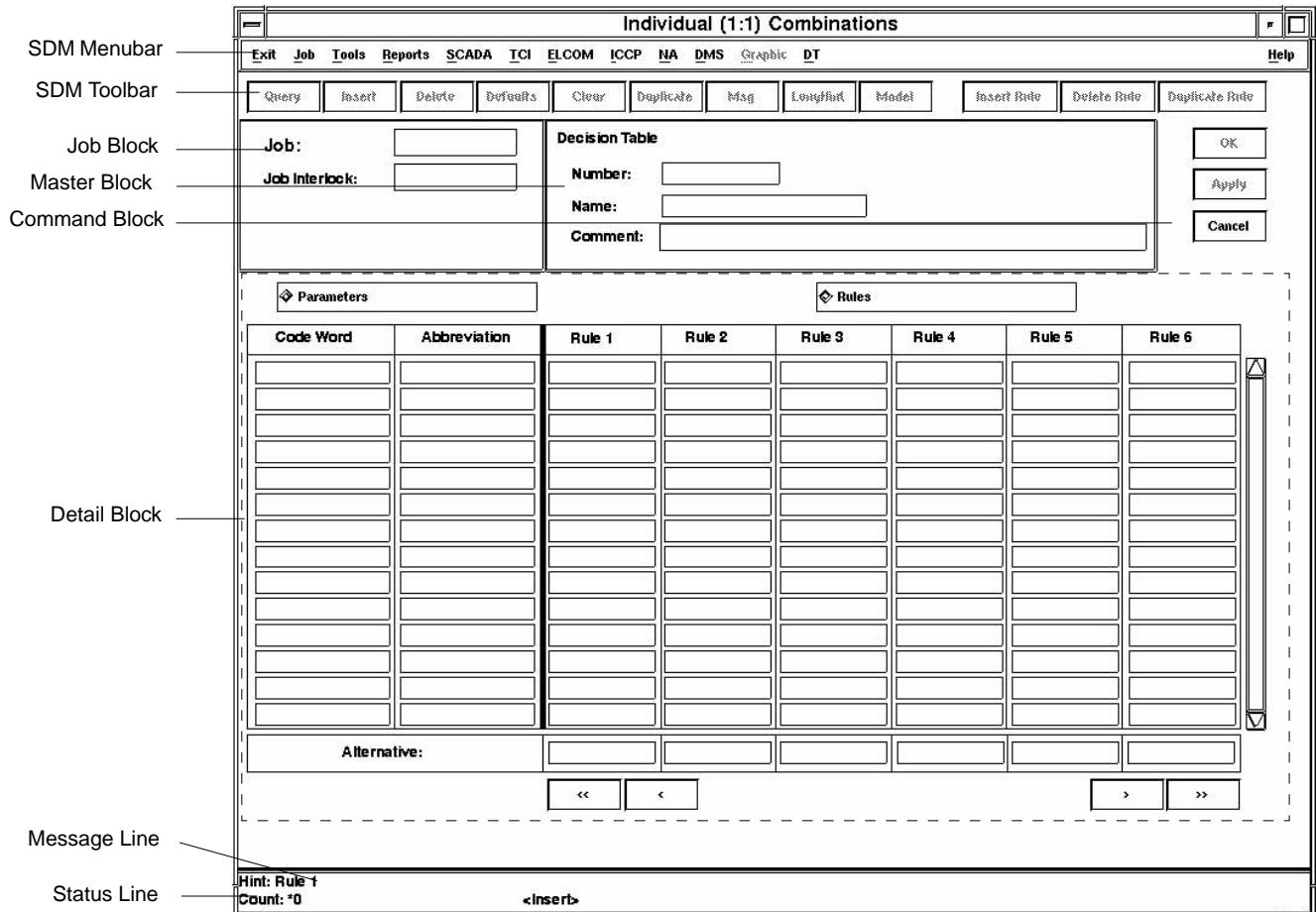
Info name of the information used in the decision table.

Decision Table Forms

Rules Worksheet

FIGURE 94

Basic structure of the Individual (1:1) Combinations Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested and a line for entering an alternative for each rule. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **Code Word**

- **Abbreviation**

These two columns show the codewords and abbreviations defined in the Parameters Worksheet. These fields cannot be modified in this worksheet.

Decision Table Forms

■ Rule <n>

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

- ☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

Beneath the tabular list the following line is displayed:

■ Alternative

For each rule an alternative must be defined. Different rules can have the same alternative.

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ Insert Rule

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ Delete Rule

Selecting this button deletes the currently selected rule (column).

■ Duplicate Rule

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

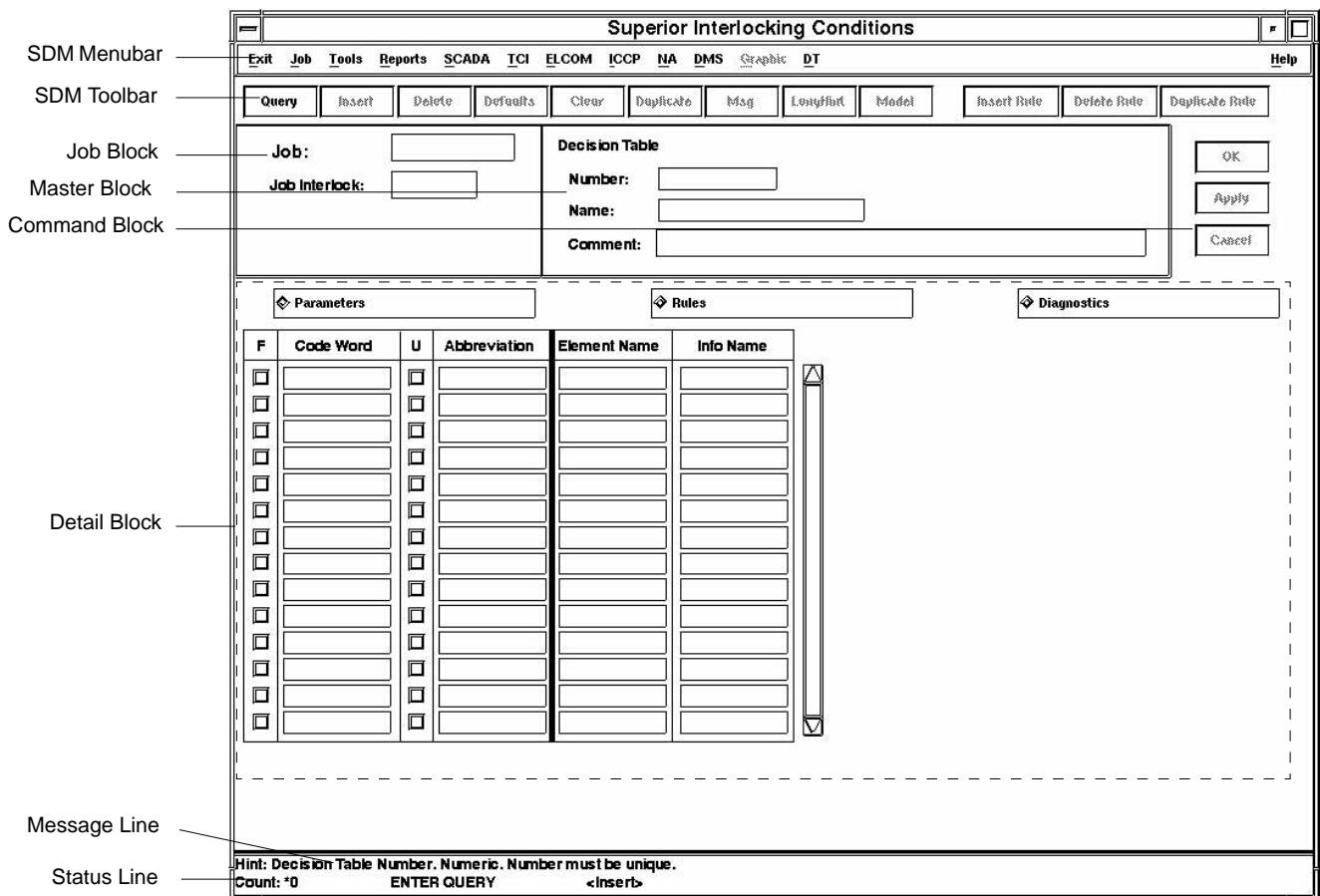
Decision Table Forms

Superior Interlocking Conditions Form

The decision table for superior interlocks contains only interlocking conditions depending on the type of step (e. g. control step, follow-up step, etc.). At test time the entire step information is present. The interlocking conditions are valid for each technological area and are tested with each remote control step and each tagging step. Technologically formulated conditions therefore are rarely useful in this table (but possible). This decision table exists only once in the system and is a project constant.

FIGURE 95

Basic structure of the Superior Interlocking Conditions Form - Parameters Worksheet



The Superior Interlocking Conditions Form is composed of the following components:

- SDM Menubar
- SDM Toolbar

Decision Table Forms

- Message Line
 - Status Line
 - Job Block
 - Command Block
- These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.
- Master Block
 - Detail Block

Master Block of the Superior Interlocking Conditions Form

The Master Block of the Superior Interlocking Conditions Form contains fields displaying general attributes of the currently selected decision table:

- **Number**

This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.

For details about performing a query please refer to section 'Queries' on page 6.

- **Name**

This field shows the name of the decision table.

- **Comment**

This field shows the comment that has been entered for the decision table.

Detail Block of the Superior Interlocking Conditions Form

The Detail Block of the Superior Interlocking Conditions Form consists of a worksheet selection group and three worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet, the Rules Worksheet and the Diagnostics Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 95. It consists of a tabular list with the following columns:

- **F**

Decision Table Forms

Selecting this checkbox marks the corresponding codeword and conditions as filter to determine the rules that must be checked. All lines marked as filter must be at the beginning of the table. They must not be mixed with the other lines. Therefore this checkbox can only be selected in the last line marked as filter and in the first line not marked as filter.

■ **Code Word**

The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. element name and info name are necessary.

■ **U**

If this checkbox is selected, it indicates that the condition can be unlocked by a command from the operator during supervisory control. This checkbox can be selected for all lines that are not marked as filter (see column '**F**').

■ **Abbreviation**

Optional text for the technological address. This abbreviation serves as identification of the test steps in the other two worksheets.

■ **Element Name**

■ **Info Name**

Element name and info name of the information used in the decision table.

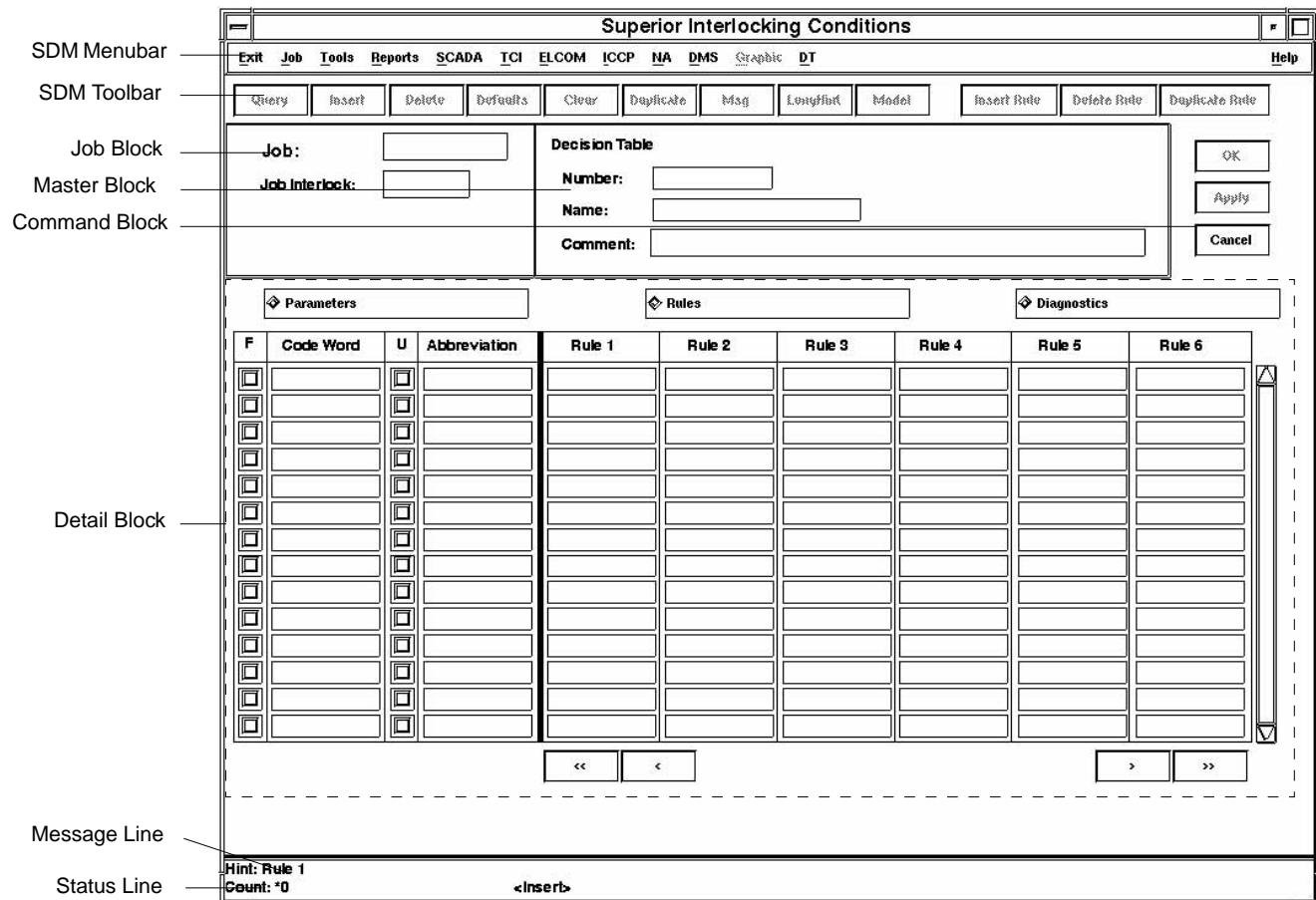
☞ *When duplicating a condition line, setting of the checkbox '**F**' depends on the position of the destination line (whether it is within filter lines or not). If checkbox '**U**' is selected in the source line, it will not be copied if the destination line will be a filter line.*

Decision Table Forms

Rules Worksheet

FIGURE 96

Basic structure of the Superior Interlocking Conditions Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Rule <n>**

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ **Delete Rule**

Selecting this button deletes the currently selected rule (column).

■ **Duplicate Rule**

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

Decision Table Forms

Diagnostics Worksheet

FIGURE 97

Basic structure of the Superior Interlocking Conditions Form - Diagnostics Worksheet

The screenshot shows the basic structure of the Superior Interlocking Conditions Form - Diagnostics Worksheet. The window title is "Superior Interlocking Conditions". The menu bar includes Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help. The toolbar contains buttons for Query, Insert, Delete, Defaults, Clear, Duplicate, Msg, Length, Model, Insert Rule, Delete Rule, and Duplicate Rule. The main area is divided into several blocks: "Job Block" with fields for Job and Job Interlock; "Master Block" with fields for Number, Name, and Comment; "Command Block"; "Detail Block" containing a table with columns F, Code Word, U, and Abbreviation, and a Report Text area; "Message Line"; and "Status Line" showing Count: *0 and <Insert>. A vertical scroll bar is on the right side of the Detail Block.

The Diagnostics Worksheet contains a tabular list for entering a report text for each condition line. It is not possible to add or delete condition lines in this worksheet.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

Decision Table Forms

■ Report Text

In this column a report text can be specified for each interlocking condition.

Decision Table Forms

Global Area Interlocking Conditions Form

With this form network information which lies outside of the own network element group can be included in the interlocking conditions.

FIGURE 98

Basic structure of the Global Area Interlocking Conditions Form - Parameters Worksheet

The screenshot shows the 'Global Area Interlocking Conditions' dialog box. The interface is organized into several sections:

- SDM Menubar:** Located at the top left, containing menu items: Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- SDM Toolbar:** Located below the menubar, containing buttons: Query, Insert, Delete, Defaults, Clear, Duplicate, Mag, Length, Model, Insert Rule, Delete Rule, and Duplicate Rule.
- Job Block:** Contains fields for 'Job:' and 'Job Interlock:'.
- Master Block:** Contains fields for 'Number:' and 'Name:'.
- Command Block:** Contains a 'Comment:' field.
- Detail Block:** A large table grid with columns labeled F, Code Word, U, Abbreviation, B1 Name, B2 Name, B3 Name, Element Name, and Info Name. Each column has a series of input fields.
- Message Line:** A text area at the bottom with a hint: 'Hint: Decision Table Number, Numeric. Number must be unique.'
- Status Line:** A text area at the bottom displaying: 'Count: 0' and '<Insert>'.

The Global Area Interlocking Conditions Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Message Line

- Status Line

- Job Block

- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Master Block

- Detail Block

Master Block of the Global Area Interlocking Conditions Form

The Master Block of the Global Area Interlocking Conditions Form contains fields displaying general attributes of the currently selected decision table:

- **Number**

This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.

For details about performing a query please refer to section 'Queries' on page 6.

- **Name**

This field shows the name of the decision table.

- **Comment**

This field shows the comment that has been entered for the decision table.

Detail Block of the Global Area Interlocking Conditions Form

The Detail Block of the Global Area Interlocking Conditions Form consists of a worksheet selection group and three worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet, the Rules Worksheet and the Diagnostics Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 98. It consists of a tabular list with the following columns:

- **F**

Selecting this checkbox marks the corresponding codeword and conditions as filter to determine the rules that must be checked. All lines marked as filter must be at the be-

Decision Table Forms

ginning of the table. They must not be mixed with the other lines. Therefore this checkbox can only be selected in the last line marked as filter and in the first line not marked as filter.

■ **Code Word**

The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. B1 name, B2 name, B3 name, element name and info name are necessary.

■ **U**

If this checkbox is selected, it indicates that the condition can be unlocked by a command from the operator during supervisory control. This checkbox can be selected for all lines that are not marked as filter (see column '**F**').

■ **Abbreviation**

Optional text for the technological address. This abbreviation serves as identification of the test steps in the other two worksheets.

■ **B1 Name**

B1 name of the information used in the decision table.

■ **B2 Name**

B2 name of the information used in the decision table.

■ **B3 Name**

B3 name of the information used in the decision table.

■ **Element Name**

Element name of the information used in the decision table.

■ **Info Name**

Info name of the information used in the decision table.

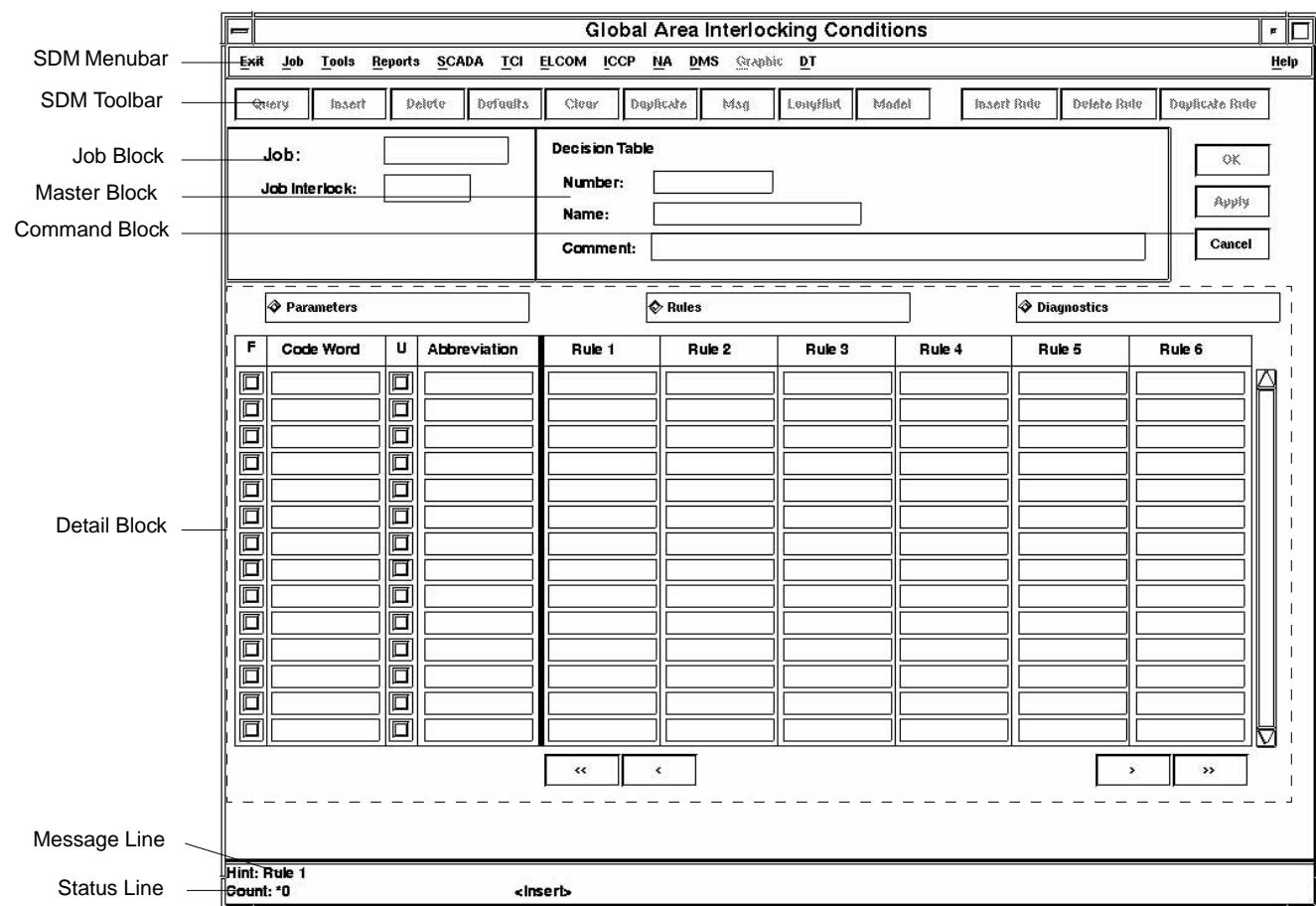
 When duplicating a condition line, setting of the checkbox '**F**' depends on the position of the destination line (whether it is within filter lines or not). If checkbox '**U**' is selected in the source line, it will not be copied if the destination line will be a filter line.

Decision Table Forms

Rules Worksheet

FIGURE 99

Basic structure of the Global Area Interlocking Conditions Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Rule <n>**

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ **Delete Rule**

Selecting this button deletes the currently selected rule (column).

■ **Duplicate Rule**

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

Decision Table Forms

Diagnostics Worksheet

FIGURE 100

Basic structure of the Global Area Interlocking Conditions Form - Diagnostics Worksheet

The screenshot shows the 'Global Area Interlocking Conditions' window. At the top is the SDM Menubar with options like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help. Below it is the SDM Toolbar with buttons for Query, Insert, Delete, Defaults, Clear, Duplicate, Msg, Longlist, Model, Insert Rule, Delete Rule, and Duplicate Rule. The main area is titled 'Decision Table' and contains fields for Job (with a dropdown menu), Job Interlock, Number, Name, and Comment. To the right are OK, Apply, and Cancel buttons. Below this is a section with tabs for Parameters, Rules, and Diagnostics. The Parameters section contains a table with columns F, Code Word, U, and Abbreviation, and a column for Report Text. The Report Text column has 15 rows. At the bottom are Message and Status lines.

F	Code Word	U	Abbreviation	Report Text

Message Line:
Status Line: Count: *0 <Insert>

The Diagnostics Worksheet contains a tabular list for entering a report text for each condition line. It is not possible to add or delete condition lines in this worksheet.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Report Text**

In this column a report text can be specified for each interlocking condition.

Decision Table Forms

Local Area Interlocking Conditions Form

The decision tables for local interlocks contain standardized, e.g. for each microtopology type formulated, interlocking conditions.

FIGURE 101

Basic structure of the Local Area Interlocking Conditions Form - Parameters Worksheet

The diagram illustrates the basic structure of the Local Area Interlocking Conditions Form. It is a window-based application with the following components:

- SDM Menubar:** Located at the top, containing menu items: Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- SDM Toolbar:** Located below the menubar, containing buttons: Query, Insert, Delete, Defaults, Clear, Duplicate, Msg, Longlist, Model, Insert Rule, Delete Rule, and Duplicate Rule.
- Job Block:** A section containing fields for "Job:" and "Job Interlock:".
- Master Block:** A section containing fields for "Number:" and "Name:".
- Command Block:** A section containing a "Comment:" field.
- Detail Block:** A large table grid with columns labeled F, Code Word, U, Abbreviation, Element Name, and Info Name. Each row contains a checkbox in the F column and input fields for the other columns.
- Message Line:** A status bar at the bottom with the message "Hint: Decision Table Number, Numeric, Number must be unique."
- Status Line:** A status bar at the bottom with the message "Count: *0 ENTER QUERY <Insert>".

The Local Area Interlocking Conditions Form is composed of the following components:

- SDM Menubar
- SDM Toolbar
- Message Line
- Status Line

Decision Table Forms

- Job Block
- Command Block
 - These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.
- Master Block
- Detail Block

Master Block of the Local Area Interlocking Conditions Form

The Master Block of the Local Area Interlocking Conditions Form contains fields displaying general attributes of the currently selected decision table:

- **Number**

This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.
For details about performing a query please refer to section 'Queries' on page 6.
- **Name**

This field shows the name of the decision table.
- **Comment**

This field shows the comment that has been entered for the decision table.

Detail Block of the Local Area Interlocking Conditions Form

The Detail Block of the Local Area Interlocking Conditions Form consists of a worksheet selection group and three worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet, the Rules Worksheet and the Diagnostics Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 101. It consists of a tabular list with the following columns:

- **F**

Selecting this checkbox marks the corresponding codeword and conditions as filter to determine the rules that must be checked. All lines marked as filter must be at the beginning of the table. They must not be mixed with the other lines. Therefore this check-

Decision Table Forms

box can only be selected in the last line marked as filter and in the first line not marked as filter.

■ **Code Word**

The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. element name and info name are necessary.

■ **U**

If this checkbox is selected, it indicates that the condition can be unlocked by a command from the operator during supervisory control. This checkbox can be selected for all lines that are not marked as filter (see column 'F').

■ **Abbreviation**

Optional text for the technological address. This abbreviation serves as identification of the test steps in the other two worksheets.

■ **Element Name**

■ **Info Name**

Element name and info name of the information used in the decision table.

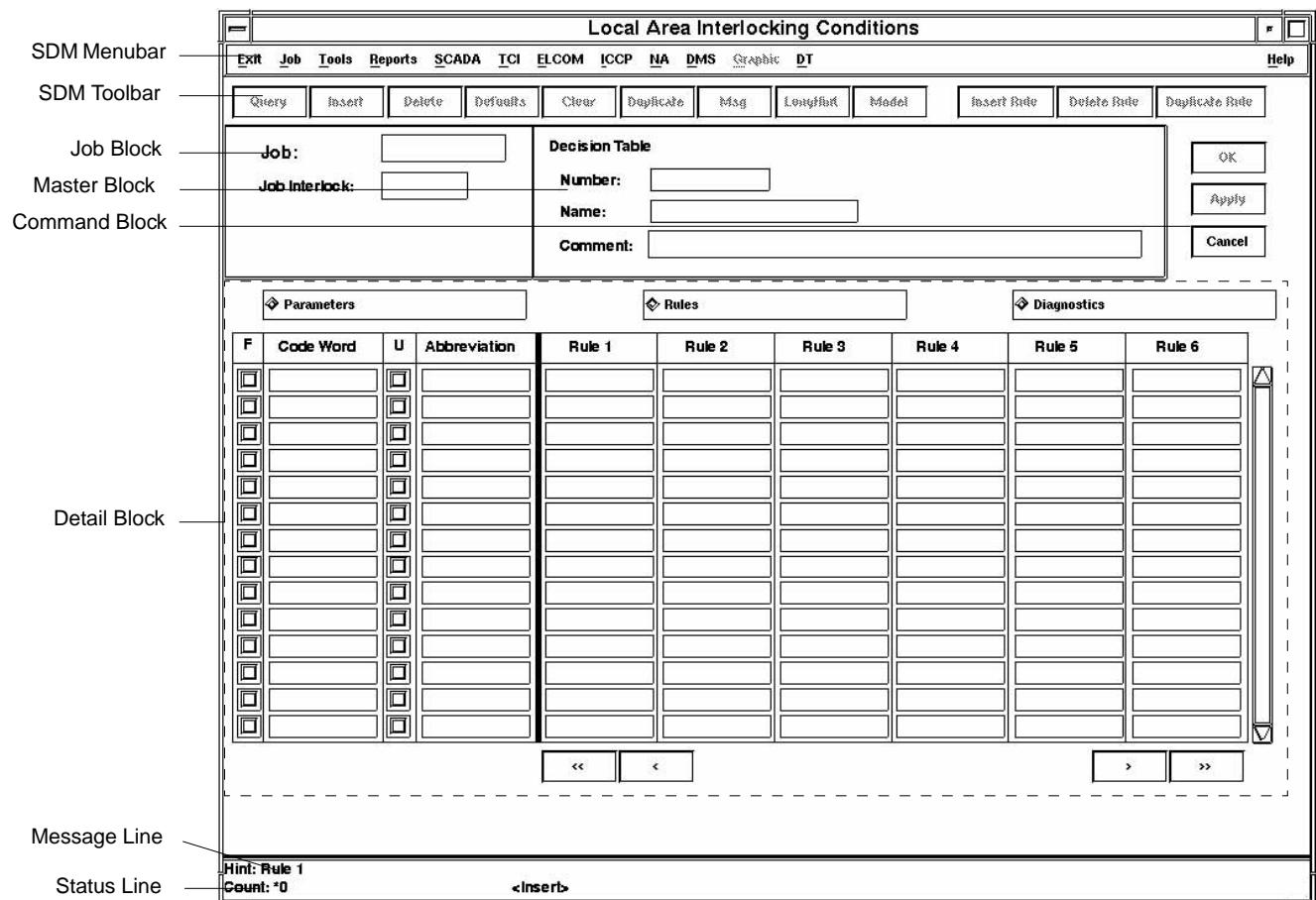
☞ *When duplicating a condition line, setting of the checkbox 'F' depends on the position of the destination line (whether it is within filter lines or not). If checkbox 'U' is selected in the source line, it will not be copied if the destination line will be a filter line.*

Decision Table Forms

Rules Worksheet

FIGURE 102

Basic structure of the Local Area Interlocking Conditions Form - Rules Worksheet



The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Rule <n>**

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ **Delete Rule**

Selecting this button deletes the currently selected rule (column).

■ **Duplicate Rule**

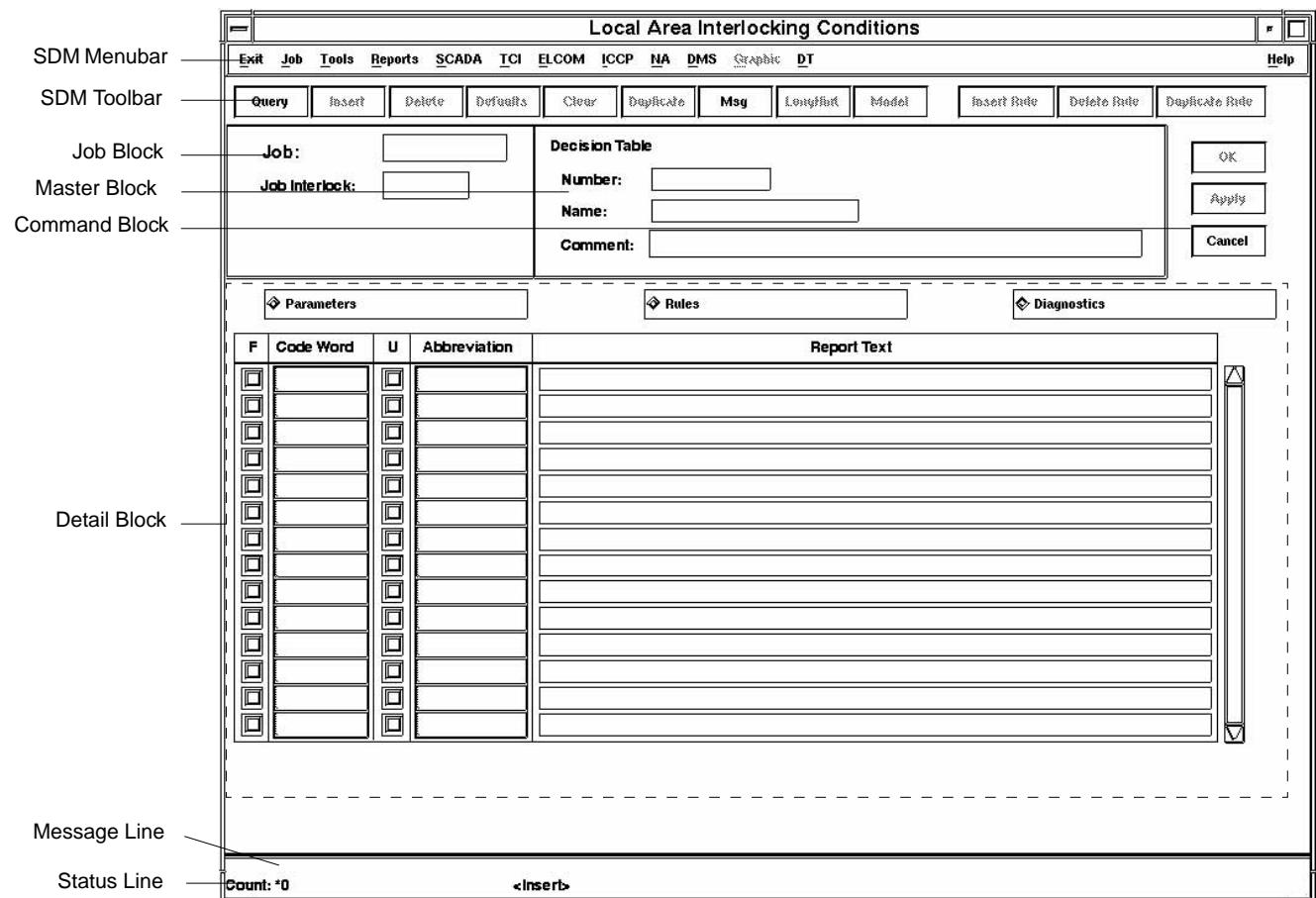
Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

Decision Table Forms

Diagnostics Worksheet

FIGURE 103

Basic structure of the Local Area Interlocking Conditions Form - Diagnostics Worksheet



The Diagnostics Worksheet contains a tabular list for entering a report text for each condition line. It is not possible to add or delete condition lines in this worksheet.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Report Text**

In this column a report text can be specified for each interlocking condition.

Decision Table Forms

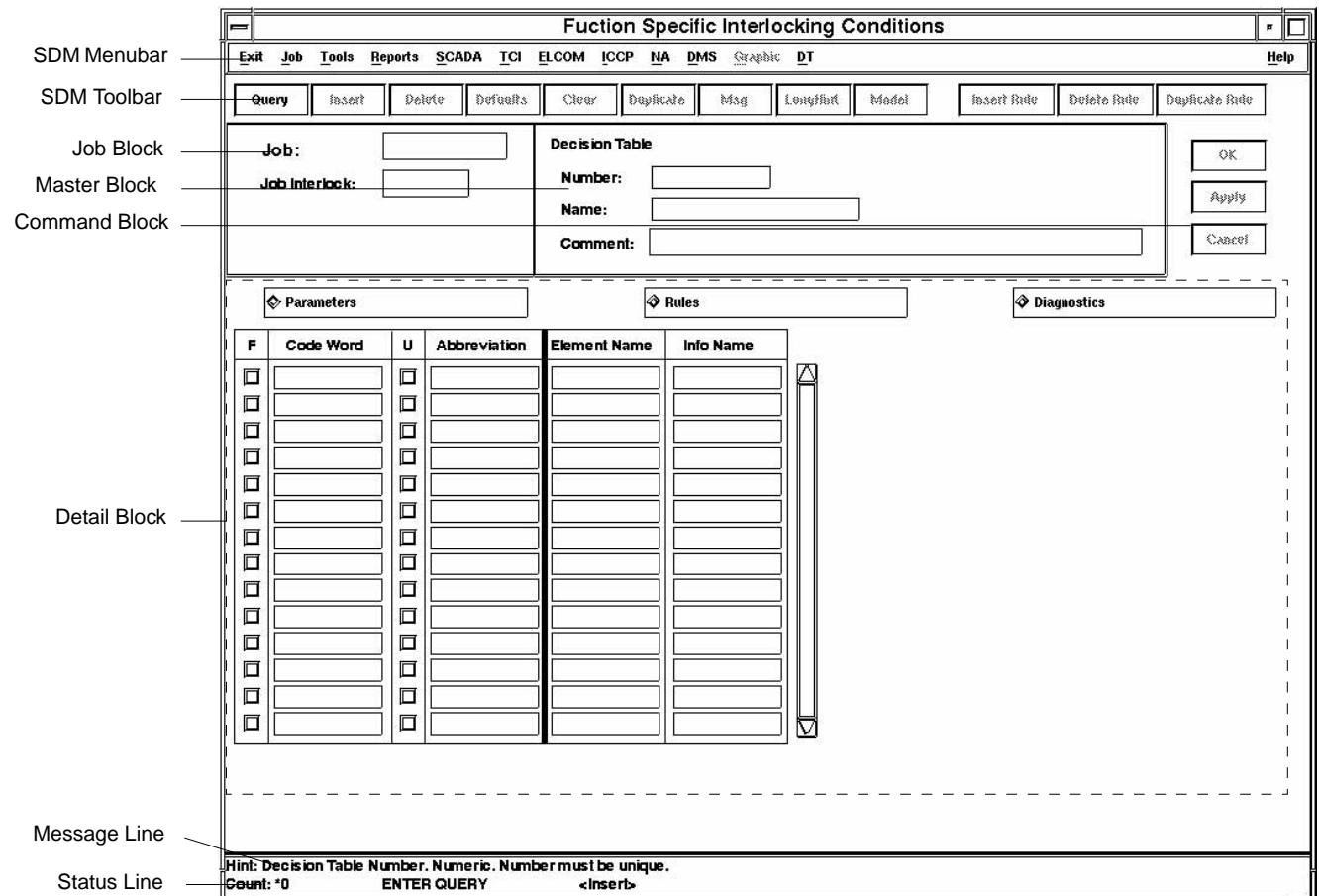
Function Specific Interlocking Conditions Form

Decision tables for function specific interlocking conditions contain only interlocking conditions depending on functions for supervisory control. At the time the interlocks are tested, only the type of the order for supervisory control exists and no technological information with the exception of declarations about the action area (positioning data), therefore technological interlocks can only be formulated conditionally in this table.

This decision table exists only once in the system and is a project constant.

FIGURE 104

Basic structure of the Function Specific Interlocking Conditions Form - Parameters Worksheet



The Function Specific Interlocking Conditions Form is composed of the following components:

Decision Table Forms

- SDM Menubar
- SDM Toolbar
- Message Line
- Status Line
- Job Block
- Command Block

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Master Block
- Detail Block

Master Block of the Function Specific Interlocking Conditions Form

The Master Block of the Function Specific Interlocking Conditions Form contains fields displaying general attributes of the currently selected decision table:

- **Number**

This field shows the number of the decision table. Another decision table may be selected in this field by entering the name or by selecting the name from a list of values. The list of values is opened after a double-click on the concerned text field. Selecting a new decision table is only possible in Query mode.

For details about performing a query please refer to section 'Queries' on page 6.

- **Name**

This field shows the name of the decision table.

- **Comment**

This field shows the comment that has been entered for the decision table.

Detail Block of the Function Specific Interlocking Conditions Form

The Detail Block of the Function Specific Interlocking Conditions Form consists of a worksheet selection group and three worksheets.

The worksheet selection group is provided for selecting the Parameters Worksheet, the Rules Worksheet and the Diagnostics Worksheet respectively.

Parameters Worksheet

The Parameters Worksheet is shown in Figure 104. It consists of a tabular list with the following columns:

- **F**
Selecting this checkbox marks the corresponding codeword and conditions as filter to determine the rules that must be checked. All lines marked as filter must be at the beginning of the table. They must not be mixed with the other lines. Therefore this checkbox can only be selected in the last line marked as filter and in the first line not marked as filter.
 - **Code Word**
The codewords define the test conditions. For a complete description of the test conditions sometimes additional statements, e. g. element name and info name are necessary.
 - **U**
If this checkbox is selected, it indicates that the condition can be unlocked by a command from the operator during supervisory control. This checkbox can be selected for all lines that are not marked as filter (see column 'F').
 - **Abbreviation**
Optional text for the technological address. This abbreviation serves as identification of the test steps in the other two worksheets.
 - **Element Name**
 - **Info Name**
Element name and info name of the information used in the decision table.
- ☞ When duplicating a condition line, setting of the checkbox '**F**' depends on the position of the destination line (whether it is within filter lines or not). If checkbox '**U**' is selected in the source line, it will not be copied if the destination line will be a filter line.

Decision Table Forms

Rules Worksheet

FIGURE 105

Basic structure of the Function Specific Interlocking Conditions Form - Rules Worksheet

The screenshot shows the 'Function Specific Interlocking Conditions' window with various labeled components:

- SDM Menubar:** Located at the top left, containing menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- SDM Toolbar:** Located below the menubar, containing buttons for Query, Insert, Delete, Defaults, Clear, Duplicate, Msg, Longlist, Model, Insert Rule, Delete Rule, and Duplicate Rule.
- Job Block:** A section containing fields for 'Job:' and 'Job Interlock:'.
- Master Block:** A section containing fields for 'Number:' and 'Name:'.
- Command Block:** A large empty area below the master block.
- Detail Block:** A tabular list for entering conditions, consisting of columns F, Code Word, U, Abbreviation, and six Rule columns (Rule 1 to Rule 6). It includes scroll bars and navigation buttons (<<, <, >, >>).
- Message Line:** A status bar at the bottom left showing 'Hint: Rule 1' and 'Count: *0'.
- Status Line:** A status bar at the bottom right showing '<Insert>'.

The Rules Worksheet consists of a tabular list for entering conditions for each object to be tested. It is not possible to add or delete condition lines in this worksheet. Below the tabular list four buttons for scrolling through all rules are provided, as only a limited number of rules can be displayed at a time.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**

Decision Table Forms

■ **Abbreviation**

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Rule <n>**

These columns can be used for defining rules. A rule results from the total amount of conditions displayed vertically below a rule number. Adding new rules or deleting existing rules can be performed with buttons **Insert Rule**, **Delete Rule** and **Duplicate Rule** described below.

- ☞ *During on-line processing the system takes the rules one after the other beginning with rule 1. If a rule is fulfilled, the processing is stopped. This must be taken into consideration when defining the decision tables.*

When the Rules Worksheet is selected, the SDM Toolbar additionally contains the following buttons:

■ **Insert Rule**

This button is used to insert a new rule in the decision table. The new rule is inserted at the left side of the currently selected rule.

■ **Delete Rule**

Selecting this button deletes the currently selected rule (column).

■ **Duplicate Rule**

Selecting this button inserts a new rule and fills its lines with the data of the currently selected rule.

Decision Table Forms

Diagnostics Worksheet

FIGURE 106

Basic structure of the Function Specific Interlocking Conditions Form - Diagnostics Worksheet

The diagram illustrates the basic structure of the Function Specific Interlocking Conditions Form - Diagnostics Worksheet. The form is divided into several functional blocks:

- SDM Menubar:** Located at the top left, containing menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- SDM Toolbar:** Located just below the menubar, containing buttons for Query, Insert, Delete, Defaults, Clear, Duplicate, Msg, Longlist, Model, Insert Rule, Delete Rule, and Duplicate Rule.
- Job Block:** A section labeled "Job:" followed by a text input field.
- Master Block:** A section labeled "Job Interlock:" followed by a text input field.
- Command Block:** A large area below the master block, which is currently empty.
- Detail Block:** A tabular list for entering report text, consisting of four columns: F, Code Word, U, and Abbreviation. The "Report Text" column contains multiple rows for input.
- Message Line:** A horizontal line at the bottom of the form.
- Status Line:** A line at the very bottom displaying "Count: *0" and "<Insert>".

The Diagnostics Worksheet contains a tabular list for entering a report text for each condition line. It is not possible to add or delete condition lines in this worksheet.

The tabular list consists of the following columns:

- **F**
- **Code Word**
- **U**
- **Abbreviation**

Decision Table Forms

These columns show the information entered in the Parameters Worksheet. They cannot be modified in this worksheet.

■ **Report Text**

In this column a report text can be specified for each interlocking condition.

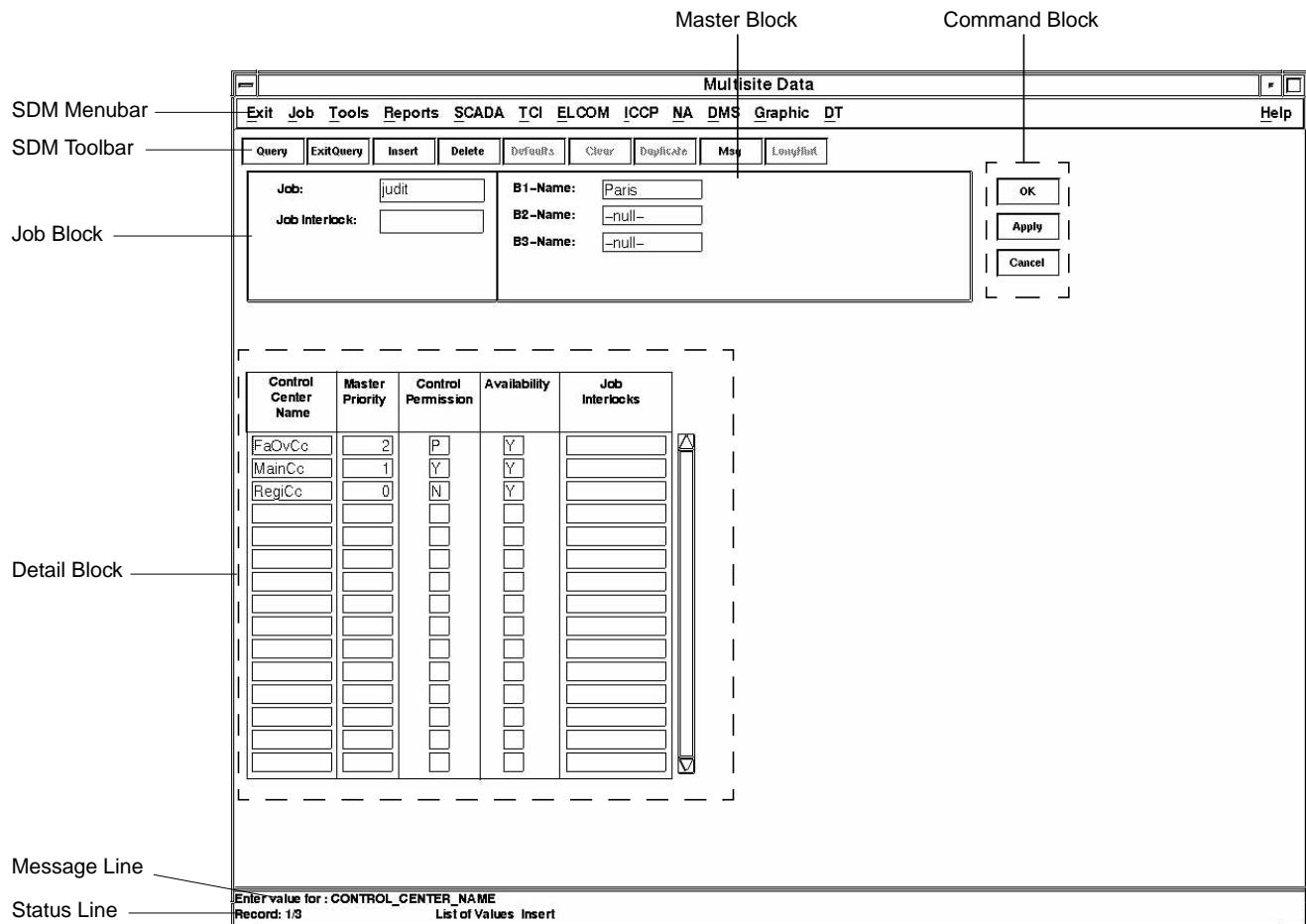
Multisite Form

The Multisite Form provides facilities for entering data describing the multisite functions assigned to certain control centers for the selected B1, B2 or B3 block. Multisite descriptions are inherited by subordinate blocks, but this inheritance may also be overwritten by defining new multisite data for a B2 or B3 block.

Multisite Form

FIGURE 107

Basic structure of the Multisite Form



The Multisite Form is composed of the following elements:

- SDM Menubar
- SDM Toolbar
- Job Block
- Master Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

■ **Detail Block**

Detail Block of the Multisite Form

The Detail Block of the Multisite Form consists of a tabular list for entering multisite data for the block defined in the Master Block. This tabular list consists of the following columns:

■ **Control Center Name**

In this field you can enter the name of the control center for which you want to enter the multisite data.

■ **Master Priority**

This field determines, whether the control center is master system for the block defined in the Master Block, as well as its priority. The following input is allowed:

- 0
- 1
- 2
- 3
- 4

Entering "0" means that this control center is not master system for this block.
Entering numbers "1" to "4" determines the master priority of the control center.
A lower number means a higher priority (there may be no gaps when defining the master priority - e.g.: priority "3" may only be defined for a control center, if there are also control centers with priority "1" and "2" for this block).

■ **Control Permission**

This field determines, whether the control center can have control permission for this block. Possible values are:

- N
The control center can never have control permission for this block.
- P
If the control center is switched to mode "autonomous", it has preferred control permission for this block.
- Y
The control center can have control permission for this block.

■ **Availability**

Input in this field determines, whether the data points of this block are always kept current in the network image (whether the data points are in the information area of the control center). The following input is possible:

- N
The data points in this block are not available to the control center.
- Y
The data points in this block are available to the control center.

 *If **Control Permission** is set to 'Y', then also **Availability** should be set to 'Y'!*

■ **Job Interlocks**

Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

Inheritance of Multisite Descriptions by B2 and B3 Blocks

The multisite data are inherited automatically by all subordinate B2 and B3 blocks of a B1 block. When calling the Multisite Form e.g. for a B2 block, automatically the data of its parent B1 block are entered into the tabular list. Inheritance can be overwritten by pressing button **Disinherit** at the right side of the tabular list, as shown in figure 108.

Multisite Form

FIGURE 108

Multisite Form for defining multisite data for a B2 block with button **Disinherit**

Button for removing inheritance

The screenshot shows the 'Multisite Data' dialog box. At the top, there's a menu bar with 'Exit', 'Job', 'Tools', 'Reports', 'SCADA', 'TCI', 'ELCOM', 'ICCP', 'NA', 'DMS', 'Graphic', 'DT', and 'Help'. Below the menu is a toolbar with buttons for 'Query', 'ExitQuery', 'Insert', 'Delete', 'Defaults', 'Clear', 'Duplicate', 'Msg', and 'Longfield'. The main area contains input fields for 'Job' (judit), 'B1-Name' (Paris), 'B2-Name' (110), and 'B3-Name' (–null–). To the right of these fields are 'OK', 'Apply', and 'Cancel' buttons. A message box in the center states: 'The Multisite data for this B2 is inherited from its B1 parent.' To the right of this message is a 'Disinherit' button. Below the message is a large table with columns: Control Center Name, Master Priority, Control Permission, Availability, and Job Interlocks. The table lists several control centers with their respective values. At the bottom of the dialog box, there's a message: 'Enter value for : CONTROL_CENTER_NAME' and 'Record: 1/3 Insert'.

After selecting button **Disinherit**, the fields of the tabular list are released for input and new data can be entered. Button **Disinherit** changes to **Reinherit**.

To undo this operation and select the inherited data again, press button **Reinherit** as shown in figure 109.

Multisite Form

FIGURE 109

Multisite Form for defining multisite data for a B2 block with button Reinherit

Typification Forms

Definition and modification of type data require a thorough understanding of the SINAUT **Spectrum** data model and of internal processings.

The typification forms described in the following mainly serve for representing type data on the SDM user interface. Upon agreement the forms may also be used to define new types or to modify existing ones. For this purpose the following forms are provided:

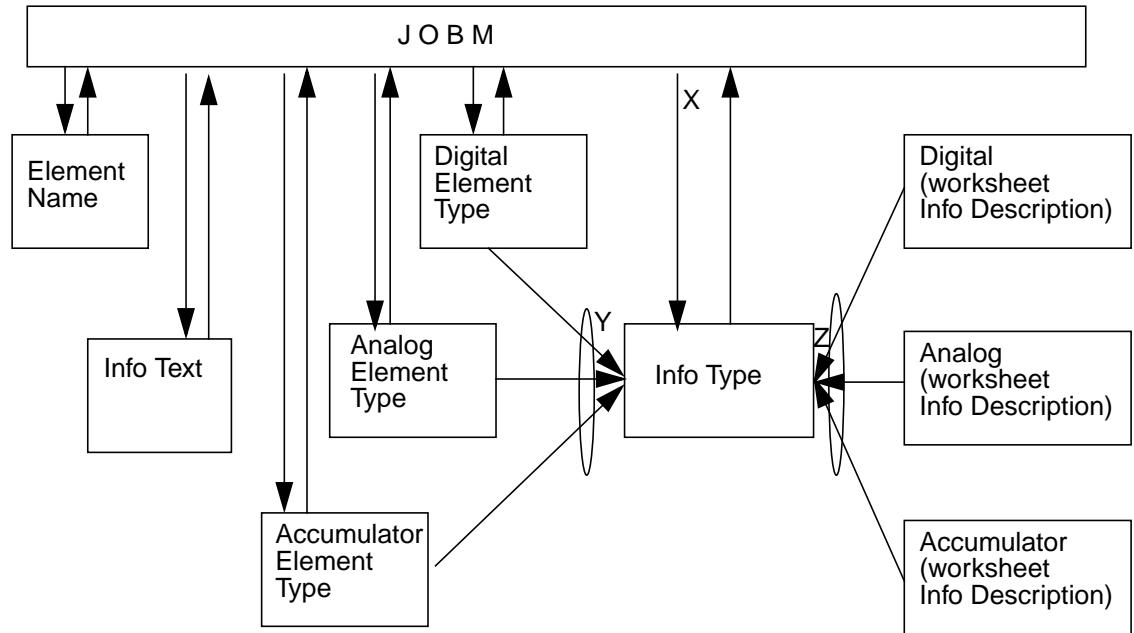
- Info Type Definition Form
- Digital Element Type Form
- Analog Element Type Form
- Accumulator Element Type Form
- Element Name Definition Form
- Info Text Definition Form

The following figure gives you an overview of how you can select the individual forms.

Typification Forms

FIGURE 110

Navigation overview



X - In form Info Type Definition all Infotypes may be displayed and changed

Y -Select <Infotype> press InfoType... Only selected Infotype is displayed

Z -Select <Infotype> press InfoType... Only selected Infotype is displayed (read-only)

Typification Forms

Info Type Definition Form

With this form you can define a new info type as well as modify or delete an existing info type.

FIGURE 111

Basic structure of the Info Type Definition Form - Basic Attributes Worksheet

The screenshot shows the 'Info Type Definition' dialog box. It is divided into several sections:

- SDM Menubar:** Located at the top left, containing menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Type.
- SDM Toolbar:** Located below the menubar, with buttons for Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, LongList, and Model.
- Job Block:** A section containing fields for Job (with a dropdown menu), Job Interlock (with a dropdown menu), Info Type Name (set to DeviComp), Info Type Number (set to 1), and Comment (empty).
- Master Block:** A vertical column on the right side containing buttons for OK, Apply, and Cancel.
- Command Block:** A vertical column on the right side containing buttons for OK, Apply, and Cancel.
- Detail Block:** A large central area divided into several sections:
 - Characteristics:** Fields for Message Class (8), Appearing/Disappearing (checkbox), Value Offset Message (logoff_68), and Value Offset Command (0).
 - Base Processing:** Fields for Supervision Time in Minutes (checkbox), Command Supervision Time (0), Command Output Time (0), Disturbance type (0), Info Type for Realtime Alarm (empty), Inhibit Info Type (empty), RTU Termination Time (0), and Status Monitoring Time (0).
 - Relevant for Interlocking Check:** A group of checkboxes.
 - Relevant for Topology:** A group of checkboxes.
 - Relevant for Activate SC-Job:** A group of checkboxes.
 - Info in NIM:** A group of checkboxes.
 - User Programs:** A list of programs with checkboxes.
 - User Services:** A list of services with checkboxes.
 - Archive:** Fields for Storage (checkbox) and Message Format (0).
 - Expert System:** Fields for Class (ES not attached) and Slot (ES not attached).
- Message Line:** A dashed line indicating the message line.
- Status Line:** A line at the bottom displaying a hint: 'Hint-Info Type Name. Character. Info Type Name must be unique. Record: 1?'. Below it is an 'Insert' button.

The Info Type Definition Form is composed of the following elements:

- SDM Menubar
- Job Block
- Command Block

Typification Forms

- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- SDM Toolbar
- Master Block
- Detail Block

SDM Toolbar of the Info Type Definition Form

In addition to the standard toolbar buttons the toolbar of the Info Type Definition Form also contains the following button:

- **Model**

By pressing this button you can create a new info type using an existing info type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.

Master Block of the Info Type Definition Form

The Master Block of the Info Type Definition Form contains the following fields for selecting the info type, when in Query mode:

- **Info Type Name**

Shows the name of the currently selected info type. Its data are displayed in the Detail Block described below.

- **Info Type Number**

Shows the number of the currently selected info type.

- **Comment**

In this field a comment for the info type can be entered.

and checkbox

- **In use**

This checkbox indicates, whether this info type is already used. If the info type is already assigned to any of the element types, deletion and modification of the info type is not allowed.

Detail Block of the Info Type Definition Form

The Detail Block of the Info Type Definition Form consists of a worksheet selection group and two worksheets.

The worksheet selection group is provided for selecting the Basic Attributes Worksheet and the Representation Worksheet respectively.

Basic Attributes Worksheet

The Basic Attributes Worksheet is shown in Figure 111. It consists of the following blocks:

Characteristics Block

■ Message Class

In this field you can insert the number of the message class for selection guidance.

■ Appear/Disappearing

This checkbox determines whether the information is an appearing/disappearing event. This definition is necessary if a selection guidance to appearing/disappearing events is required. If the checkbox is set, this indicates an appearing/disappearing event.

■ Value Offset Message

This parameter determines the first text for a sequence of information texts of the specified information in the database.

The first text represents the corresponding text with the information value 0. The information value is added to the number of the first text to determine the corresponding information text. This result represents the number of the corresponding text. Table 1 shows an example.

TABLE 1

Example for parameter **Value Offset**

Single-pole message	value 0 ... disappearing
	value 1 appearing
Offset text	"Disappearing" ... text no. in database is 42
Sequence of texts in database:	
	#41 ...
	#42 "Disappearing"
	#43 "Appearing"
	#44 ...

Typification Forms

The text number for an appearing message is determined as *number of the first text + value for appearing*: $42 + 1 = 43$, i. e. the text "Appearing".

In this field you can enter the offset text for messages. Valid input are all names from table VANAME.

■ **Value Offset Command**

This parameter determines the first text for a sequence of information texts of the specified information in the database (see description of parameter **Value Offset Message**). In this field you can enter the offset text for commands. Valid input are all names from table VANAME.

■ **Status Type**

Information signal types:

- **singles** – Single-pole
- **doubles** – Double-pole
- **fleet** – Fleeting
- **Tapset** – Transformer tap (byte-integer value)
- **DevStm** – Device state
- **DigVal2** – 2-byte-integer value
- **DigVal4** – 4-byte-integer value
- **noSitype** – none of the types described above

The following two parameters are only displayed and may be changed, if in table type_ctrl type = 'DAS' and attribute = 'Y':

■ **Remote Message Processing**

Checkbox to select whether the information can be remote controlled. If the checkbox is set, the information can be remote controlled.

■ **Telesignaled Message Processing**

Checkbox to select whether the information state is telesignaled. If the checkbox is set, the information is telesignaled.

Base Processing Block

■ **Supervision Time Min/Sec**

This checkbox determines, whether the supervision time is entered in minutes or seconds. If the checkbox is set, the supervision time is entered in minutes, otherwise it is entered in seconds.

■ **Command Supervision Time**

This field contains the remote control command reply timeout. The unit - minutes or seconds - is determined by the setting of checkbox **Supervision Time Min/Sec**.

Value range: 0..127

■ **Command Output Time**

Determines the code for command output duration (relevant only for remote controlled information).

The code depends on the RTU and the output function module of the command output program.

Value range: 0..127

■ **Disturbance Type**

If you want a message with the currently selected information type to initiate a disturbance event, input in this field specifies the disturbance type.

Value range: 0..127

■ **Info Type for Realtime Alarm**

In case of a Sequence of Events (SOE), the setting of this parameter specifies the processing (information type) of the second transmitted message. Valid input are all names from table INTYPNAME. Default entry is NoType.

■ **Inhibit Info Type**

Info type to be used, if tag Alarm Inhibit is set. Valid input are all names from table INTYPNAME. Default entry is NoType.

■ **RTU Termination Time**

Time for termination from RTU, indicating that command output has been finished.

■ **Status Monitoring Time**

Time after command return signal for monitoring that the switch has remained in its target position.

■ **Relevant for Interlocking Check**

Checkbox indicating whether a status change must be considered for interlocking checks. If the checkbox is set, this indicates that a status change has to be considered for interlocking checks.

■ **Relevant for Topology**

Checkbox indicating whether a status change must be considered for topological calculations. If the checkbox is set, this indicates that a status change has to be considered for topological calculations.

■ **Relevant for Activate SC-Job**

Checkbox to determine whether a status change activates a process controlled switching procedure. If the checkbox is set, this indicates that a status change activates a process controlled switching procedure.

■ **Info in NIM**

Defines if the current information state is stored in the network image. If the checkbox is set, this indicates that the information state is stored in the network image.

Typification Forms

■ **User Programs**

This list shows the user programs that shall be informed about information status changes. A maximum of five programs may be specified.

■ **User Services**

This list shows the user services that shall be informed about information status changes. A maximum of five services may be specified.

Archive Block

■ **Storage**

This checkbox indicates whether storage of spontaneous changes in the archive is desired.

■ **Message Format**

Determines the number of the text processing module for archives.

Value range: 0..127

If checkbox **Storage** is not set, then "0" has to be entered.

Expert System Block

■ **Class**

Identification of the expert system class.

Value range: 0..127

If parameter **Slot** is set to zero, also parameter **Class** has to be zero.

■ **Slot**

Identification of the expert system slot.

Value range: 0..127

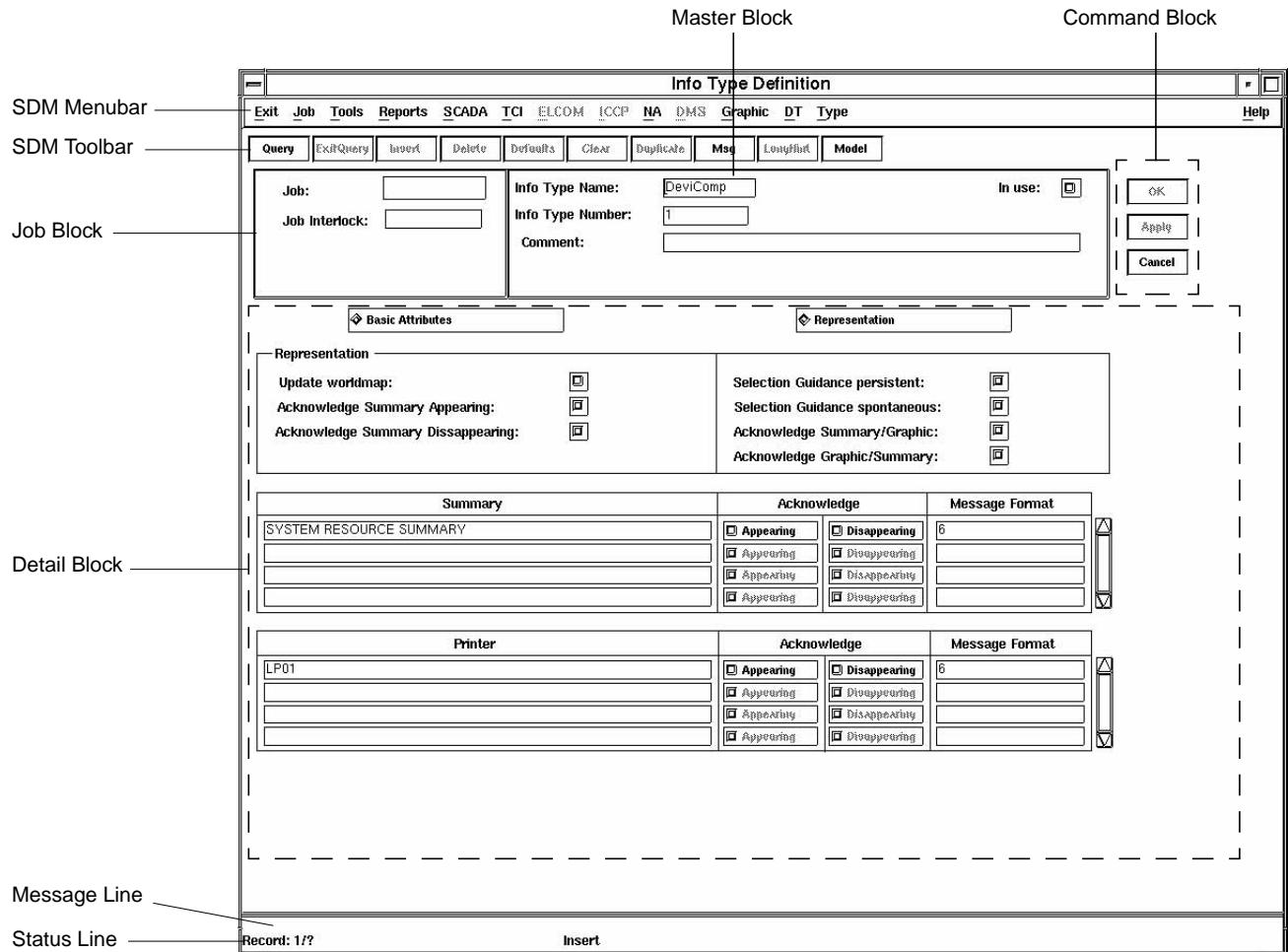
If parameter **Class** is set to zero, also parameter **Slot** has to be zero.

Typification Forms

Representation Worksheet

FIGURE 112

Basic structure of the Info Type Definition Form - Representation Worksheet



Representation Block

■ Update worldmap

If this checkbox is set, information changes are shown in a worldmap.

■ Acknowledge Summary Appearing

If this checkbox is set, this indicates that appearing messages must be acknowledged in summaries.

Typification Forms

- **Acknowledge Summary Disappearing**
If this checkbox is set, this indicates that disappearing messages must be acknowledged in summaries.
- **Selection Guidance persistent**
If this checkbox is set, this indicates that selection guidance for persistent messages in worldmaps is switched on. This checkbox may not be set if checkbox **Update worldmap** is not selected.
- **Selection Guidance spontaneous**
If this checkbox is set, this indicates that selection guidance for spontaneous status changes in worldmaps is switched on. This checkbox may not be set if checkbox **Update worldmap** is not selected.
- **Acknowledge Summary/Graphic**
If this checkbox is set, this indicates that a message acknowledgment in a summary also acknowledges affected worldmaps. This checkbox may not be set if checkbox **Selection Guidance spontaneous** is not selected or no summaries have been defined.
- **Acknowledge Graphic/Summary**
If this checkbox is set, this indicates that a message acknowledgment in a worldmap also acknowledges affected summaries. This checkbox may not be set if checkbox **Selection Guidance spontaneous** is not selected or no summaries have been defined.

Summary Block

A maximum of four summaries can be defined.

The Summary Block consists of a list with the following columns:

- **Summary**
Name of the summary for which processing of the message is specified.
- **Acknowledge**
 - **Appearing**
Checkbox indicating whether appearing messages and fleetings shall be stored in the summary.
 - **Disappearing**
Checkbox indicating whether disappearing messages shall be stored in the summary.
- **Message Format**
Determines which function module creates the text of the message line. For possible input values refer to 'Basic Attributes Worksheet', parameter **Message Format**.

Printer Block

A maximum of four printers can be defined.

Typification Forms

The Printer Block consists of a list with the following columns:

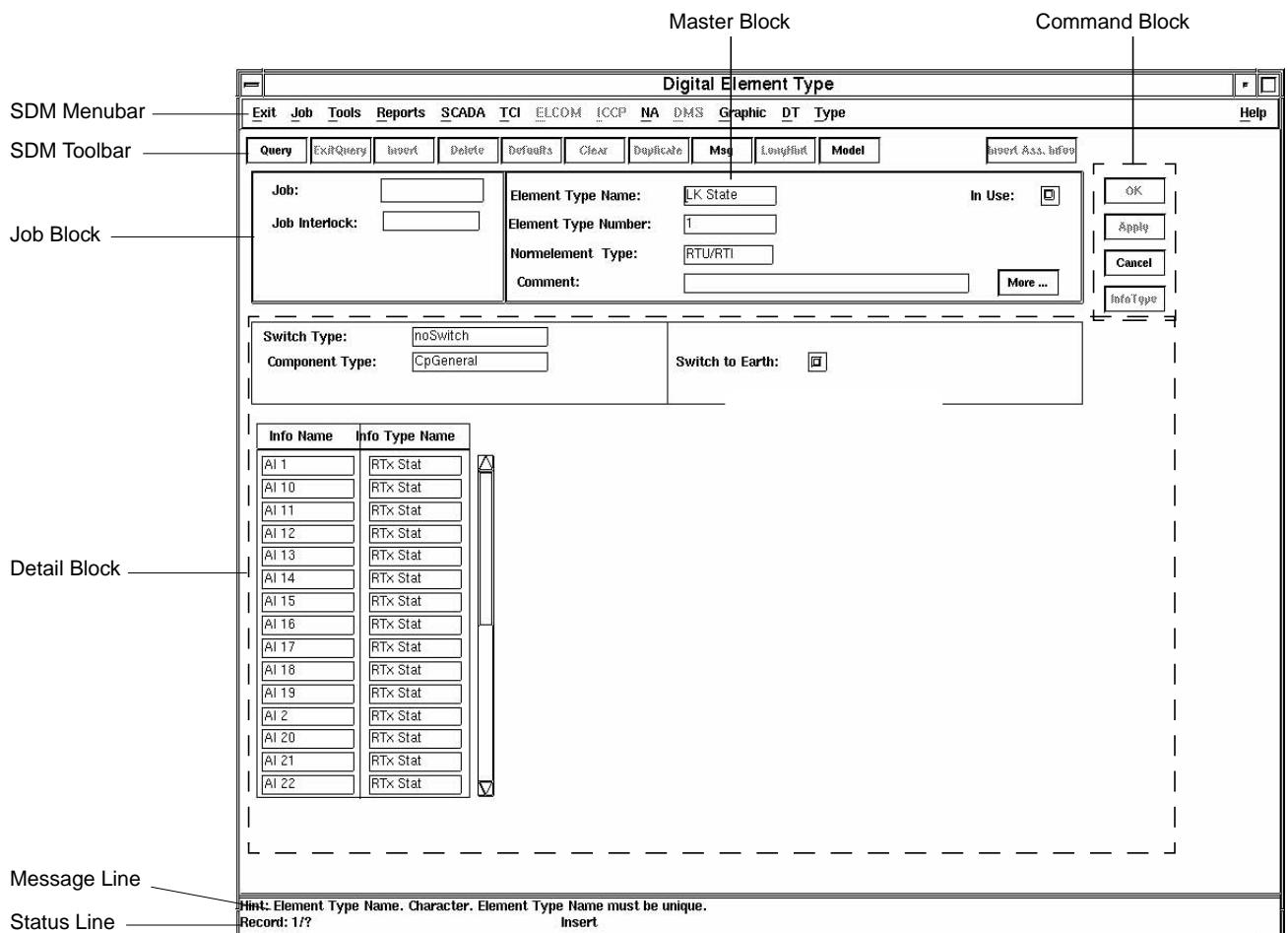
- **Printer**
Name of the printer for which processing of message output is specified.
- **Acknowledge**
 - **Appearing**
Checkbox indicating whether appearing messages and fleetings shall be stored.
 - **Disappearing**
Checkbox indicating whether disappearing messages shall be stored.
- **Message Format**
Determines which function module creates the text of the message line. For possible input values refer to 'Basic Attributes Worksheet', parameter **Message Format**.

Typification Forms

Digital Element Type Form

In this form you can define a new digital element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 113 Basic structure of the Digital Element Type Form



The Digital Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block
- Message Line

Typification Forms

- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Digital Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Digital Element Type Form also contains the following buttons:

- **Model**

By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.

- **Insert Ass. Infos**

For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button **Insert Ass. Infos**.

Master Block of the Digital Element Type Form

The Master Block of the Digital Element Type Form contains the following fields for selecting the digital element type, when in Query mode:

- **Element Type Name**

Shows the name of the currently selected digital element type. Its data are displayed in the Detail Block described below.

- **Element Type Number**

Shows the number of the currently selected digital element type.

- **Normelement Type**

Shows the norm element type name of the currently selected digital element type.

- **Comment**

In this field a comment for the element type can be entered.

Typification Forms

checkbox

- **In use**

This checkbox indicates, whether this digital element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

- **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Digital Element Type Form

Additionally to the standard buttons OK, Apply and Cancel the Command Block of the Digital Element Type Form also contains button

- **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Digital Element Type Form

The Detail Block of the Digital Element Type Form consists of the following elements:

- **Switch Type**

This field indicates, whether the element is a switch, and if it is a switch, its type. Relevant for element types of normelement type "Switch" only.

Possible values:

noSwitch, Isolator, RemLoadBrSw, LoadBrSw, RemBraker, Breaker

- **Component Type**

Indicates the component type of the operational device. Relevant for element types of normelement type "Topological Node" only.

Possible values:

noComponent, CpConnNode, CpGround, CpGeneral, CpBusbar, CpAuxiBusbar, CpCombiBusbar, CpGenerator, CpInjection, CpLoad, CpHauseSupply, CpCompensator, CpPetersenCoil, CpLine, CpTransformer, CpThreeWindings

- **Switch to Earth**

The checkbox indicates whether the element is a switch to earth. Relevant for element types of normelement type "Switch" only.

as well as a table with the columns

Typification Forms

- **Info Name**

This column shows all information names assigned to this element type.

- **Info Type Name**

This column shows the information type of the respective information name.

where you can select an info.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button **Insert** of the SDM Toolbar, you can define a new digital element type.

By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected digital element type.

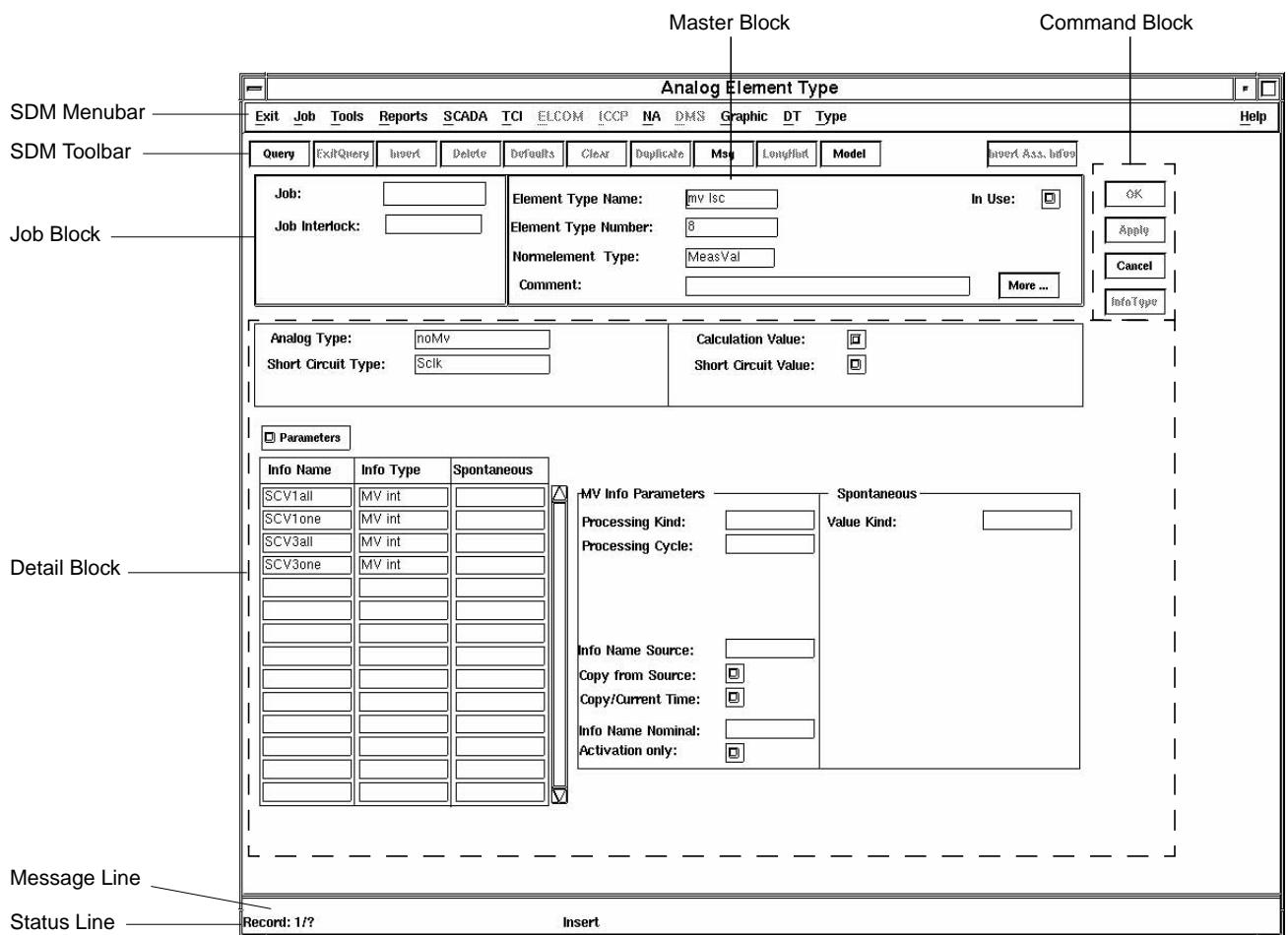
Typification Forms

Analog Element Type Form

In this form you can define a new analog element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 114

Basic structure of the Analog Element Type Form



The Analog Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block

Typification Forms

- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Analog Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Analog Element Type Form also contains the following buttons:

- **Model**
By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.
- **Insert Ass. Infos**
For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button Insert Ass. Infos.

Master Block of the Analog Element Type Form

The Master Block of the Analog Element Type Form contains the following fields for selecting the analog element type, when in Query mode:

- **Element Type Name**
Shows the name of the currently selected analog element type. Its data are displayed in the Detail Block described below.
- **Element Type Number**
Shows the number of the currently selected analog element type.
- **Normelement Type**
Shows the norm element type name of the currently selected analog element type.
- **Comment**
In this field a comment for the element type can be entered.

Typification Forms

checkbox

■ **In use**

This checkbox indicates, whether this analog element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

■ **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Analog Element Type Form

Additionally to the standard buttons **OK**, **Apply** and **Cancel** the Command Block of the Analog Element Type Form also contains button

■ **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Analog Element Type Form

The Detail Block of the Analog Element Type Form consists of the following elements:

■ **Analog Type**

This field indicates the type of the analog value.

Possible values:

noMv, Voltage, Current, ActPower, ReactPower, Frequency, Temperature, CosPhi, Phi, VirtPower, Elevation, GatePos, TransfTap

■ **Short Circuit Type**

This field indicates the type of the short circuit value.

Possible values:

noSc, ScSk, ScLk, ScPhi, ScUrest

■ **Calculation Value**

Selecting this checkbox determines, whether the element type also has calculation values.

■ **Short Circuit Value**

Selecting this checkbox determines, whether the element type also has short circuit values.

Typification Forms

a table with the columns

■ **Info Name**

This column shows all information names assigned to this element type.

■ **Info Type**

This column shows the information type of the respective information name.

■ **Spontaneous**

This column shows the kind of spontaneous processing.

Possible values:

The value must exist in table MVINTYDE.

and checkbox

■ **Parameters**

When you select this checkbox, an additional block with information about the info currently selected in the table is displayed at the right side of the list (see figure 114). This block is read-only.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button **Insert** of the SDM Toolbar, you can define a new analog element type.

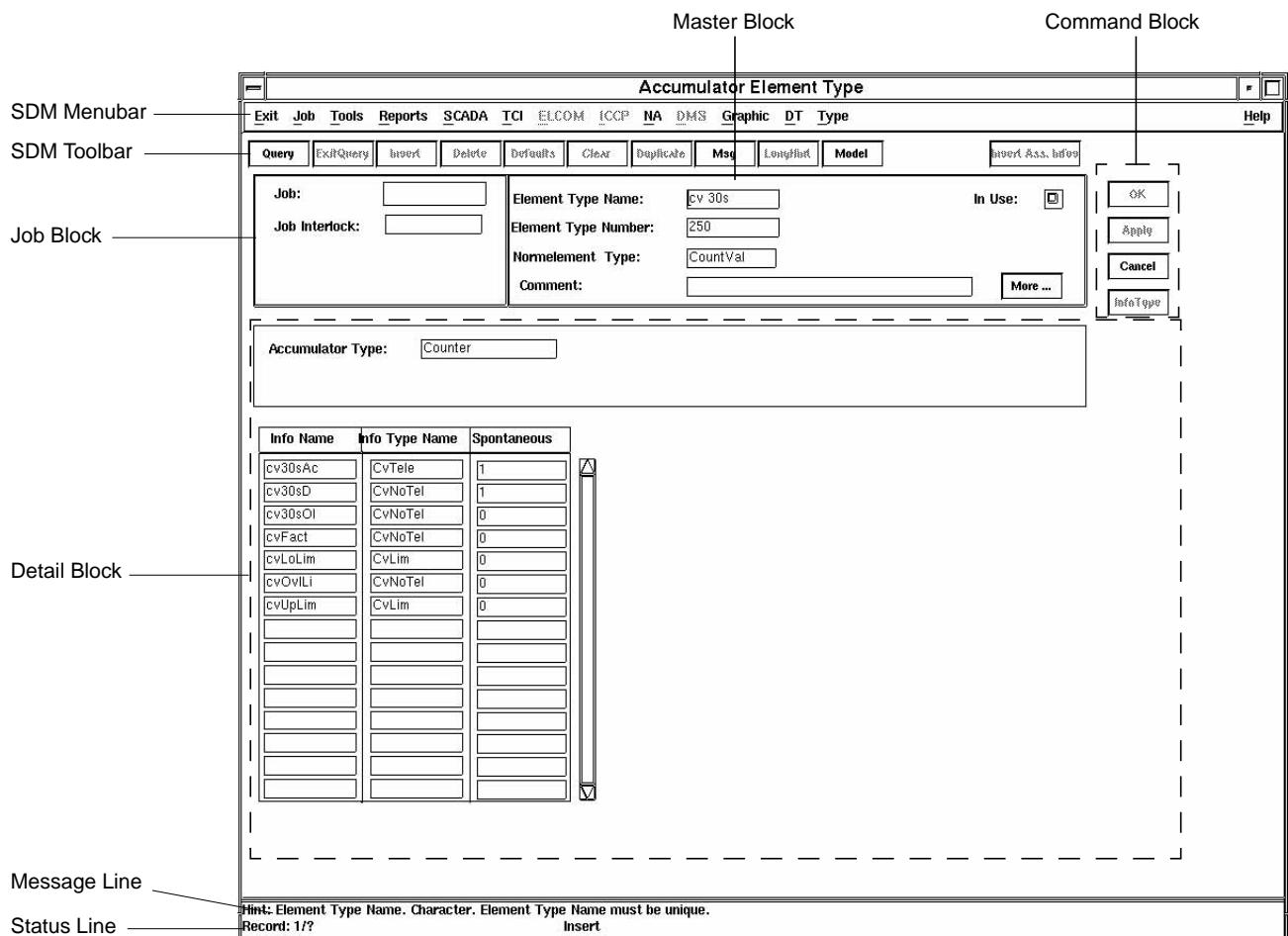
By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected analog element type.

Typification Forms

Accumulator Element Type Form

In this form you can define a new accumulator element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 115 Basic structure of the Accumulator Element Type Form



The Accumulator Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block

Typification Forms

- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Accumulator Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Accumulator Element Type Form also contains the following buttons:

- **Model**
By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.
- **Insert Ass. Infos**
For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button Insert Ass. Infos.

Master Block of the Accumulator Element Type Form

The Master Block of the Accumulator Element Type Form contains the following fields for selecting the accumulator element type, when in Query mode:

- **Element Type Name**
Shows the name of the currently selected accumulator element type. Its data are displayed in the Detail Block described below.
- **Element Type Number**
Shows the number of the currently selected accumulator element type.
- **Normelement Type**
Shows the norm element type name of the currently selected accumulator element type.
- **Comment**
In this field a comment for the element type can be entered.

Typification Forms

checkbox

■ **In use**

This checkbox indicates, whether this accumulator element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

■ **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Accumulator Element Type Form

Additionally to the standard buttons OK, Apply and Cancel the Command Block of the Accumulator Element Type Form also contains button

■ **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Accumulator Element Type Form

The Detail Block of the Accumulator Element Type Form consists of the following elements:

■ **Accumulator Type**

This field indicates the type of the accumulator.

Possible values:

noCv, Counter, SwitchCount, OpTimCount

and a table with the columns

■ **Info Name**

This column shows all information names assigned to this element type.

■ **Info Type Name**

This column shows the information type of the respective information names.

■ **Spontaneous**

This column shows the kind of spontaneous processing.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button Insert of the SDM Toolbar, you can define a new accumulator element type.

Typification Forms

By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected accumulator element type.

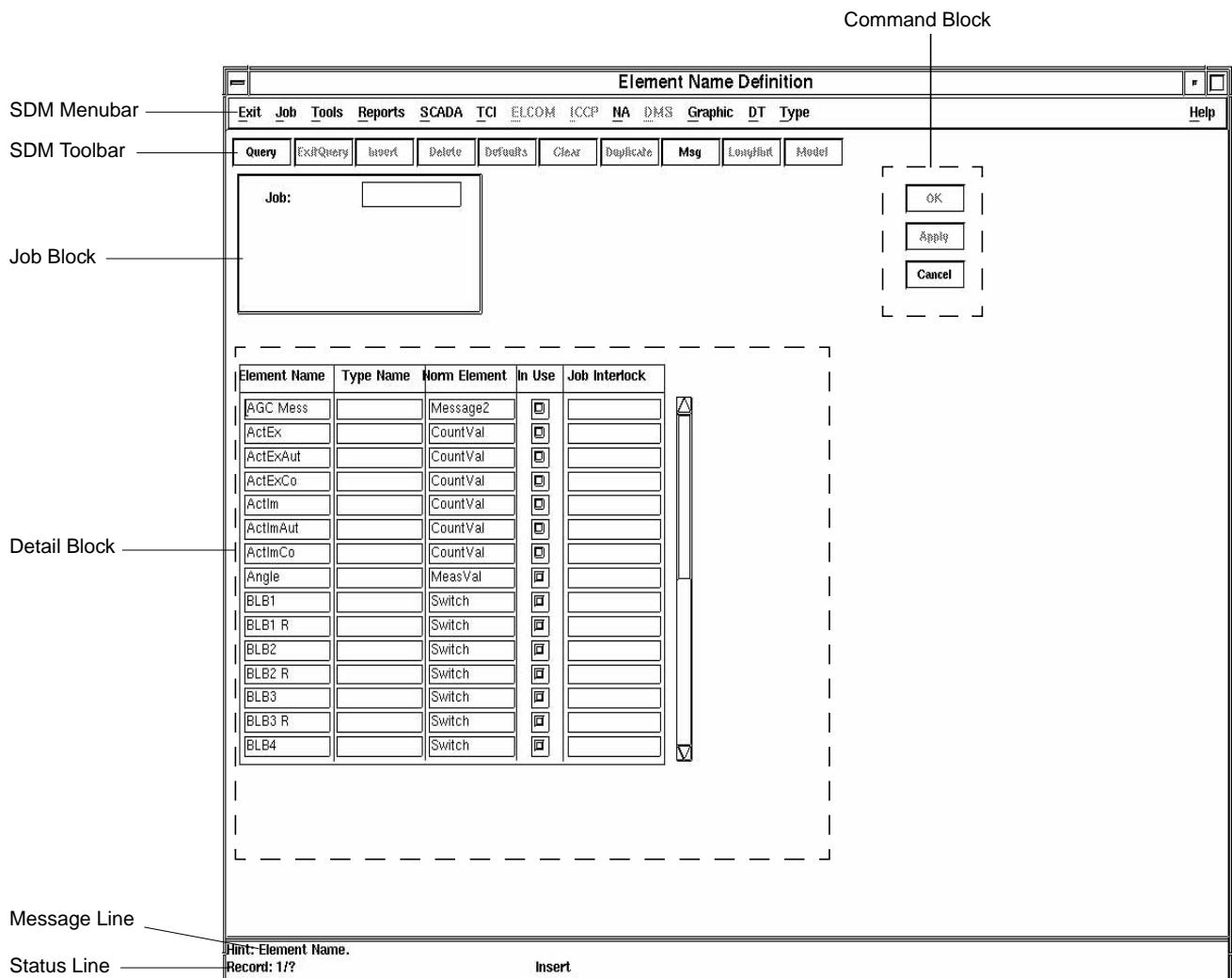
Typification Forms

Element Name Definition Form

With this form you can modify element names. Modification is not allowed if the element name is already used as part of a Technological Address.

FIGURE 116

Basic structure of the Element Name Definition Form



The Element Name Definition Form is composed of the following elements:

- SDM Menubar

Typification Forms

- SDM Toolbar
- Job Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Detail Block

Detail Block of the Element Name Definition Form

The Detail Block of the Element Name Definition Form consists of a tabular list with the following columns:

- **Element Name**
This column contains the element names, which can be changed.
- **Type Name**
It is possible to preset an element name with a definite element type. For these cases the element type is shown in this column. This field cannot be edited.
- **Norm Element**
This column shows the norm element type name of the respective element. This field cannot be edited.
- **In Use**
This checkbox indicates, whether the element is already used. If the checkbox is set (the element is already used), no modification is allowed.
- **Job Interlock**
Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

Typification Forms

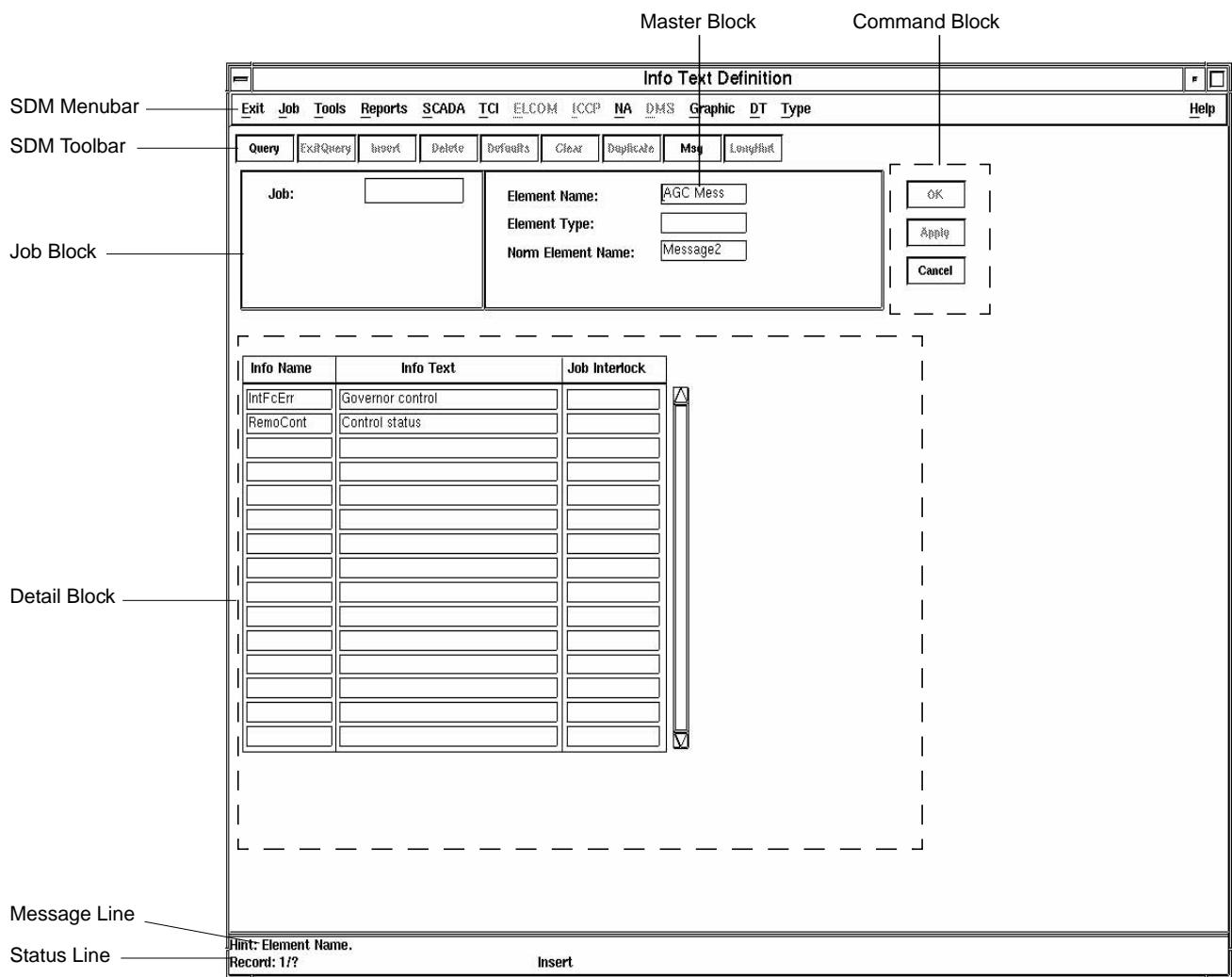
Info Text Definition Form

With this form you can modify an existing info text or insert a new info text for existing infos.

Changes in this form are only allowed, if in table type_ctrl
type = 'GLOBAL_INFOTEXTS', attribute = 'Y'.

FIGURE 117

Basic structure of the Info Text Definition Form



Typification Forms

The Info Text Definition Form is composed of the following elements:

- SDM Menubar
- SDM Toolbar
- Job Block
- Command Block
- Message Line
- Status Line

These form components are common in all SDM forms. For a detailed description, please refer to the corresponding sections in chapter 'SDM Basics' on page 3 in this document.

- Master Block
- Detail Block

Master Block of the Info Text Definition Form

The Master Block of the Info Text Definition Form contains the following fields for selecting the element whose infos shall be displayed.

- **Element Name**
Shows the name of the currently selected element. The infos assigned to this element are shown in the Detail Block described below.
- **Element Type**
It is possible to preset an element name with a definite element type. For these cases the element type is shown in this field. This field cannot be edited.
- **Norm Element Name**
Shows the name of the norm element of the currently selected element.

Detail Block of the Info Text Definition Form

The Detail Block of the Info Text Definition Form consists of a tabular list with the following columns:

- **Info Name**
This column shows the names of the infos assigned to the element selected in the Master Block.
- **Info Text**
In this column you can edit information texts for the listed infos.
- **Job Interlock**

Typification Forms

Shows the name of the interlocking job, if such an interlock exists. Read-only display field.

Base Applications Import Data Definitions

Introduction

This chapter is a reference that aids in the process of collecting and defining the source data for SINAUT **Spectrum** Applications (e.g., Base Applications). The information provided in this guide includes guidelines for collecting the source data, interactive data entry form definitions, the import record formats, and the detailed definitions of the import record attributes.

The information in this chapter is intended for data engineers who understand the power system characteristics and are thoroughly knowledgeable about the topics covered by the various data analysis user guides. Additionally, the data engineer's role requires an understanding of database concepts to ensure that the correct and appropriate data is both initially incorporated and maintained in the source database.

This chapter supports the collecting, specifying, and formatting of the source data for SINAUT **Spectrum** Applications (e.g., Base Applications). Use this chapter initially to understand and set up the source data import file. This includes collecting the source data according to the detailed record attribute definitions and placing the data into the import record formats.

As an additional reference source, use the concerned data analysis user guide to provide a basic understanding of the data and how each piece of data relates to the overall system. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter.

Prerequisites

Before attempting to set up any records, study the concerned data analysis user guide. It will help you to understand what comprises switchbays, network components, etc. .

Most, but not all, of the information needed to define the system is included within this chapter. Certain data, especially that which deals with configuring the system, is enterable only through SDM, job files (i.e., BQ jobs) or as system parameters. This type of information must be configured into the system before the import data is imported into the system. Some examples of this type of data are: block types, element types, system sizing parameters, formulae used in calculations, characteristic curves used to convert raw data to engineering units, etc.

A complete understanding of the concerned data analysis user guide and completion of the SINAUT **Spectrum** SDM class will help you to understand the information that needs to be entered. Table 2 below shows a list of applicable documents:

TABLE 2

Applicable documents

Document ID	Title
U-SC20	Base Applications Data Analysis
U-PA20	Power Applications Data Analysis ^{a)}
U-NA20	Network Applications Data Analysis ^{b)}
U-SD09	SDM Network Applications Reference ^{b)}
U-SD02	SDM Interface Maintenance ^{c)}

- a) Note: This document might not be available since it belongs to the Power Applications package which might not be part of your scope of supply.
- b) Note: This document might not be available since it belongs to the Network Applications package which might not be part of your scope of supply.
- c) U-SD02 contains information on the involved database tables for data import, source database tables and SDM control tables.

Data Collection Guidelines

This section provides guidelines for collecting and organizing the source data required by the SINAUT **Spectrum** Applications. These guidelines include setting up the source data import records to describe the various entities of the system, e.g., topology of the system, switchbays and network components, application data, etc. .

Switchbay and Network Component Definition

The *Operational Database (ODB)* portion of the SINAUT **Spectrum** database, which contains information describing the power system network, consists of *Blocks* (substations, voltage levels, switchbays, network components), *Elements* (circuit breakers, disconnects, measuring points, etc.), and associated technological data units, the so-called *Infos* (statuses, analog values, quality codes, etc.) that these elements carry. There is a 3-level hierarchy associated with the blocks (B1, B2, B3).

Various possibilities of the block structure are shown below as examples:

- B1 / .. / .. ---> e.g., substation, line
- B1/ B2/.. ---> e.g., voltage level
- B1/B2/B3 ---> e.g., network components, switchbays

The switchbays and network components contain elements. The B1/B2/B3 triplet, along with the element, provides a unique identification for ODB data records. Finally, each element contains various technological data units (infos). This 5-level hierarchy is used to identify information uniquely in the system.

B1/B2/B3/Element/Info

This combination is referred to as the *Technological Address (TA)*. When processed by the SDM system, it becomes a technological identifier, which is used to identify the information uniquely in the database.

 **Note:**

Detailed information on the technological address and other basic concepts of the power system data model can be obtained from the document U-SC20, Base Applications Data Analysis. Descriptions of application-specific data analysis methods can be obtained from the concerned data analysis user guide. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter

The first step of data preparation consists of identifying the blocks in the system. In general, the B1-record is used to identify the substations and lines in the system. The B2-record defines the various voltage levels within each station or line. The B3-record contains the name, block type, topology type, etc. of the switchbay or the network component. The block

Base Applications Import Data Definitions

type and the topology type of the switchbay or network component (on the B3-record), are best determined from examination of single-line diagrams. The SDM will, based on the topology type and block type found on the B3 record, create a skeletal set of Element records (refer to the section 'Auto Creation of Element and Info Records' on page 298 in this chapter).

After the definition of the blocks, the elements within the switchbays and network components are defined with Element records. The element type chosen for each element determines what data units are associated with the element and how that information is processed. The SDM will, based on the element name and element type found on the Element record, create a skeletal set of Info records (refer to the section 'Auto Creation of Element and Info Records' below).

This sequence of data preparation is repeated for all substations, lines, voltage levels, switchbays and network components in your system. After switchbays and network components are defined, the SDM order **Referenc** can be used to define the connectivity between B3-blocks. This connection information and the topology type of each block is needed by Supervisory Control and Network Coloring functions. Multiple reference records will have to be created. The number of records depends on which type of references are being defined/satisfied. If the references are from the switchbay to network components, the topology type of the switchbay will determine how many reference records are required. If the references are from a non-busbar network component to a busbar, the type of network component determines how many references are needed.

☞ **Note:**

Use the concerned data analysis user guide as a source for finding standard names and data. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter

Auto Creation of Element and Info Records

When a B3-record is inserted into the database, its block type and topology type are used to determine a minimum number of elements necessary to complete the definition of that B3-block. These elements are automatically inserted into the element table in the database with a -null- in the element type column.

☞ **Note:**

You must correct the element type name for these elements prior to doing a job transfer. If import is running and the element is encountered in the import data definition (IDD) file, the attributes are updated to match whatever is on the IDD Element record.

When an element is inserted into the database, its element name and its element type are used to determine a minimum number of data units (infos) necessary to complete the definition of that Element. These data units are automatically inserted into the appropriate database tables (analog value, digital, accumulator or application data).

☞ **Note:**

Base Applications Import Data Definitions

You must update the other attributes of the info prior to job transfer. If import is running and the data unit is encountered in the IDD file, the attributes are updated to match whatever is on the IDD info record.

Application Data

The application data Import Data Definition (IDD) is configured in the Oracle tables `IDDUG_RECORD` and `IDDUG_FIELD`. These tables have associated filltab files located in:

`$SPEC PATH/src/code/im_sdb/schema/prime/filltab/iddug_record.ad` and
`$SPEC PATH/src/code/im_sdb/schema/prime/filltab/zz_iddug_field.ad`

The start and end constants for the application data import data definition are described in `$SPEC PATH/src/code/im_sdb/include/ImIdlugAD.h`.

This chapter also presents the data import record definitions for application data, application data characteristic groups and schedules. These data is arranged hierarchically according to its function. For a complete description of the presentation format, see section 'Data Collection Guidelines' on page 297 and section 'General Format Guidelines' on page 299.

IDD descriptions are required for those application data stored in the following source database tables:

- `AD_INFO`
- `AD_REFERENCE`
- `SCHEDULE`
- `AD_CALC_INFO`
- `AD_CHARAC_GROUP`
- `AD_CHARAC`
- `AD_CHARAC_SEGMENT`

General Format Guidelines

All source data for import consists of text records that reside in files. This data may be created by whatever means is most readily available and convenient to you, including batch generation from data stored in another computer system, export from the SINAUT **Spec-trum** source database, and/or interactive editing.

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Throughout this document, the term "record" is defined as a string of characters subdivided into data item fields that are delimited by some record separator. Each field is used for the entry of data values for specific attributes of power system equipment and other entities.

☞ **Note:**

Control codes such as TAB are not permitted in import data as delimiters or for any other purpose. The only exceptions are for the normal end-of-line codes such as carriage return and line feed. The presence of any other control codes will cause unpredictable results.

The use of unusual printing characters in user data should be approved during project definition. This is to make sure they will not cause system problems and can be properly displayed and printed.

The record format for import has fields in fixed-column positions. A single blank column is allocated between fields that is examined by the import process for the presence of any non-blank character, thus indicating shifted or misplaced data from adjacent fields. If a field is labeled as reserved, it should be left blank. All data records consist of the following four general areas:

- | | |
|---------------|--|
| Columns 1-7 | Record Type |
| Column 8 | Record Variation Field (<blank> for insert/update) |
| Columns 9-80 | Data Fields |
| Columns 82-86 | Record Identifier (optional) |

This format enhances portability, permits viewing and editing on most CRTs, and permits identification of source records in error messages. If the record identifier field of a record is blank, a default sequential record number is supplied by the import process.

Any record with an asterisk ("*") or blank in column 1 is treated as a comment. Remaining columns of the comment record may contain any sequence of printing characters including the delimiter character and/or blank spaces. Comment records may be freely interspersed in any input data. Comments are generally ignored by the import process except in some cases where they are copied to reports.

Each different record type is identified by a unique code that begins in the first character position of the record. When the data does not fit on a single record, a second record type exists to handle the additional data. The record type name for these overflow records is distinguished from the original record by adding an alpha character at the end of the record type name. This sequence character identifies continuation subtypes within a basic type. Within the records for a given piece of equipment, the records must appear in sequence-character order (for example, B3 followed by B3A, etc.).

The record type field must be filled out for every record. If an actual record type does not match one of the known types, an error message is issued and the content of the record is ignored.

Base Applications Import Data Definitions

The record defaults to an update/insert. This means, records with a technological identifier already available in the database are updated, records with a new technological identifier are inserted into the database. But it can also be a deletion or just used as a foreign key reference for the succeeding records. Valid values for the record variation field are:

- D - This record and all subordinate records will be deleted from the database.
- X - This record is a “placeholder” and is used to provide identifying information for lower level records. No processing will occur for this record, but the hierarchical key information, which is needed to identify lower level records, will be collected by the import program and saved for future use. For example, the user must provide a placeholder B1 record and a placeholder B2 record in order to delete a B3 record, since the import program must know the B3's whole hierarchical identity before it can execute a delete.
- R - The previous key for this record is replaced by the actual one in the database. No other data than the affected key is processed for this record.

Example:

B1	XASH	* Set 'ASH' as key for SCADA B1
B2	X230 kV	* Set '230 kV' as key for SCADA B2
B3	XF1	* Set 'F1' as key for SCADA B3
B3	RT1	* Rename the last SCADA B3 ('F1') to 'T1'

The replace is possible for following IDDUG records:
'B1', 'B2', 'B3', 'TDEP', 'TCR', 'TCB', 'TCC', 'TLRU'

- Blank - This record will be imported into the database; new records will be inserted and existing records will be updated.

Technological Identifier

SINAUT **Spectrum** employs a 5-level technological address (TA) to identify all network equipment. Each part of the TA consists of a name of up to 8 characters. The 5 parts of the TA are:

- B1 (Block of hierarchical level 1)
B1 names are either the substation name or the literal value ‘Line’. Substation names are chosen by the user with each name being unique in the network.
- B2 (Block of hierarchical level 2)
B2 names are the voltage level name. Voltage level names are chosen by the user with each name requiring uniqueness only within its substation.
- B3 (Block of hierarchical level 3)
B3 names are the network equipment or component names. Equipment names are chosen by the user with each name requiring uniqueness only within its voltage level.
- Element

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Element names are selected from predefined lists. Different equipment types may have different predefined lists.

- **Information (Info)**

Info names are selected from predefined lists. Different combinations of equipment types and element types may have different predefined lists.

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 **Note:**

Detailed information on the technological address and other basic concepts of the power system data model can be obtained from the document U-SC20, Base Applications Data Analysis.

Data Ordering Rules

The power system data must be organized in hierarchical structures. One of these structures, SCADA, is based along geographical lines of station and voltage level. The SCADA hierarchy also shows the interrelationship between the pieces of data. The other structures are non-geographical and simply rely on their hierarchy to show the interrelationship of data. Other hierarchical structures are possible as well.

Several distinct hierarchical structures are available:

- B1/B2/B3/Element/Info for SCADA data, application data and Multisite data
- Connectivity data
- Application data characteristic group data
- Schedule data

SCADA Data (B1/B2/B3/Element/Info) Hierarchy

The data record order for SCADA data (see figure 118 on page 305) must observe the following rules:

1. A record for each B1 (e.g. substation) in the system.
2. Within a B1, a record for description of Multisite data.
3. Within a B1, a record for every element of that B1.
4. Within each element for that B1, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records
 - Digital records
 - Calc Operand records
 - Application data info records
 - Additional information records
 - Application data calculation information records

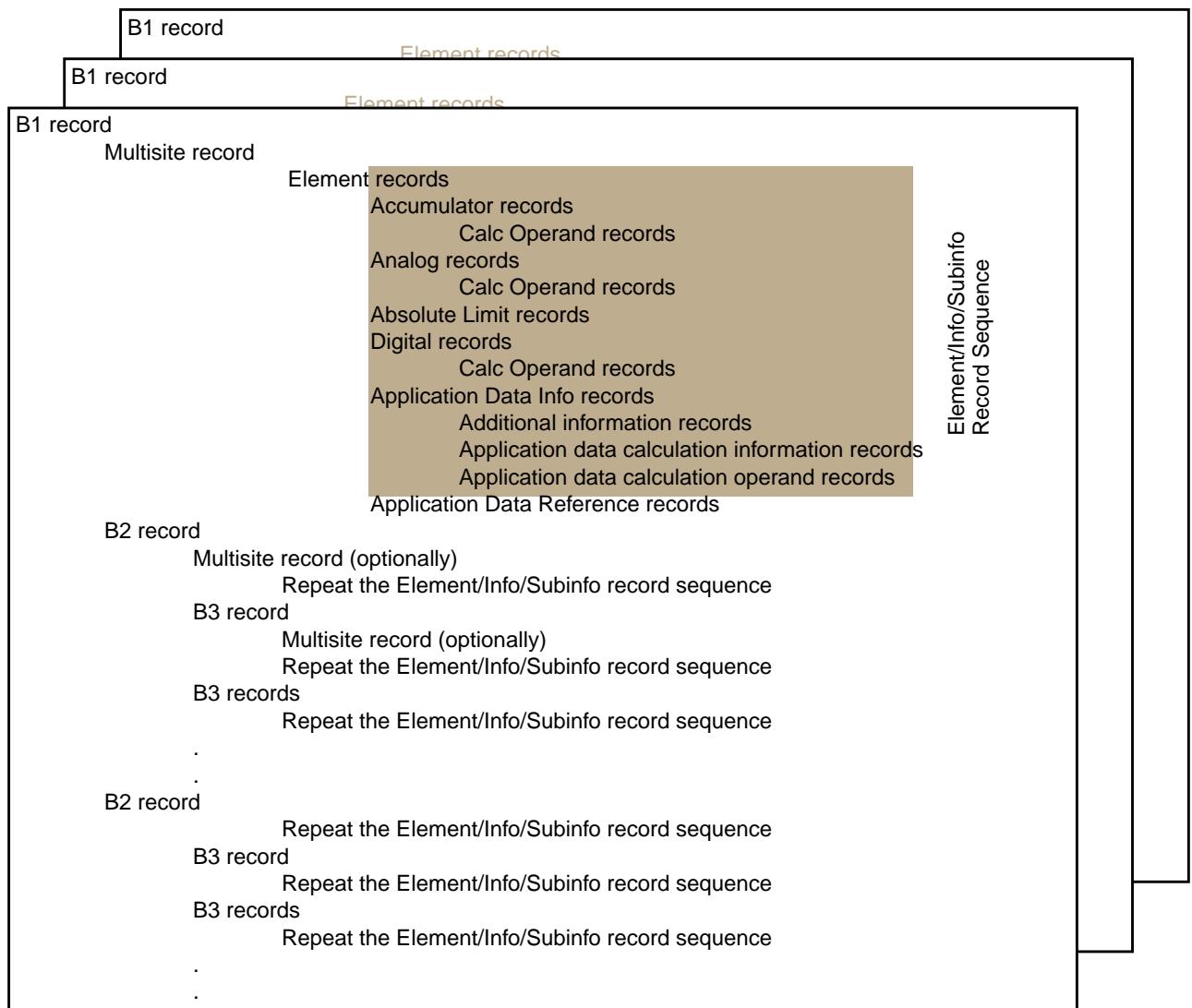
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- Application data calculation operand records
 - Application data reference records
5. A record for each B2 (e.g. voltage level) in a B1 must follow the B1 record group. B2 is the basic subdivision of a B1. For example, all equipment in a substation (B1), operating at a particular nominal voltage, belongs to one voltage level (B2). A substation may include equipment operating at one or more nominal voltages.
 6. Within a B2, a record for description of Multisite data (optionally).
 7. Within each B2 at a B1, a record for every element of that B2.
 8. Within each element for that B2, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records
 - Digital records
 - Calc Operand records
 - Application data info records
 - Additional information records
 - Application data calculation information records
 - Application data calculation operand records
 - Application data reference records
 9. A record for each B3 (e.g. switchbay) in a B2 must follow the B2 record group. B3 is the basic subdivision of a B2. For example, all switchbays and network components belonging to a voltage level of a station are described as B3.
 10. Within a B3, a record for description of Multisite data (optionally).
 11. Within a B3, a record for every element of that B3.
 12. Within an element, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records

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- Digital records
 - Calc Operand records
 - Application data info records
 - Additional information records
 - Application data calculation information records
 - Application data calculation operand records
 - Application data reference records

FIGURE 118 B1/B2/B3/Element/Info Hierarchy



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DMS SCADA Data (B1/B2/B3/Element/Info) Hierarchy

The DMS definition data may be represented by using the SCADA records. The data record order for DMS SCADA data (see Figure 119) must observe the following rules:

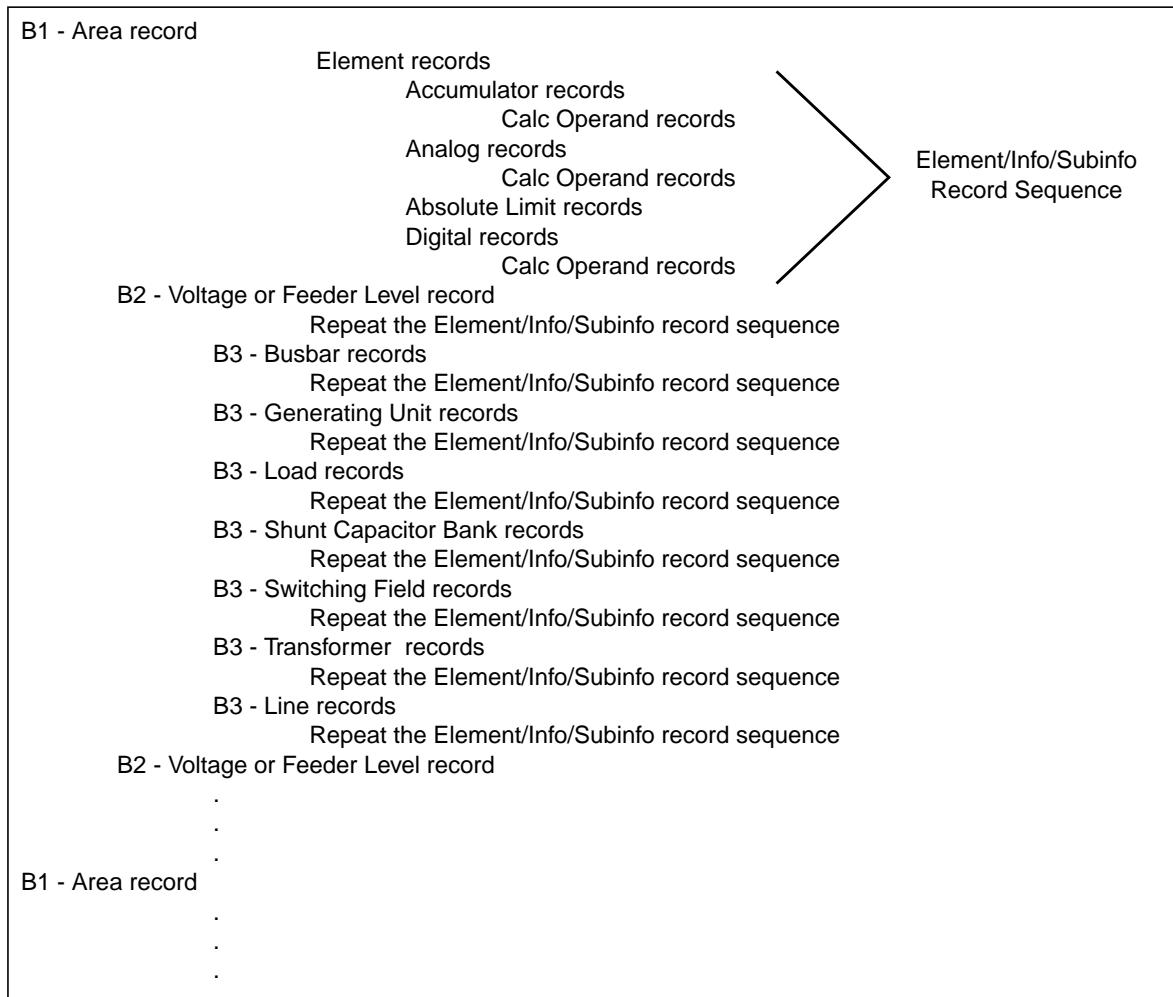
1. All DMS Block records must have the DMS-relevant flag set to True. The DMS applications only run with DMS-relevant data.
2. EMS/DMS boundary busbars would be delineated by having both the NA-relevant and DNA-relevant flags set.
3. A record for each DMS Area (B1) in the system.
4. Within a DMS Area, a record for every element of that area.
5. Within each element for that Area, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records
6. A record for each voltage or feeder level (B2) in a DMS area must follow the area record group. A voltage level is the basic subdivision of a station. All equipment in a station, operating at a particular nominal voltage, belongs to one voltage level. A station may include equipment operating at one or more nominal voltages.
7. Within each voltage or feeder level at in an area, a record for every element of that area.
8. Within each element for that area and voltage or feeder level, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records
9. Within a voltage or feeder level at an area, a record for each equipment (B3) may be described as follows:
 - Busbar records
 - Generating Unit records
 - Load records
 - Measurement Block records
 - Shunt Capacitor Bank records
 - Switching Field records
 - Transformer records
 - Line records
10. Within an equipment, a record for every element of that equipment

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11. Within an element, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records

FIGURE 119

DMS SCADA (B1/B2/B3/Element/Info) Hierarchy



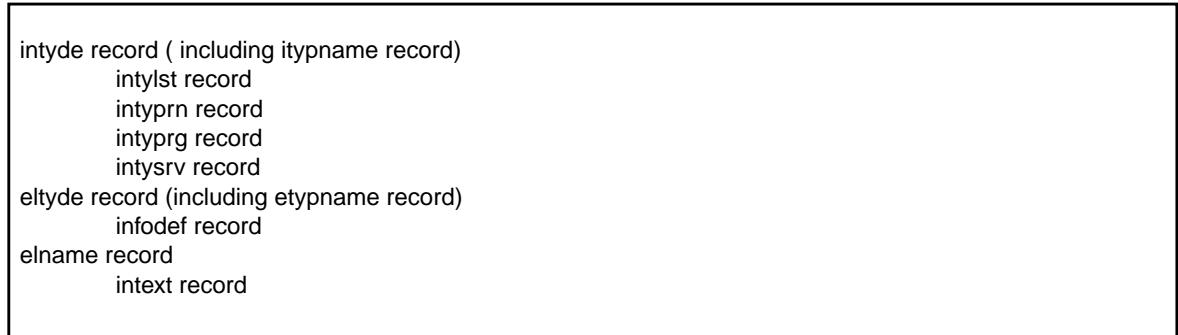
Typification Data Hierarchy

Typification records must be inserted before the B1 record.

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FIGURE 120

Typification Data Hierarchy

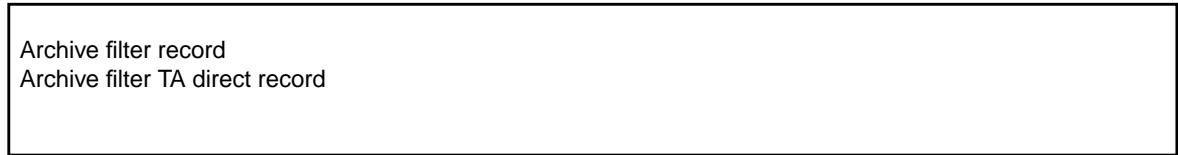


Archive Filter Hierarchy

The archive filter records must be inserted after the B1 records.

FIGURE 121

Archive Filter Hierarchy



Connectivity Hierarchy

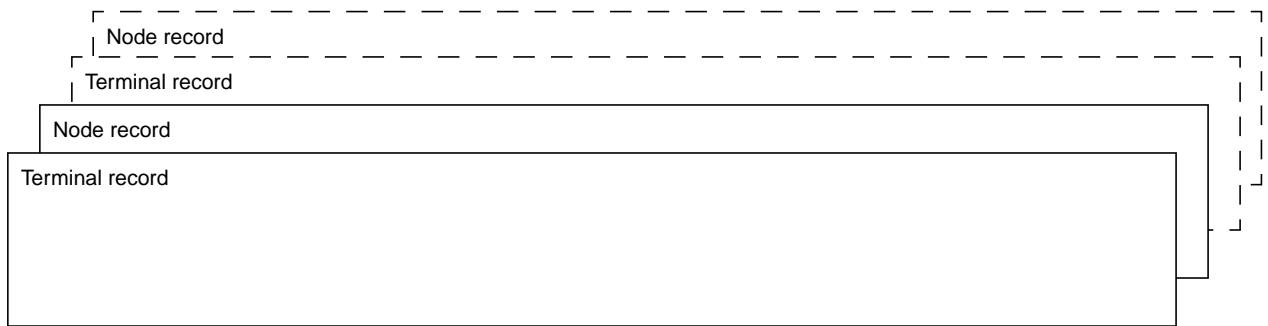
The data record ordering for connection records must observe the following data ordering rules (see figure 122 on page 309):

1. A record pair for each connected terminal in the system.
The record pair must consist of:
 - terminal record
 - accompanying node record.

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FIGURE 122

Connectivity Hierarchy



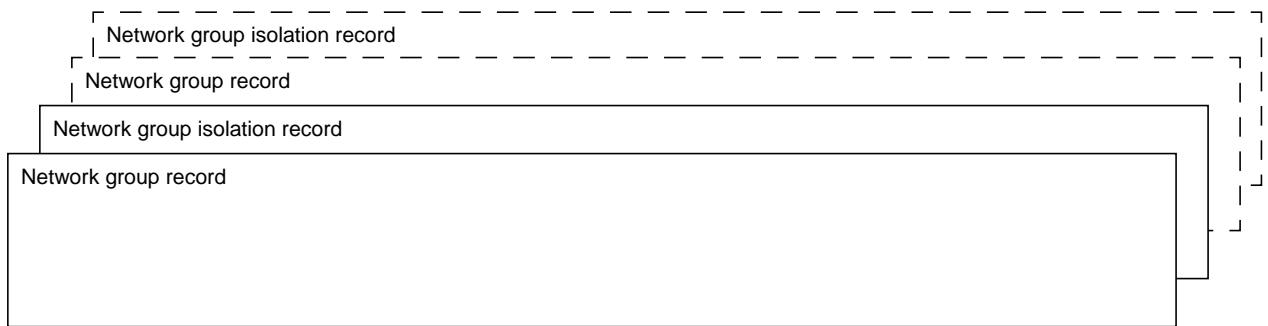
Network Group Hierarchy

The data record ordering for network group records must observe the following data ordering rules (see figure 123 on page 309):

1. A record for each network group in the system.
2. A record for each network group isolating element in the system.

FIGURE 123

Network Group Hierarchy



Decision Table Hierarchy

The data record order for DT hierarchy must observe the following rules:

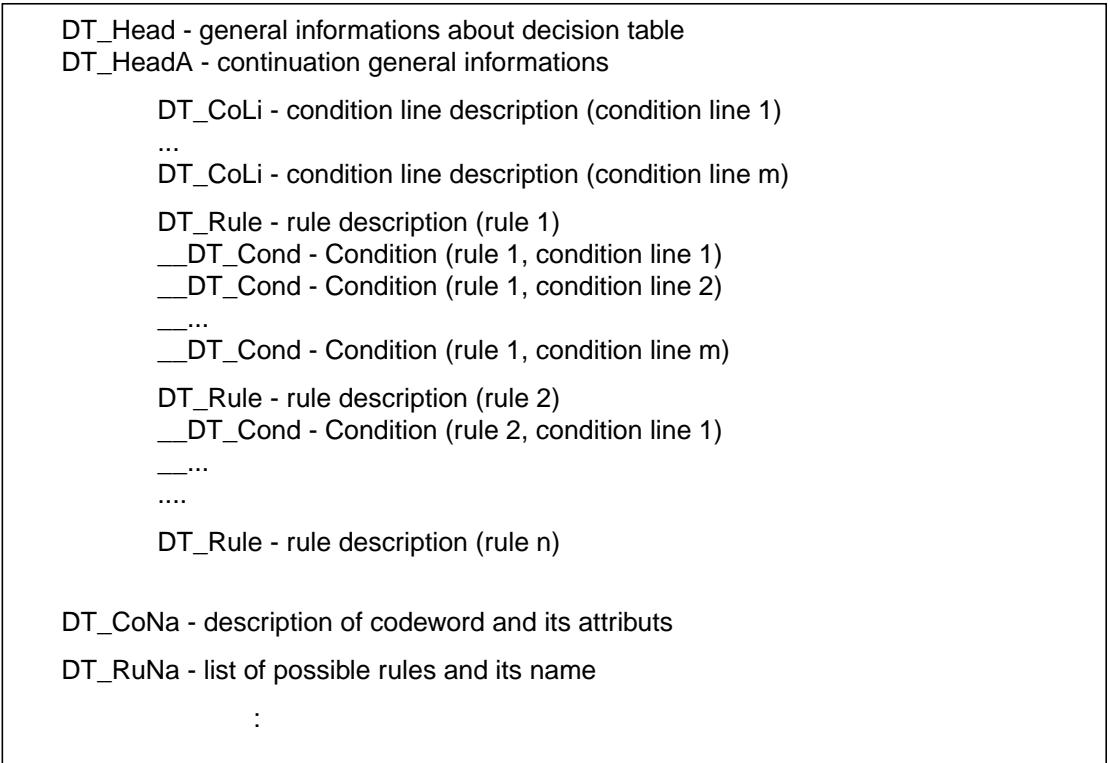
1. A record DT_Head for each DT in the system will be described
DT_HeadA is the continuation of DT_Head.
2. The condition lines will be described in DT_CoLi. All conditionlines follow behind DT_Head.
3. The rules described in DT_Rule follow after the descriptions DT_CoLi.

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4. DT_Cond contains the description up to five single conditions (line,rule)

FIGURE 124

Decision Table Hierarchy



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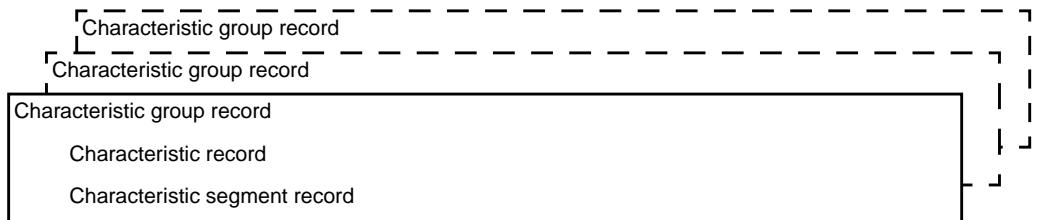
Application Data Characteristic Groups Hierarchy

The data record ordering for application data characteristic groups records must observe the following data ordering rules (see figure 125 on page 311):

1. A record for each application data characteristic group in the system.
2. Within an application data characteristic group record, a record for every application data characteristic of that application data characteristic group.
3. Within an application data characteristic record, a record for every segment of that application data characteristic.

FIGURE 125

Characteristic Groups Hierarchy



Schedule Hierarchy

The data record ordering for schedule records must observe the following data ordering rules:

1. A record for each schedule in the system.

Attribute Groups Hierarchy

The data record ordering for attribute group records must observe the following data ordering rules (see figure 126 on page 311):

1. A record for each attribute group in the system.
2. Within an attribute group record, a record for each attribute alternative of that attribute group.

FIGURE 126

Attribute Groups Hierarchy

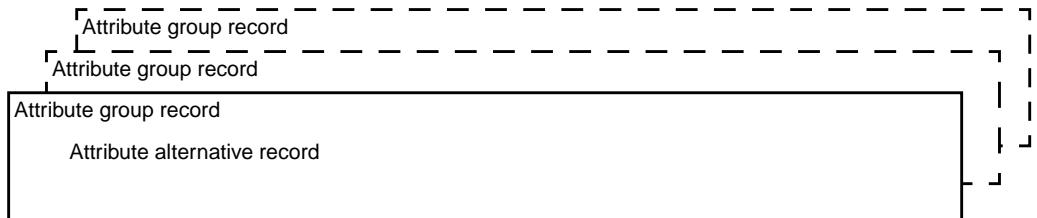


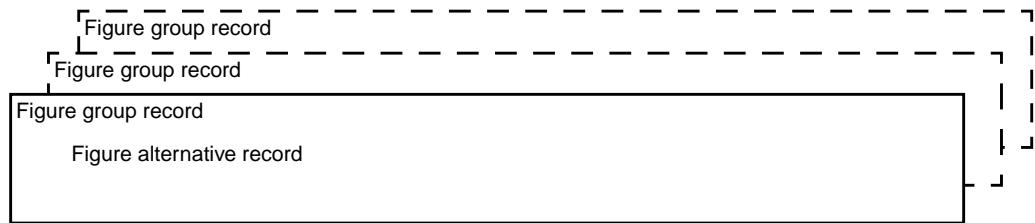
Figure Groups Hierarchy

The data record ordering for figure group records must observe the following data ordering rules (see figure 127 on page 312):

1. A record for each figure group in the system.
2. Within a figure group record, a record for each figure alternative of that figure group.

FIGURE 127

Figure Groups Hierarchy



Record Description Format

The elements of the subsequent data import record definitions (refer to section 'Data Import Record Attribute Definitions' on page 318 in this chapter) have a structure that aids the user in gathering the appropriate data for import purposes and/or interactive editing.

The format includes the following information:

- <Name of the Entity>
- <Name of the Record>
- <Attribute Name>
 - <Meta-Attributes>

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TABLE 3 Meta-Attributes

		Content
Meta-Attributes	Required	Yes/No/Conditional
	Data Type/Size	Example – character (8)
	Columns	Example – 37-44
	Valid Values	<optional>
	Default Value	<optional>
	Dependencies	<optional>
	Description	Textual description of the attribute
	Field for SDM entry	<optional>

Legend for Record Description Format

Data attributes are described in terms of the following meta-attributes:

Name of Entity: This names the data model entity described by the following record or record types. Text related to the entity may be inserted here. The text may describe the entity and various considerations related to it.

Name of Record: The record identifier followed by the data model entity name. Text related to this specific record may be inserted here. The text may describe the record and various considerations related to it. More than one record type may be used to describe an entity.

Attribute Name: The name of the attribute.

Meta-attributes:

■ Required

Indicates whether the user is required to enter information for this attribute:

- “Yes” indicates an entry must be made in all cases.
- “No” indicates an entry is not required (i.e., optional). The field may be left blank since a default will be provided.
- “Conditional” indicates that an entry is conditionally required depending on circumstances described in one or more of the meta-attributes following, usually “Dependencies”.

■ **Data Type/Size**

Describes the type of data allowed, i.e., Character, Integer, Float, Hexadecimal, etc., and the maximum length of the entry. These data types are described in greater detail in the next section.

■ **Columns**

Defines the starting and ending column positions of the field in the record.

■ **Valid Values**

Specifies a range or list of valid values. A numeric range is always inclusive. Symbolic (name) references are to the actual values entered by the user in other fields of the same or another record. Range limits are defined for most numeric fields, but where impossible to define, the default value should be used as a guide.

■ **Default Value**

Specifies the default value which will be used if the attribute is not required (optional) and the field is left blank. For more information refer to the section 'General Data Entry Rules' on page 314 in this document.

■ **Dependencies**

Describes relationships between attributes.

■ **Description**

A short textual description of the attribute.

■ **Field for SDM entry**

If the respective attribute can be entered via SDM, this meta-attribute identifies the related SDM form and the location of the concerned input field.

General Data Entry Rules

The following general data entry rules apply for all data types:

1. If a non-blank value is entered in a field, then that entered value is imported into the relational database.
2. If no value is entered in a field (the field is left blank) and an entry is not required in the field (entry is optional), then the indicated default value is substituted into the field and consequently imported into the relational database. Default values are defined for each optional field.
3. If no value is entered in a field (the field is left blank) but an entry is required, then an error message is issued and the field is left blank resulting in a null value being imported into the relational database.

Meta-Attribute “Data Type/Size”

This meta-attribute declares the data type of the field, i.e., Character, Integer, Float, etc. and the maximum length of the entry enclosed in parentheses. Integer and Float may be collectively referred to as Numeric.

Character (w)

This defines a character field which can contain any printing characters in any order unless otherwise stated. Lists of valid entries are defined for some character fields.

Embedded blank spaces are allowed and are included and counted in the data. For example, the names “ABC1”, “ABC 1”, and “A B C 1” are distinct from one another and are not equivalent. Although embedded blanks are preserved, data items distinguished by the number of consecutive embedded blanks is discouraged. The example of “ABC 1” versus “ABC 1” illustrates the case.

Leading and trailing blank spaces are discarded and the remaining entered data left registered when imported into the database. The use of character data items having leading blanks is strongly discouraged since such practice can lead to uncertainty and confusion.

Upper and lower case letters are also distinct from one another, i.e., “A” is different from “a”, “B” from “b”, etc. For example, the names “ABC”, “Abc”, and “abc” are treated as three different names which are not equivalent.

☞ **Note:**

Please check with Siemens before using lower case letters or special printing characters to make sure they won't cause system problems and can be properly displayed and printed.

The above distinctions are important when a name entered in a record is intended to refer to the same name in some other record.

The value of (w) indicates the total field width (maximum number of columns).

Integer (w)

This defines an integer field which may contain any digits 0 through 9 preceded by + or -. The plus sign is allowed but is not significant as values are assumed to be positive unless a minus sign is present. Entries should, but need not, be right aligned in the field. Integer data may not contain a decimal point. All blank spaces, whether leading, trailing, or embedded, are ignored. Range limits are defined for all fields.

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The value of (w) indicates the field width (maximum number of columns). Valid integer data is not subject to truncation or loss of accuracy. The operational range of integer values generally extends over a range of approximately -2,000,000,000 to +2,000,000,000 although either the size of the field or the allowed enterable range typically places a more restricted limit on enterable values.

Float (w.d)

This defines a floating point or fractional number field which may contain a numeric value consisting of a string of any digits 0 through 9 preceded by + or – and somewhere a decimal point. The plus sign is allowed but is not significant as values are assumed to be positive unless a minus sign is present. Entries using exponential or scientific notation (e.g., 12 • 3E + 4) are not supported. Entries should be right aligned in the field. All blank spaces, whether leading, trailing, or embedded, are ignored. Range limits are defined for most fields, but where impossible to define, the default value should be used as a guide.

The value of (w) indicates the field width (maximum number of columns). Floating point data is typically subject to an operational limit of approximately seven significant digits. The absolute internal range of floating point values typically extends from 1.2E-38 to 3.4E+38 although either the field size or valid range always places a more restricted limit on enterable values.

The value of (d) when present suggests the number of digits to the right of the decimal which are significant within the context of the related applications. It is a suggestion, not a requirement.

Individual floating point data items displayed to the user may be subject to round-off or truncation due to limited display space or to formatting decisions when building displays. Data entered without an explicit decimal point is read as a whole number. No decimal point position is assumed as would be the case were this interpreted as a FORTRAN F.w.d specification. To avoid uncertainty or confusion, an explicit decimal point in the data is expected. Example entries in a field defined as Float (8) or Float (8,3) would be interpreted as follows:

Entry	Interpreted as
1234.567	1234.567
1234567	1234567.
1.234567	1.234567
45.67	45.67
+0.00056	0.00056
(blank field)	0.0
-12.	-12.0
12	12.0

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12	12.0
00001200	1200.0
12.	12.0
-555	-555.0
.1	0.1

Data Import Record Attribute Definitions

This chapter presents the source data import record attribute definitions for Base Applications. The data is arranged hierarchically according to its function. For a complete description of the presentation format, see section 'Data Collection Guidelines' on page 297pp and section 'General Format Guidelines' on page 299pp.

B1/B2/B3/Element/Info Hierarchy

B1 Block Data Record

The B1 block name can be used to form the B1 part of the 5-level Technological Address. The B1 record can be used to supply B1 data that logically does not fit into one of the standard hierarchies.

Record Type B1 – B1 Block Data

B1 Block Name

Required:	Yes	
Data Type and Size:	Character (8)	
Columns:	9 - 16	
Dependencies:	Must be unique among all B1 block names within the system.	
Description:	Name of the B1 block.	
Field for SDM entry:	Form:	B1 Form
	Component:	List of B1-Blocks
	Field:	B1-Name

Record Type B1 – B1 Block Data (Continued)

Block Type

Required: No
Data Type and Size: Character (8)
Columns: 18 - 25
Valid Values: For information on the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: The block type corresponding to this B1 block.

NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry: Form: B1 Form
Component: List of B1-Blocks
Field: B1-Type

Logbook Text

Required: No
Data Type and Size: Character (7 = B1TextLen)
Columns: 27 - 33
Valid Values: The number of characters used is based on how the system is configured. Refer to the *Base Applications Data Analysis* user guide for additional information about text line structures.
Default Value: B1 Block Name.
Description: In certain situations, B1 block name is used in textual messages and sometimes the Logbook Text (also called B1 block text) is used.
Field for SDM entry: Form: B1 Form
Component: List of B1-Blocks
Field: B1-Text

Record Type B1 – B1 Block Data (Continued)

Technological Area For Signalling

Required:	No						
Data Type and Size:	Integer (2)						
Columns:	47 - 49						
Valid Values:	1 - 16 (=cMaxTear)						
Default Value:	1						
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>B1 Form</td></tr><tr><td>Component:</td><td>List of B1-Blocks</td></tr><tr><td>Field:</td><td>Tec-Area</td></tr></tbody></table>	Form:	B1 Form	Component:	List of B1-Blocks	Field:	Tec-Area
Form:	B1 Form						
Component:	List of B1-Blocks						
Field:	Tec-Area						

Global Decision Table

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	51 - 53						
Valid Values:	Decision table number, which must have been previously defined using SDM order NcGaData.						
Description:	Decision table number for global area interlocks which extend beyond the defined network element group.						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>B1 Form</td></tr><tr><td>Component:</td><td>List of B1-Blocks</td></tr><tr><td>Field:</td><td>NC Decision Table Global</td></tr></tbody></table>	Form:	B1 Form	Component:	List of B1-Blocks	Field:	NC Decision Table Global
Form:	B1 Form						
Component:	List of B1-Blocks						
Field:	NC Decision Table Global						

Record Type B1 – B1 Block Data (Continued)

Local Decision Table

Required:	No
Data Type and Size:	Integer (3)
Columns:	55 - 57
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.
Description:	Decision table number for local area interlocks within a B1 block. Normally used for B3 blocks.
Field for SDM entry:	Form: B1 Form Component: List of B1-Blocks Field: NC Decision Table Local

DMS Relevant Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	70
Valid Values:	Y - Yes N - No
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	If block is to be recognized by the DMS applications, this field should be set to Y.

B2 Block Data Record

The B2 block name can be used to form the B2 part of the 5-level Technological Address. The B2 record can be used to supply B2 data that logically does not fit into one of the standard hierarchies.

Record Type B2 – B2 Block Data

B2 Block Name

Required:	Yes						
Data Type and Size:	Character (8)						
Columns:	9 - 16						
Dependencies:	Must be unique among all B2 block names within its B1 block.						
Description:	Name of the B2 block.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Name</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Name
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Name						

Block Type

Required:	Yes
Data Type and Size:	Character (8)
Columns:	18 - 25
Valid Values:	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	The block type corresponding to this B2 block.

NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Type</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Type
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Type						

Record Type B2 – B2 Block Data (Continued)

Logbook Text

Required:	No						
Data Type and Size:	Character (3 = B2TextLen)						
Columns:	27 - 29						
Valid Values:	The number of characters used is based on how the system is configured. Refer to the <i>Base Applications Data Analysis</i> user guide for additional information about text line structure.						
Default Value:	B2 Block Name.						
Description:	In certain situations, the B2 block name is used in textual messages and sometimes the Logbook Text (also called B2 block text) is used.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Text</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Text
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Text						

Technological Area For Signalling

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	47 - 49						
Valid Values:	1 - 16 (= cMaxTear)						
Dependencies:	Enter data in this field only if its value differs from the Technological Area For Signalling (TAS) on its parent (B1) record. Leaving this field blank (null) signifies that the value is actually inherited from its parent.						
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>Tec-Area</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	Tec-Area
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	Tec-Area						

Record Type B2 – B2 Block Data (Continued)

Global Decision Table

Required:	No
Data Type and Size:	Integer (3)
Columns:	51 - 53
Valid Values:	Decision table number, which must have been previously defined using SDM order NcGaData.
Description:	Decision table number for global area interlocks which extend beyond the defined network element group.
Field for SDM entry:	Form: B2 Form Component: List of B2-Blocks Field: NC Decision Table Global

Local Decision Table

Required:	No
Data Type and Size:	Integer (3)
Columns:	55 - 57
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.
Description:	Decision table number for local area interlocks within a B2 block. Normally used for network element groups (B3 block).
Field for SDM entry:	Form: B2 Form Component: List of B2-Blocks Field: NC Decision Table Local

DMS Relevant Flag

Required:	No
Data Type and Size:	Character (1)
Columns:	70
Valid Values:	Y - Yes N - No
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	If block is to be recognized by the DMS applications, this field should be set to Y.

B3 Block Data Record

The B3 block name can be used to form the B3 part of the 5-level Technological Address. The B3 record can be used to supply B3 data that logically does not fit into one of the standard hierarchies.

Record Type B3 – B3 Block Data

B3 Block Name

Required:	Yes						
Data Type and Size:	Character (8)						
Columns:	9 - 16						
Dependencies:	The name must be unique among all B3 names within its B2 block.						
Description:	Name of the B3 block.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>B3 Name</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	B3 Name
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	B3 Name						

Block Type

Required:	Yes
Data Type and Size:	Character (8)
Columns:	18 - 25
	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	The block type corresponding to this B3 block.

NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>B3 Type</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	B3 Type
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	B3 Type						

Record Type B3 – B3 Block Data (Continued)

Logbook Text

Required: No
Data Type and Size: Character (9 = B3TextLen))
Columns: 27 - 35
Valid Values: The number of characters used is based on how the system is parameterized. Refer to the *Base Applications Data Analysis* user guide for additional information about text line structure.
Default Value: B3 Block Name.
Description: In certain situations, the B3 block name is used in textual messages and sometimes the Logbook Text (also called B3 block text) is used.
Field for SDM entry: Form: B3 Form
Component: List of B3-Blocks
Field: B3 Text

Global Decision Table

Required: No
Data Type and Size: Integer (3)
Columns: 48 - 50
Valid Values: Decision table number, which must have been previously defined using SDM order NcGaData.
Description: Decision table number for global area interlocks which extend beyond the defined block.
Field for SDM entry: Form: B3 Form
Component: List of B3-Blocks
Field: NC Decision Table Global

Record Type B3 – B3 Block Data (Continued)

Local Decision Table

Required:	No
Data Type and Size:	Integer (3)
Columns:	52 - 54
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.
Description:	Decision table number for local area interlocks within a B3 block.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: NC Decision Table Local

Technological Area For Signalling

Required:	Conditional
Data Type and Size:	Integer (2)
Columns:	73- 75
Valid Values:	1 - 16
Dependencies:	Enter data in this field only if its value differs from the Technological Area For Signalling (TAS) on its parent (B2) record. Leaving this field blank (null) signifies that the value is actually inherited from its parent.
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: Tec Area

Topology Type

Required:	Required if B3 is Switchbay, else must be 0
Data Type and Size:	Integer
Columns:	65 - 72
Valid Values:	0 - 2147483647
Dependencies:	The number of the topology type must be identical to the block nimset number.
Description:	Number of the associated topology type. Only relevant for switchbays.
Field for SDM entry:	Cannot be entered - only internal used.

Record Type B3 – B3 Block Data (Continued)

NA - relevant Flag

Required:	Yes	
Data Type and Size:	Character	
Columns:	77 - 77	
Valid Values:	Y/N	
Dependencies:		
Description:	This flag decides whether the B3 block is used for network analysis calculations or not.	
Field for SDM entry:	Form:	B3 Form
	Component:	Y/N
	Field:	NA relevant

Record Type B3B – B3 Block Data

B3 Block Name

Required: No
Data Type and Size: Character (8)
Columns: 9 - 16
Valid Values: B3 Block Name on the parent *B3* record.
Default Value: B3 Block Name on the parent *B3* record.
Description: Name of the B3 Block.
Field for SDM entry:

DMS Relevant Flag

Required: No
Data Type and Size: Character(1)
Columns: 18
Valid Values: Y - Yes
N - No
Default Value: N
Dependencies: This field is only relevant when defining DMS data.
Description: If block is to be recognized by the DMS applications, this field should be set to Y.
Field for SDM entry: Form: B3 Form
Component: List of B3-Blocks
Field: DMS rel.

Record Type B3B – B3 Block Data (Continued)

DMS Boundary Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	20
Valid Values:	I = InSrBb F = FdHdBb B = InFdBb N = NormBb
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	This value is used by the DMS applications to tell whether a boundary busbar is reached and which part of the busbar should be included in the calculations.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: Bnd Flg

Element Data Record

The Element Name is used to form the element part of the 5-level Technological Address

Record Type ELEM – Element Data

Element Name

Required: Yes

Data Type and Size: Character (8)

Columns: 9 - 16

The following is an example of possible values. For the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.

Examples: Block, B1 Spec, P, Q, Phi

Description: Name of the element.

Field for SDM entry:
Form: Element Form
Component: List of Elements
Field: Element Name

Record Type ELEM – Element Data (Continued)

Element Type

Required:	Yes												
Data Type and Size:	Character (8)												
Columns:	18 - 25												
	The following is an example of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.												
Examples:	BlocTags, TopElem, BlocStat, mv I, mv U, mv P, CB, CB nrc, TapCh												
Description:	The element type.												
	NOTE: This field is updateable under certain, restricted conditions. Those conditions are:												
(1)	The standard element type for the new element type must be the same as the standard element type of the old element type,												
(2)	The values for the following element type attributes (see relation ELTYDE) must match between the new element type and the old element type:												
	<table><tr><td>- SwType</td><td>kind of switching element for Supervisory Control</td></tr><tr><td>- CalVal</td><td>element has calculated values</td></tr><tr><td>- ScVal</td><td>element is subject to short circuit calculation</td></tr><tr><td>- MvSort</td><td>kind of measured value</td></tr><tr><td>- CvSort</td><td>kind of accumulator value</td></tr><tr><td>- ScSort</td><td>kind of short circuit value</td></tr></table>	- SwType	kind of switching element for Supervisory Control	- CalVal	element has calculated values	- ScVal	element is subject to short circuit calculation	- MvSort	kind of measured value	- CvSort	kind of accumulator value	- ScSort	kind of short circuit value
- SwType	kind of switching element for Supervisory Control												
- CalVal	element has calculated values												
- ScVal	element is subject to short circuit calculation												
- MvSort	kind of measured value												
- CvSort	kind of accumulator value												
- ScSort	kind of short circuit value												

NOTE: The values CalVal, SCVal and ScSort are used for Network Applications purposes. Use them only if the Network Applications package is part of your scope of supply.

Under any other circumstance, the field is not considered to be updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry:	Form:	Element Form
	Component:	List of Elements
	Field:	Element Type

Record Type ELEM – Element Data (Continued)

Element Text

Required:	No
Data Type and Size:	Character (20)
Columns:	27 - 46
Description:	Input of the element text is useful only if this text is displayed in message text lines (decided at the time of system parameterization).
Field for SDM entry:	Form: Element Form Component: List of Elements Field: Element Text

Accumulator Data Info Record

The Accumulator Data is used to form the info part of the 5-level Technological Address. The data on the ACCUM and ACCUMA records is used to form several accumulator infos; the Upper Limit value becomes info `cvUpLim`, the Lower Limit value becomes info `cvLoLim`, and so forth.

When setting up the data on the ACCUM and ACCUMA records, keep in mind that for each accumulator defined, there can be an authorized value, a main counter, a control counter, and an analog value integral. The main counter is the normal scanned value. The control counter could be a second scanned value or a data linked value. The control counter is not always used. The analog value integral is the integrated value associated with the main counter. The authorized value is obtained by taking the best value from the main counter, control counter, or analog value integral. The “best value” is determined by looking at the quality flags of the associated counters in priority order of main, control, and integral.

An ACINFO record is required if an info value is derived from a calculation or from a pre-defined function.

Record Type ACCUM – Accumulator Data

Conversion Constant

Required:	No	
Data Type and Size:	Float (10)	
Columns:	9 - 18	
Valid Values:	0.00 - 999.9999	
Description:	The conversion constant used to convert the raw accumulator counts to engineering units.	
Field for SDM entry:	Form:	Accumulator Form
	Component:	Miscellaneous Block
	Field:	Conversion Factor

Rollover Limit

Required:	No	
Data Type and Size:	Integer (10)	
Columns:	20 - 29	
Valid Values:	0 - 99999999	
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.	
Description:	For relative accumulators this is the maximum raw value reachable by the accumulator + 1.	
Field for SDM entry:	Form:	Accumulator Form
	Component:	Miscellaneous Block
	Field:	Rollover

Record Type ACCUM – Accumulator Data (Continued)

Upper Limit

Required:	No
Data Type and Size:	Float (10)
Columns:	31 - 40
Valid Values:	0.0 - 9999999.00
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.
Description:	The upper limit for this accumulator that will cause an alarm.
Field for SDM entry:	Form: Accumulator Form Component: Limits Block Field: Upper

Lower Limit

Required:	No
Data Type and Size:	Float (10)
Columns:	42 - 51
Valid Values:	0.0 - 9999999.00
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.
Description:	The lower limit for this accumulator that will cause an alarm.
Field for SDM entry:	Form: Accumulator Form Component: Limits Block Field: Lower

Record Type ACCUM – Accumulator Data (Continued)

Rate Group

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	53 - 54						
Valid Values:	1 - 20						
Dependencies:	Valid only when the authorized value for this accumulator has been configured.						
Description:	A value in this field is required only if processing involving peak periods is required for the accumulator. The Rate Group is the index pointing to parameters in \$SPEC PATH/src/param/baps/odb/fillrel/cv_rate.j that describes the pattern of peak periods.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Rate Group</td></tr></table>	Form:	Accumulator Form	Component:	Miscellaneous Block	Field:	Rate Group
Form:	Accumulator Form						
Component:	Miscellaneous Block						
Field:	Rate Group						

EACC Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	56 - 56
Valid Values:	Y - Yes N - No
Default Value:	N
Description:	Accumulator is relevant for Energy Accounting.

NOTE: The EACC flag can be used only if the function Energy Accounting is part of your scope of supply.

Field for SDM entry:	<table><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Energy Accounting</td></tr></table>	Form:	Accumulator Form	Component:	Miscellaneous Block	Field:	Energy Accounting
Form:	Accumulator Form						
Component:	Miscellaneous Block						
Field:	Energy Accounting						

Record Type ACCUMA – Accumulator Data

Main/Integral Difference Limit

Required: No
Data Type and Size: Float (10)
Columns: 9 - 18
Valid Values: 0.0 - 9999999.00
Dependencies: Valid only when the element type for this accumulator has been configured for this limit.
Description: The difference between the main counter and the analog value integral for this accumulator that will cause an alarm.
Field for SDM entry: Form: Accumulator Form
Component: Difference Limits Block
Field: Main -Integral

Main/Control Difference Limit

Required: No
Data Type and Size: Float (10)
Columns: 20 - 29
Valid Values: 0.0 - 9999999.00
Dependencies: Valid only when the element type for this accumulator has been configured for this limit.
Description: The difference between the main counter and control counter for this accumulator that will cause an alarm.
Field for SDM entry: Form: Accumulator Form
Component: Difference Limits Block
Field: Main - Control

Record Type ACCUMA – Accumulator Data (Continued)

Control/Integral Difference Limit

Required:	No
Data Type and Size:	Float (10)
Columns:	31 - 40
Valid Values:	0.0 - 9999999.00
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.
Description:	The difference between the control counter and the analog value integral for this accumulator that will cause an alarm.
Field for SDM entry:	Form: Accumulator Form Component: Difference Limits Block Field: Control - Integral

The ACINFO record is required only if an accumulator value is derived from a one-to-one calculation or a function. If the accumulator value is derived from a typified calculation (as defined using the SD order Calcul), an ACINFO record is NOT necessary.

Record Type ACINFO – Accumulator Data

Accumulator Info Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9 - 16
Valid Values:	The following are examples of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide. Examples: cv15mAc, cv15Aut, cv15mDCc, cv30sAc, cv30mAut, cv30mDCc
Description:	Name of the accumulator info being defined.
Field for SDM entry:	Form: Accumulator Form Component: Info Block Field: Name

Formula Number

Required:	Yes
Data Type and Size:	Integer (3)
Columns:	18 - 21
Valid Values:	If the value is derived from a calculation: enter the number of a formula that has already been defined by using the SDM order Formula. If the value is derived by using the predefined authorized accumulator function: enter a -2.
Dependencies:	If a formula is specified: One CALCOP record is required for each operand in the formula. If the authorization of accumulators is specified: Three CALCOP records are required (one each for operand A, B, and C).
Description:	If the accumulator value is the result of a one-to-one calculation or a function, this number describes the operation to be performed.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Number

Record Type ACINFO – Accumulator Data (Continued)

Calculation Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	23
Valid Values:	0 = Formula 1 = Authorization 2 = Increment
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	0
Description:	The type of calculation to be used.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Type

Calculation Execution Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	25
Valid Values:	0 = no processing type 1 = spontaneous 2 = cyclic 3 = external coordinate 4 = time controlled 5 = delayed 6 = archived
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	1
Description:	The type of calculation execution to be performed.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Execution Type

Record Type ACINFO – Accumulator Data (Continued)

Calculation Delay Time

Required:	Conditional
Data Type and Size:	Integer (4)
Columns:	27 - 30
Valid Values:	1 - 3600
Dependencies:	This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description:	The number of seconds to delay before performing the calculation.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Delay Time

Calculation Priority

Required:	Yes
Data Type and Size:	Integer (2)
Columns:	32- 33
Valid Values:	1 - 99
Default Value:	1
Description:	Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Priority

Analog Data Info Record

The Analog Data is used to form the info part of the 5-level Technological Address. The data on the ANALOG record is used to form several analog infos. For example, Nominal Value becomes info MvNomina and Gradient Limit becomes MvLimGra.

An ANINFO record is required if an info value is derived from a calculation or from a pre-defined function and ABSLM records are required to set up the analog limit infos.

Record Type ANALOG – Analog Data

Nominal Value

Required:	No						
Data Type and Size:	Float (10.2)						
Columns:	9 - 18						
Valid Values:	0 - 7812.50						
Dependencies:	The Nominal Value can be entered only if the Nominal Value has been parameterized for the analog value.						
Description:	The normal value associated with the analog measurement. If percentage limits are used, changing the nominal value will affect the limits used to monitor the analog value.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Nominal Value</td></tr></table>	Form:	Analog Form	Component:	Miscellaneous Block	Field:	Nominal Value
Form:	Analog Form						
Component:	Miscellaneous Block						
Field:	Nominal Value						

Gradient Limit

Required:	No						
Data Type and Size:	Float (8)						
Columns:	20 - 27						
Valid Values:	0 - 2438.62						
Dependencies:	The Gradient Limit is valid only if the information Gradient Limit has been parameterized.						
Description:	Specifies the rate of change limit for the analog value.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Gradient Limit</td></tr></table>	Form:	Analog Form	Component:	Miscellaneous Block	Field:	Gradient Limit
Form:	Analog Form						
Component:	Miscellaneous Block						
Field:	Gradient Limit						

Record Type ANALOG – Analog Data (Continued)

State Estimator Metering Error

Required: No
Data Type and Size: Float (8)
Columns: 29 - 36
Description: The standard deviation in engineering units. This is the metering error introduced by the equipment used to measure the value.
Field for SDM entry:
Form: Analog Form
Component: Miscellaneous Block
Field: SE Metering Error

EACC Flag

Required: No
Data Type and Size: Character(1)
Columns: 70
Valid Values: Y - Yes
N - No
Default Value: N
Description: Analog is relevant for Energy Accounting.

NOTE: The EACC flag can be used only if the function Energy Accounting is part of your scope of supply.

Field for SDM entry:
Form: Analog Form
Component: Miscellaneous Block
Field: Energy Accounting

The ANINFO record is required only if an analog value is derived from a one-to-one calculation or a function. If the analog value is derived from a typified calculation (as defined using the CALCUL database editor), an ANINFO record is NOT necessary.

Record Type ANINFO – Analog Info Data

Analog Info Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9-16
Valid Values:	The following are examples of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide. Examples: MvMoment, MvNomina, MvGradie
Description:	Name of the analog info being defined.
Field for SDM entry:	Form: Analog Form Component: Info Block Field: Name

Formula Number

Required:	Yes
Data Type and Size:	Integer (3)
Columns:	18 - 21
Valid Values:	If the value is derived from a calculation: enter the number of a formula that has already been defined by using the SDM order Formula.
Dependencies:	If a formula is specified: one CALCOP record is required for each operand in the formula.
Description:	If the analog value is the result of a one-to-one calculation or a function, this number describes the operation to be performed.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Number

Record Type ANINFO – Analog Info Data (Continued)

Calculation Type

Required: Yes
Data Type and Size: Integer (1)
Columns: 23
Valid Values:
0 = Formula
1 = Authorization
2 = Increment
Dependencies: This field is required if the Formula Number is specified.
Default Value: 0
Description: The type of calculation to be used.
Field for SDM entry:
Form: Analog Form
Component: Formula Block
Field: Type

Calculation Execution Type

Required: Yes
Data Type and Size: Integer (1)
Columns: 25
Valid Values:
0 = no processing type
1 = spontaneous
2 = cyclic
3 = external coordinate
4 = time controlled
5 = delayed
6 = archived
Dependencies: This field is required if the Formula Number is specified.
Default Value: 1
Description: The type of calculation execution to be performed.
Field for SDM entry:
Form: Analog Form
Component: Formula Block
Field: Execution Type

Record Type ANINFO – Analog Info Data (Continued)

Calculation Delay Time

Required: Conditional
Data Type and Size: Integer (4)
Columns: 27 - 30
Valid Values: 1 - 3600
Dependencies: This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description: The number of seconds to delay before performing the calculation.
Field for SDM entry:
Form: Analog Form
Component: Formula Block
Field: Delay Time

Calculation Priority

Required: Yes
Data Type and Size: Integer (2)
Columns: 32- 33
Valid Values: 1 - 99
Default Value: 1
Description: Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.
Field for SDM entry:
Form: Analog Form
Component: Formula Block
Field: Priority

Absolute Limit Data Subinfo Record

The Absolute Limit data is used to form absolute limit infos for an analog element. Each analog element may have up to 6 ABSLM records.

Record Type ABSLM – Absolute Limit Data

Limit Number

Required:	Yes						
Data Type and Size:	Integer (1)						
Columns:	11						
Valid Values:	1 – 3						
Description:	The numeric identifier for this limit. This number must be sequential. For example, 1 must be defined before 2, 2 must be defined before 3.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Absolute Limits Block</td></tr><tr><td>Field:</td><td>Number</td></tr></table>	Form:	Analog Form	Component:	Absolute Limits Block	Field:	Number
Form:	Analog Form						
Component:	Absolute Limits Block						
Field:	Number						

Upper Lower Flag

Required:	No						
Data Type and Size:	Character (1)						
Columns:	13						
Valid Values:	U = upper, L = lower.						
Default Value:	U.						
Description:	Specifies whether the limit being defined is an upper limit or a lower limit.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Absolute Limits Block</td></tr><tr><td>Field:</td><td>U / L</td></tr></table>	Form:	Analog Form	Component:	Absolute Limits Block	Field:	U / L
Form:	Analog Form						
Component:	Absolute Limits Block						
Field:	U / L						

Record Type ABSLM – Absolute Limit Data (Continued)

Limit Value

Required:	Yes
Data Type and Size:	Float (10)
Columns:	15 - 24
Valid Values:	-1999900 - 1999900
Dependencies:	The Limit Value of upper limit 1 must be greater than the Limit Value for lower limit 1, etc. Also, the Limit Value for upper limit 2 must be greater than the Limit Value for upper limit 1, etc.
Description:	The limit, in engineering units, that causes an alarm condition.
Field for SDM entry:	Form: Analog Form Component: Absolute Limits Block Field: Limit Value

Deadband

Required:	No
Data Type and Size:	Float (7)
Columns:	26 - 32
Valid Values:	0 - 9999.99
Description:	The deviation towards normal required to prevent excessive alarms for this limit.
Field for SDM entry:	Form: Analog Form Component: Absolute Limits Block Field: Deadband

Digital Data Info Record

The Digital Name can be used to form the info part of the 5-level Technological Address. Unlike the analog and accumulator records, each DIGITL record describes a single info and the processing options available.

Record Type DIGITL – Digital Data

Digital Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9 - 16
Valid Values:	Valid digital info name. For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
	Examples of infos: Status—Switching status, CtrlInhi —Control Inhibit, NormStat—Normal switching status, UseNorm—Use Normal State.
Default Value:	Status
Description:	Name of the digital info being defined. Refer to the Initial Value field.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Info

Unused Field

Columns:	18 - 20
Description:	Reserved for future use.

Single Message Text

Required:	No
Data Type and Size:	Character (20)
Columns:	22 - 41
Description:	Allows the info text to be freely definable. If nothing is specified in this field, the info text associated with the element for this info will be used.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Message Text

Record Type DIGITL – Digital Data (Continued)

Message Class

Required:	No
Data Type and Size:	Integer (2)
Columns:	43 - 44
Valid Values:	0 - 15 (= cMaxMeCl)
Default Value:	0 Zero indicates that the message class associated with the info type for this point will be used.
Description:	Allows the message class to be freely definable (i.e. the message class associated with the info type is overridden if a message class is specified here).
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Message Class

Initial Value

Required:	No
Data Type and Size:	Integer (3)
Columns:	46 - 48
Valid Values:	0 - 1 = all infos except transformer tap position infos -32 - 32 = transformer tap position infos only
Description:	The initial value is allowed to be specified on the creation of data within a block.

NOTE: Under most circumstances, this field is not updateable. The only way to change its value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value. The one exception to this rule is that the field may be updated at any time prior to its first transfer to the operational database. That is, the initial value is updateable from its initial entry into the database until it is transferred into the on-line copy of the operational database. Once the info is part of the on-line database, it can no longer be updated in the conventional manner.

Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Initial Value
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Record Type DIGITL – Digital Data (Continued)

Formula Number

Required: No
Data Type and Size: Integer (3)
Columns: 50 - 53
Valid Values: A Formula Number that has already been defined by using the SDM order Formula.
Dependencies: If a formula is specified, n CALCOP records must be entered to provide the operand information, "n" being the number of operands required by the formula.
Description: If the digital value is a result of a one-to-one calculation, this formula number describes the calculation to be performed. If the digital value is derived from a typified calculation (as defined using the SDM order Calcul), the formula number is unnecessary and need not be entered.
Field for SDM entry:
Form: Digital Form
Component: Formula Block
Field: Number

Calculation Type

Required: Conditional
Data Type and Size: Integer (1)
Columns: 55
Valid Values: 0 = Formula
1 = Authorization
2 = Increment
Dependencies: This field is required if the Formula Number is specified.
Default Value: 0
Description: The type of calculation to be used.
Field for SDM entry:
Form: Digital Form
Component: Formula Block
Field: Type

Record Type DIGITL – Digital Data (Continued)

Calculation Execution Type

Required:	Conditional
Data Type and Size:	Integer (1)
Columns:	57
Valid Values:	0 = no processing type 1 = spontaneous 2 = cyclic 3 = external coordinate 4 = time controlled 5 = delayed 6 = archived
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	1
Description:	The type of calculation execution to be performed.
Field for SDM entry:	Form: Digital Form Component: Formula Block Field: Execution Type

Calculation Delay Time

Required:	Conditional
Data Type and Size:	Integer (4)
Columns:	59 - 62
Valid Values:	1 - 3600
Dependencies:	This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description:	The number of seconds to delay before performing the calculation.
Field for SDM entry:	Form: Digital Form Component: Formula Block Field: Delay Time

Record Type DIGITL – Digital Data (Continued)

Calculation Priority

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	64 - 65						
Valid Values:	1 - 99						
Dependencies:	This field is required if the Formula Number is specified.						
Default Value:	1						
Description:	Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Formula Block</td></tr><tr><td>Field:</td><td>Priority</td></tr></table>	Form:	Digital Form	Component:	Formula Block	Field:	Priority
Form:	Digital Form						
Component:	Formula Block						
Field:	Priority						

Unused Field

Columns:	65- 70
Description:	Reserved for future use.

Value Name Index

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	75 - 77						
Valid Values:	0 - 500						
Default Value:	0						
Description:	Zero indicates that the value name index associated with the info type will be used. Allows the value name index (into relation VANAME) to be freely defined (i.e. the value name index for the info type is overridden if the value name index is specified here).						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Detail Block</td></tr><tr><td>Field:</td><td>Value Name Index</td></tr></table>	Form:	Digital Form	Component:	Detail Block	Field:	Value Name Index
Form:	Digital Form						
Component:	Detail Block						
Field:	Value Name Index						

Record Type DIGITL – Digital Data (Continued)

Disturbance Type

Required:	No
Data Type and Size:	Integer (3)
Columns:	79 - 81
Valid Values:	0 - 127, 999
Default Value:	0 Zero indicates that the disturbance type associated with the info type will be used.
Description:	Allows the disturbance type designation to be freely defined (i.e., the disturbance type designation for the info type is overridden if the disturbance type is specified here). (A value of 999 indicates that the disturbance type will not be processed for this digital. This value deselects disturbance processing unconditionally for this info.)
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Disturbance Type

Record Type DIGITLA - Digital Data

Digital Name

Required: No
Data Type and Size: Character (8)
Columns: 9 - 16
Valid Values: The Digital Name on the parent DIGITL record.
Default Value: The Digital Name on the parent DIGITL record.
Description: Name of the digital info being defined.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: Info

Acknowledge List Appearing

Required: Conditional
Data Type and Size: Character(1)
Columns: 18
Valid Values: Y - Yes
N - No
Description: Acknowledgment in alarm summary for appearing state. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: Insert Acknowledge Appearing

Record Type DIGITLA - Digital Data (Continued)

Acknowledge List Disappearing

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	20
Valid Values:	Y - Yes N - No
Description:	Acknowledgment in alarm summary for disappearing state. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Insert Acknowledge Disappearing

Signalling Status

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	22
Valid Values:	Y - Yes N - No
Description:	Selection guidance for persistent state in worldmaps. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Signalling Persistant State

Record Type DIGITLA - Digital Data (Continued)

Signalling Spontaneous Change

Required: Conditional
Data Type and Size: Character(1)
Columns: 24
Valid Values: Y - Yes
N - No
Description: Selection guidance in worldmaps for spontaneous status change. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: Signalling Spontaneous Change

List 1 Number

Required: Conditional
Data Type and Size: Integer(3)
Columns: 26 - 28
Valid Values: 0 - 40 (=cLiNuMax)
For information on the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 2 Number

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	30 - 32
Valid Values:	0 - 40 (=cLiNuMax) For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 3 Number

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	34 - 36
Valid Values:	0 - 40 (=cLiNuMax) For information the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 4 Number

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	38 - 40
Valid Values:	0 - 40 (=cLiNuMax) For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 1 Appearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	42
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 2 Appearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	44
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 3 Appearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	46
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 4 Appearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	48
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 1 Disappearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	50
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 2 Disappearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	52
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 3 Disappearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	54
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 4 Disappearing

Required:	Conditional
Data Type and Size:	Character (1)
Columns:	56
Valid Values:	Y - Yes N - No
Description:	
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 1 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	58 - 60
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 2 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	62 - 64
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 3 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	66 - 68
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 4 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	70 - 72
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Archive

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	74
Valid Values:	Y = Yes N = No
Description:	Send status change to the archive. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Historic Database

Value Name Command Index

Required:	No
Data Type and Size:	Integer (3)
Columns:	76 - 78
Valid Values:	0 - 500
Description:	Allows the value name index (into relation VANAME) for commands to be freely defined (i.e. the value name index for the info type is overridden if the value name index is specified here).
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Value Name Command Index

Record Type DIGITLA - Digital Data (Continued)

Info Type

Required:	Conditional
Data Type and Size:	Character(8)
Columns:	80 - 87
Valid Values:	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Dependencies:	This field is only valid when the Number of Sources is greater than two.
Description:	This number indicates the priority of source4. The lower the number, the higher the priority.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Info Type

Calc Operand Data Record

This record type is only applicable if the preceding info record defines a formula number. One CALCOP record is required for every operand in the formula.

Record Type CALCOP – Calc Operand Data

Operand Identifier

Required:	Yes																		
Data Type and Size:	Character (1)																		
Columns:	9 - 32																		
Valid Values:	A - Z																		
Description:	Name of the variable used in the formula.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	Operand	Form:	Analog Form	Component:	Operands List	Field:	Operand	Form:	Accumulator Form	Component:	Operands List	Field:	Operand
Form:	Digital Form																		
Component:	Operands List																		
Field:	Operand																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	Operand																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	Operand																		

Type

Required:	Yes																		
Data Type and Size:	Character (3)																		
Columns:	34- 36																		
Valid Values:	TA, CON (TA = Technological Address, CON = Constant value)																		
Description:	Type of the operand, a variable or a constant.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	Type	Form:	Analog Form	Component:	Operands List	Field:	Type	Form:	Accumulator Form	Component:	Operands List	Field:	Type
Form:	Digital Form																		
Component:	Operands List																		
Field:	Type																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	Type																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	Type																		

Record Type CALCOP – Calc Operand Data (Continued)

Constant

Required:	Conditional
Data Type and Size:	Float (10)
Columns:	38 - 47
Valid Values:	-99999992 - 99999992
Dependencies:	The Constant value is only required if the Type is CON.
Description:	Constant value to be used in the calculation.
Field for SDM entry:	Form: Digital Form Component: Operands List Field: Constant
	Form: Analog Form Component: Operands List Field: Constant
	Form: Accumulator Form Component: Operands List Field: Constant

Operand B1 Name

Required:	Conditional
Data Type and Size:	Character (8)
Columns:	49 - 56
Valid Values:	A B1 Block Name
Dependencies:	The Operand B1 Name is only required if the Type is TA.
Description:	Name of the B1 block.
Field for SDM entry:	Form: Digital Form Component: Operands List Field: B1-Name
	Form: Analog Form Component: Operands List Field: B1-Name
	Form: Accumulator Form Component: Operands List Field: B1-Name

Record Type CALCOP – Calc Operand Data (Continued)

Operand B2 Name

Required:	Conditional																		
Data Type and Size:	Character (8)																		
Columns:	58 - 65																		
Valid Values:	A B2 Block Name																		
Dependencies:	A B2 Name is only needed if the type is TA and the technological address for this calculation includes a B2 level.																		
Description:	Name of the B2 block for this operand.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B2-Name</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B2-Name</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B2-Name</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	B2-Name	Form:	Analog Form	Component:	Operands List	Field:	B2-Name	Form:	Accumulator Form	Component:	Operands List	Field:	B2-Name
Form:	Digital Form																		
Component:	Operands List																		
Field:	B2-Name																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	B2-Name																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	B2-Name																		

Operand B3 Name

Required:	Conditional																		
Data Type and Size:	Character (8)																		
Columns:	67 - 74																		
Valid Values:	A B3 Block Name																		
Dependencies:	The B3 Name is only required if the Type is TA and the technological address for this calculation includes a B3 level.																		
Description:	The name used to identify the B3-type record for this operand. The name might be a transformer name, a busbar name, a switching field name, etc.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B3-Name</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B3-Name</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B3-Name</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	B3-Name	Form:	Analog Form	Component:	Operands List	Field:	B3-Name	Form:	Accumulator Form	Component:	Operands List	Field:	B3-Name
Form:	Digital Form																		
Component:	Operands List																		
Field:	B3-Name																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	B3-Name																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	B3-Name																		

Record Type CALCOP – Calc Operand Data (Continued)

Operand Element Name

Required:	Conditional
Data Type and Size:	Character (8)
Columns:	76 - 83
Valid Values:	An Element Name
Dependencies:	The Operand Element Name is only required if the Type is TA.
Description:	Name of the Element for this operand.
Field for SDM entry:	Form: Digital Form Component: Operands List Field: Element-Name
	Form: Analog Form Component: Operands List Field: Element-Name
	Form: Accumulator Form Component: Operands List Field: Element-Name

Operand Info Name

Required:	Conditional
Data Type and Size:	Character (8)
Columns:	85 - 92
Valid Values:	An Info Name
Dependencies:	The Operand Info Name is only required if the Type is TA.
Description:	The Analog Name, Digital Name, or Accumulator Name for this operand.
Field for SDM entry:	Form: Digital Form Component: Operands List Field: Info-Name
	Form: Analog Form Component: Operands List Field: Info-Name
	Form: Accumulator Form Component: Operands List Field: Info-Name

Multisite Description Data

These records must follow a B1 and may follow a B2 or B3 level record.

All points within a B1 will inherit that B1's Multisite descriptions unless Multisite records are explicitly defined at the B2 and/or B3 level. Following this same inheritance scheme, a B3 will inherit its Multisite descriptions from its B2 parent, if that parent has its own, explicitly defined set of Multisite records.

Whenever a Multisite Description is defined, it must be complete. In other words, portions of a Multisite description at a block level cannot be defined while other portions are inherited from its parent.

Record Type MSDESC– Multisite Description Data

Control Center Name

Required:	Yes						
Data Type and Size:	Character (6)						
Columns:	9 - 14						
Valid Values:	Must be a valid Control Center name.						
Description:	Name of the Control Center. The Control Center entered here may be assigned certain multisite functions (see attributes listed below). These functions apply to the points within the block level that this record is defined under.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Multisite Form</td></tr><tr><td>Component:</td><td>Detail Block of the Multisite Form</td></tr><tr><td>Field:</td><td>Control Center Name</td></tr></table>	Form:	Multisite Form	Component:	Detail Block of the Multisite Form	Field:	Control Center Name
Form:	Multisite Form						
Component:	Detail Block of the Multisite Form						
Field:	Control Center Name						

Record Type MSDESC– Multisite Description Data (Continued)

Master Priority

Required:	Conditional
Data Type and Size:	Integer (1)
Columns:	16
Valid Values:	0 - Not a master 1 - 4
Default Value:	0
Dependencies:	At least one record, with a Master Priority of 1, must be defined for each set of Multisite records.
Description:	The Master Priority of a control center -- where 1 is the highest priority and 4 is the lowest priority. A value of 0 means that this control center can never become a master while a non-zero value means that this control center is or has the potential of becoming master control center. The designation of master control center means that it is responsible for the data. It has a direct (physical) connection to the RTDS. A control center having a priority of 1 is the normal master. If that control center is down, the control center with a priority of 2 becomes the master.
Field for SDM entry:	Form: Multisite Form Component: Detail Block of the Multisite Form Field: Master Priority

Record Type MSDESC– Multisite Description Data (Continued)

Control Permission

Required: Conditional
Data Type and Size: Character (1)
Columns: 18
Valid Values: P - Preferred
Y - Yes
N - No
Default Value: N
Dependencies: At least one record, with a Control Permission of P, must be defined for each set of Multisite records.
Description: A Control Permission is assigned to a control center. If the Control Permission has a value of N, the specified control center has no control permission. A Control Permission of P means that, although other control centers can have control, this one is the preferred one. A dispatcher who is controlling a point (i.e., manually updating) should be at the control center marked as preferred. It is, however, possible for a person to manually update a point from another control center, as long as that center has control permission.
Field for SDM entry:
Form: Multisite Form
Component: Detail Block of the Multisite Form
Field: Control Permission

Available

Required: Conditional
Data Type and Size: Character (1)
Columns: 20
Valid Values: Y - Yes
N - No
Default Value: N
Dependencies: At least one record, with its availability set to Y, must be defined for each set of Multisite records.
Description: The availability of data for a control center. If this field is set to Y, the points at this block level are available to the specified control center (i.e., the control center will make a request for the data from the master.)
Field for SDM entry:
Form: Multisite Form
Component: Detail Block of the Multisite Form
Field: Availability

Archive Filter Hierarchy

Record Type ARCHFIL

Archiv Name

Required:	yes
Data Type and Size:	character(8)
Columns:	9 - 16
Valid Values:	Archive name
Default Value:	
Dependencies:	
Description:	Archive name
Field for SDM entry:	Form: Archive Filter Form Component: Master Block Field: Archive Name

Filter Name

Required:	no
Data Type and Size:	character(16)
Columns:	18- 33
Valid Values:	name of the filter
Default Value:	
Dependencies:	
Description:	name of the filter
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Field: Filter Name

Record Type ARCHFIL

B1 Name

Required: no
Data Type and Size: character(8)
Columns: 35-42
Valid Values: B1_name from table ELEMENT
Default Value:
Dependencies:
Description: name of B1 for typified filter
Field for SDM entry: Form: Archive Filter Form
Component: Filter Definition Block
Direct TA Input
Field: B1-Name

B2 Name

Required: No
Data Type and Size: character(8)
Columns: 44-51
Valid Values: B2_ name from table ELEMENT
Default Value:
Dependencies:
Description: name of B2 for typified filter
Field for SDM entry: Form: Archive Filter Form
Component: Filter Definition Block
Direct TA Input
Field: B2-Name

Record Type ARCHFIL

B3 Name

Required: No
Data Type and Size: character(8)
Columns: 53-60
Valid Values: B3_Name from table ELEMENT
Default Value:
Dependencies:
Description: name of B3 for typified filter
Field for SDM entry: Form: Archive Filter Form
Component: Filter Definition Block
Direct TA Input
Field: B3-Name

Element Name

Required: No
Data Type and Size: character(8)
Columns: 62-69
Valid Values: Element_name from table ELEMENT
Dependencies:
Description: name of Element for typified filter
Field for SDM entry: Form: Archive Filter Form
Component: Filter Definition Block
Direct TA Input
Field: Element-Name

Record Type ARCHFIL

Info name

Required:	NO
Data Type and Size:	character(8)
Columns:	71-78
Valid Values:	name of the info
Default Value:	
Dependencies:	
Description:	Info Name for typified filter
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Field: Direct TA Input Info-Name

Record Type ARCHFIA

block type for b1

Required:	NO
Data Type and Size:	character(8)
Columns:	35-42
Valid Values:	block type for b1 from btypname
Default Value:	-
Dependencies:	
Description:	block type for typified filter of b1
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Field: Typified TA Input Block-Type (B1)

Record Type ARCHFIA

block type for b2

Required:	NO
Data Type and Size:	character(8)
Columns:	44-51
Valid Values:	block type for b2 from btypname
Default Value:	-
Dependencies:	
Description:	block type for typified filter of b2
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Field: Typified TA Input Block-Type (B2)

block type for b3

Required:	NO
Data Type and Size:	character(8)
Columns:	53-60
Valid Values:	block type for b3 from btypname
Default Value:	-
Dependencies:	
Description:	block type for typified filter of b3
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Field: Typified TA Input Block-Type (B3)

Record Type ARCHFIA

Element type name

Required:	NO
Data Type and Size:	character(8)
Columns:	62-69
Valid Values:	element type name from etypname
Default Value:	-
Dependencies:	
Description:	element type name for typified filter
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Typified TA Input Field: Element-Type

Info type name

Required:	NO
Data Type and Size:	character(8)
Columns:	71-78
Valid Values:	info type name from itypname
Default Value:	-
Dependencies:	
Description:	infotype name for typified filter
Field for SDM entry:	Form: Archive Filter Form Component: Filter Definition Block Typified TA Input Field: Info-Type

Record Type ARTADI

Archiv Name

Required: yes
Data Type and Size: character(8)
Columns: 9 - 16
Valid Values: Archive name
Default Value:
Dependencies:
Description: Archive name
Field for SDM entry: Form: Archive Filter Form
Component: Master Block
Field: Archive Name

B1 Name

Required: Yes
Data Type and Size: character(8)
Columns: 18-25
Valid Values: B1_name from table ELEMENT
Default Value:
Dependencies:
Description: name of B1
Field for SDM entry: Form: Archive Filter Form
Component: TA Table
Field: B1-Name

Record Type ARTADI

B2 Name

Required: Yes
Data Type and Size: character(8)
Columns: 27-34
Valid Values: B2_ name from table ELEMENT
Default Value:
Dependencies:
Description: name of B2
Field for SDM entry: Form: Archive Filter Form
Component: TA Table
Field: B2-Name

B3 Name

Required: Yes
Data Type and Size: character(8)
Columns: 36-43
Valid Values: B3_Name from table ELEMENT
Default Value:
Dependencies:
Description: name of B3
Field for SDM entry: Form: Archive Filter Form
Component: TA Table
Field: B3-Name

Record Type ARTADI

Element Name

Required:	Yes
Data Type and Size:	character(8)
Columns:	45-52
Valid Values:	Element_name from table ELEMENT
Dependencies:	
Description:	name of Element
Field for SDM entry:	Form: Archive Filter Form Component: TA Table Field: Element-Name

Info name

Required:	Yes
Data Type and Size:	character(8)
Columns:	54-61
Valid Values:	name of the info
Default Value:	
Dependencies:	
Description:	Info Name
Field for SDM entry:	Form: Filter Definition Block Component: TA Table Field: Info-Name

Typification Hierarchy

Record Type ELNAME

Element number

Required: YES
Data Type and Size: Number
Columns: 9 - 14
Valid Values: 0-3000
Default Value: -
Dependencies: may not be changed
Description: Element number.

Norm Element Type name

Required: YES
Data Type and Size: character(8)
Columns: 16 - 23
Valid Values: name from table nettypename
Default Value:
Dependencies: may not be changed
Description: Norm element type name
Field for SDM entry: Form: Element Name Definition Form
Component: Detail Block of the Element Name Definition Form
Field: Norm Element

Record Type ELNAME

Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	25-32
Valid Values:	string, maximal length 8
Default Value:	-
Dependencies:	may not be changed
Description:	Element type name
Field for SDM entry:	Form: Element Name Definition Form Component: Detail Block of the Element Name Definition Form Field: Type Name

Name of the element

Required:	YES
Data Type and Size:	character(8)
Columns:	34- 41
Valid Values:	string , maximal length 8
Default Value:	
Dependencies:	May not be changed in case of AD element. In another case it may be changed, but name must be unique
Description:	Element name
Field for SDM entry:	Form: Element Name Definition Form Component: Detail Block of the Element Name Definition Form Field: Element Name

Binary element

Required:	YES
Data Type and Size:	character(8)
Columns:	43- 50
Valid Values:	name from elname
Default Value:	-
Dependencies:	May not be changed
Description:	Binary Element

Record Type INTEXT

Info name

Required:	Yes
Data Type and Size:	Number
Columns:	9-14
Valid Values:	name from table inname
Default Value:	-
Dependencies:	
Description:	Info name
Field for SDM entry:	Form: Info Text Definition Form Component: Detail Block of the Info Text Definition Form Field: Info Name

Info text

Required:	Yes
Data Type and Size:	character(20)
Columns:	23- 42
Valid Values:	string , maximal lenght 20
Default Value:	-
Dependencies:	
Description:	Info text
Field for SDM entry:	Form: Info Text Definition Form Component: Detail Block of the Info Text Definition Form Field: Info Text

Record Type ELTYPDIG

Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	9- 16
Valid Values:	string, maximal length 8
Default Value:	-
Dependencies:	
Description:	Element type name
Field for SDM entry:	Form: Digital Element Type Form Component: Master Block of the Digital Element Type Form Field: Element Type Name

Element Type

Required:	YES for 1:1 Element Typ, in another case NO - will be generated
Data Type and Size:	Number
Columns:	18 - 23
Valid Values:	0-32767
Default Value:	
Dependencies:	
Description:	Element type. Element Type >10000 is 1:1 Element type
Field for SDM entry:	Form: Digital Element Type Form Component: Master Block of the Digital Element Type Form Field: Element Type Number

Record Type ELTYPDIG

Norm Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	25-32
Valid Values:	name from table netyname
Default Value:	-
Dependencies:	
Description:	Norm element type name
Field for SDM entry:	Form: Digital Element Type Form Component: Master Block of the Digital Element Type Form Field: Normelement Type

Topological element

Required:	NO
Data Type and Size:	character(1)
Columns:	34-34
Valid Values:	Y/N
Default Value:	0
Dependencies:	
Description:	topological relevant

Switch Type

Required:	NO
Data Type and Size:	Character(16)
Columns:	36-51
Valid Values:	noSwitch, Isolator, RemLoadBrSw, LoadBrSw, RemBraker, Breaker
Default Value:	noSwitch
Dependencies:	
Description:	switch type (for NCO)
Field for SDM entry:	Form: Digital Element Type Form Component: Detail Block of the Digital Element Type Form Field: Switch Type

Record Type ELTYPDIG

Switch to earth

Required:	NO
Data Type and Size:	character(1)
Columns:	53-53
Valid Values:	Y/N
Default Value:	N
Dependencies:	
Description:	switch to earth
Field for SDM entry:	Form: Digital Element Type Form Component: Detail Block of the Digital Element Type Form Field: Switch to Earth

Component Type of operation devices

Required:	NO
Data Type and Size:	Character(16)
Columns:	55- 70
Valid Values:	noComponent, CpConnNode, CpGround, CpGeneral, CpBusbar, CpAuxiBusbar, CpCombiBusbar, CpGenerator, CpInjection, CpLoad, CpHauseSupply, CpCompensator, CpPetersenCoil, CpLine, CpTransformer, CpThreeWindings
Default Value:	noComponent
Dependencies:	
Description:	component type of operation devices
Field for SDM entry:	Form: Digital Element Type Form Component: Detail Block of the Digital Element Type Form Field: Component Type

Record Type ELTYPANA

Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	9- 16
Valid Values:	string, maximal length 8
Default Value:	-
Dependencies:	
Description:	Element type name
Field for SDM entry:	Form: Analog Element Type Form Component: Master Block of the Analog Element Type Form Field: Element Type Name

Element Type

Required:	YES for 1:1 Element Typ, in another case NO - will be generated
Data Type and Size:	Number
Columns:	18 - 23
Valid Values:	0-32767
Default Value:	
Dependencies:	
Description:	Element type. Element Type >10000 is 1:1 Element type
Field for SDM entry:	Form: Analog Element Type Form Component: Master Block of the Analog Element Type Form Field: Element Type Number

Record Type ELTYPANA

Norm Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	25-32
Valid Values:	name from table netyname
Default Value:	-
Dependencies:	
Description:	Norm element type name
Field for SDM entry:	Form: Analog Element Type Form Component: Master Block of the Analog Element Type Form Field: Normelement Type

Topological element

Required:	NO
Data Type and Size:	character(1)
Columns:	34-34
Valid Values:	Y/N
Default Value:	N
Dependencies:	
Description:	topological relevant

Type of measured value MvSort

Required:	NO
Data Type and Size:	Character(16)
Columns:	36-51
Valid Values:	noMv, Voltage, Current, ActPower, ReactPower, Frequency, Temperature, CosPhi, Phi, VirtPower, Elevation, GatePos, TransfTap
Default Value:	noMv
Dependencies:	If Norm Element type is 2 -MeasVal this value should be <> noMV
Description:	type of analog value (if 'MeasVal')
Field for SDM entry:	Form: Analog Element Type Form Component: Detail Block of the Analog Element Type Form Field: Analog Type

Record Type ELTYPANA

Type of cshort circuit value ScSort

Required:	NO
Data Type and Size:	Character(16)
Columns:	53-60
Valid Values:	noSc, ScSk, Sclk, ScPhi, ScUrest
Default Value:	noCv
Dependencies:	
Description:	type of cshort circuit value
Field for SDM entry:	Form: Analog Element Type Form Component: Detail Block of the Analog Element Type Form Field: Short Circuit Type

Calculation Value

Required:	NO
Data Type and Size:	Number
Columns:	62-62
Valid Values:	Y/N
Default Value:	N
Dependencies:	
Description:	element has also calculation values
Field for SDM entry:	Form: Analog Element Type Form Component: Detail Block of the Analog Element Type Form Field: Calculation Value

Record Type ELTYPANA

Short circuit calculation Value

Required: YES
Data Type and Size: Number
Columns: 64-64
Valid Values: Y/N
Default Value: N
Dependencies:
Description: element has also short circuit calcul.
Field for SDM entry: Form: Analog Element Type Form
Component: Detail Block of the Analog Element Type Form
Field: Short Circuit Value

Record Type ELTYPACC

Element Type Name

Required: YES
Data Type and Size: character(8)
Columns: 9- 16
Valid Values: string, maximal length 8
Default Value: -
Dependencies:
Description: Element type name
Field for SDM entry: Form: Accumulator Element Type Form
Component: Master Block of the Accumulator Element Type Form
Field: Element Type Name

Record Type ELTYPACC

Element Type

Required: YES for 1:1 Element Typ, in another case NO - will be generated
Data Type and Size: Number
Columns: 18 - 23
Valid Values: 0-32767
Default Value:
Dependencies:
Description: Element type. Element Type >10000 is 1:1 Element type
Field for SDM entry:
Form: Accumulator Element Type Form
Component: Master Block of the Accumulator Element Type Form
Field: Element Type Number

Norm Element Type Name

Required: YES
Data Type and Size: character(8)
Columns: 25-32
Valid Values: name from table netyname
Default Value: -
Dependencies:
Description: Norm element type name
Field for SDM entry:
Form: Accumulator Element Type Form
Component: Master Block of the Accumulator Element Type Form
Field: Normelement Type

Record Type ELTYPACC

Type of counter value CvSort

Required:	NO
Data Type and Size:	Character(16)
Columns:	34-49
Valid Values:	noCv, Counter, Counter, OpTimCount
Default Value:	noCv
Dependencies:	If Norm Element type is 3-CountVal this value should be <> noCV
Description:	type of accumulator (if 'CountVal')
Field for SDM entry:	Form: Accumulator Element Type Form Component: Detail Block of the Accumulator Element Type Form Field: Accumulator Type

Record Type ELTYPAD

Element Type Name

Required:	YES
Data Type and Size:	character(8)
Columns:	9- 16
Valid Values:	string, maximal length 8
Default Value:	-
Dependencies:	
Description:	Element type name

Record Type ELTYPAD

Element Type

Required: YES for 1:1 Element Typ, in another case NO - will be generated
Data Type and Size: Number
Columns: 18 - 23
Valid Values: 0-32767
Default Value:
Dependencies:
Description: Element type. Element Type >10000 is 1:1 Element type

Norm Element Type Name

Required: YES
Data Type and Size: character(8)
Columns: 25-32
Valid Values: name from table netynname
Default Value: -
Dependencies:
Description: Norm element type name

Application Data Subtype

Required: YES
Data Type and Size: Number
Columns: 34 - 49
Valid Values: 0-127
Default Value: 0
Dependencies:
Description: subtype of application data. Relevant only for Application Data.

Record Type INFODEF

Info Name

Required:	Yes	
Data Type and Size:	character(8)	
Columns:	9-14	
Valid Values:	name from inname for this elementtype	
Default Value:		
Dependencies:		
Description:	info number	
Field for SDM entry:	Form: Component: Field:	Digital Element Type Form Detail Block of the Digital Element Type Form Info Name
Field for SDM entry:	Form: Component: Field:	Analog Element Type Form Detail Block of the Analog Element Type Form Info Name
Field for SDM entry:	Form: Component: Field:	Accumulator Element Type Form Detail Block of the Accumulator Element Type Form Info Name

Record Type INFODEF

Info Type name

Required:	YES
Data Type and Size:	character(8)
Columns:	16-23
Valid Values:	name from itypname
Default Value:	-
Dependencies:	
Description:	info type number
Field for SDM entry:	Form: Digital Element Type Form Component: Detail Block of the Digital Element Type Form Field: Info Type Name
Field for SDM entry:	Form: Analog Element Type Form Component: Detail Block of the Analog Element Type Form Field: Info Type
Field for SDM entry:	Form: Accumulator Element Type Form Component: Detail Block of the Accumulator Element Type Form Field: Info Type Name

Measured Value InfoType name

Required:	YES
Data Type and Size:	character(16)
Columns:	25 - 40
Valid Values:	
Default Value:	
Dependencies:	This infotype must exist in table mvintyde
Description:	info type name for analog values. Relevant only for spontaneous analog values
Field for SDM entry:	Form: Analog Element Type Form Component: Detail Block of the Analog Element Type Form Field: Spontaneous

Record Type INFODEF

Indicator for cyclic or spontan processing (VaPar)

Required: YES
Data Type and Size: Character(16)
Columns: 42-57
Valid Values: VaSpon, VaCycl, VaNone
Default Value: VaNone
Dependencies:
Description: indic.: cyclic or spontaneous accumulator info

VAType

Required: YES
Data Type and Size: Number
Columns: 59-64
Valid Values: -32768 - 32767
Default Value:
Dependencies:
Description: accumulator processing No.in vaVEASP
Field for SDM entry: Form: Accumulator Element Type Form
Component: Detail Block of the Accumulator Element Type Form
Field: Spontaneous

Record Type INTYLIST

List identification

Required: Yes
Data Type and Size: number
Columns: 9-9
Valid Values: 1-4
Default Value:
Dependencies:
Description: number of list (first, second ..)

Name of List

Required: Yes
Data Type and Size: character(40)
Columns: 11-50
Valid Values: txt from relation lidihl of length 40 characters
Default Value: -
Dependencies:
Description: list number
Field for SDM entry: Form: Info Type Definition Form
Component: Summary Block
Field: Summary

Record Type INTYLIST

Appearing

Required:	No
Data Type and Size:	character(1)
Columns:	52-52
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	insert if appearing /fleeting
Field for SDM entry:	Form: Info Type Definition Form Component: Summary Block Field: Appearing

Disappearing

Required:	No
Data Type and Size:	character(1)
Columns:	54-54
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	insert if disappearing
Field for SDM entry:	Form: Info Type Definition Form Component: Summary Block Field: Disappearing

Record Type INTYLIST

Message Format

Required:	No
Data Type and Size:	number
Columns:	56-59
Valid Values:	0-127
Default Value:	0
Dependencies:	
Description:	number of module
Field for SDM entry:	Form: Info Type Definition Form Component: Summary Block Field: Message Format

Record Type INTYPRG

program identification

Required:	Yes
Data Type and Size:	number
Columns:	9-9
Valid Values:	1-5
Default Value:	1
Dependencies:	
Description:	number of Program (first, second ..)

Record Type INTYPRG

Program name

Required:	Yes
Data Type and Size:	character(8)
Columns:	11-18
Valid Values:	string(8) (MinObject - MaxObject)
Default Value:	MinObject
Dependencies:	
Description:	program name
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: User Programs

Record Type INTYPRN

Printer identification

Required:	Yes
Data Type and Size:	number
Columns:	9-9
Valid Values:	1-4
Default Value:	
Dependencies:	
Description:	number of printer (first, second ..)

Record Type INTYPRN

Printer name

Required:	Yes
Data Type and Size:	character(4)
Columns:	11-14
Valid Values:	string(4)
Default Value:	-
Dependencies:	
Description:	Printer name
Field for SDM entry:	Form: Info Type Definition Form Component: Printer Block Field: Printer

Appearing

Required:	No
Data Type and Size:	character(1)
Columns:	16-16
Valid Values:	Y, N
Default Value:	N
Dependencies:	
Description:	insert if appearing /fleeting
Field for SDM entry:	Form: Info Type Definition Form Component: Printer Block Field: Appearing

Record Type INTYPRN

Disappearing

Required:	No
Data Type and Size:	character(1)
Columns:	18-18
Valid Values:	Y, N
Default Value:	N
Dependencies:	
Description:	insert if disappearing
Field for SDM entry:	Form: Info Type Definition Form Component: Printer Block Field: Disappearing

MessageFormat

Required:	No
Data Type and Size:	number
Columns:	20-22
Valid Values:	0-127
Default Value:	0
Dependencies:	
Description:	number of module
Field for SDM entry:	Form: Info Type Definition Form Component: Printer Block Field: Message Format

Record Type INTYSRV

service identification

Required:	Yes
Data Type and Size:	number
Columns:	9-9
Valid Values:	1-5
Default Value:	1
Dependencies:	
Description:	number of Program (first, second ..)

service name

Required:	Yes
Data Type and Size:	character(8)
Columns:	11-18
Valid Values:	string(8) (all - maxsvc)
Default Value:	all
Dependencies:	
Description:	service name
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: User Services

Record Type INTYDE

Info Type Name

Required: Yes
Data Type and Size: character(8)
Columns: 9-16
Valid Values: string of lenght maximal 8 characters
Default Value:
Dependencies:
Description: info type name
Field for SDM entry: Form: Info Type Definition Form
Component: Master Block of the Info Type Definition Form
Field: Info Type Name

InfoType

Required: No
Data Type and Size: Number
Columns: 18-22
Valid Values: 0-32767
Default Value:
Dependencies:
Description: info type number
Field for SDM entry: Form: Info Type Definition Form
Component: Master Block of the Info Type Definition Form
Field: Info Type Number

Record Type INTYDE

Message Class Number

Required:	No
Data Type and Size:	Number
Columns:	24-27
Valid Values:	0 - 127
Default Value:	1
Dependencies:	
Description:	general message attribute message class
Field for SDM entry:	Form: Info Type Definition Form Component: Characteristics Block Field: Message Class

Appear/disappear

Required:	No
Data Type and Size:	character(1)
Columns:	28-28
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	general message attribute appear/disappear
Field for SDM entry:	Form: Info Type Definition Form Component: Characteristics Block Field: Appearing/Disappearing

Record Type INTYDE

Value Name

Required: Yes
Data Type and Size: Character(16)
Columns: 30-45
Valid Values: valnum and name (because must be unique) from VANAME
Default Value:
Dependencies: if ARCHIVE = N and numer of lists =0 and number of printers = 0 then Value Name must be 0
Description: value name in vaname
Field for SDM entry: Form: Info Type Definition Form
Component: Characteristics Block
Field: Value Offset Message

Value Name Comand Index

Required: No
Data Type and Size: Character(16)
Columns: 47-62
Valid Values: valnum and name (because must be unique) from VANAME
Default Value: 1
Dependencies:
Description: value name command index in vaname
Field for SDM entry: Form: Info Type Definition Form
Component: Characteristics Block
Field: Value Offset Command

Record Type INTYDE

Status type

Required:	Yes
Data Type and Size:	Character(16)
Columns:	64-71
Valid Values:	singles, doubles, fleet, tapset, DevStm, DigVal2, DigVal4, noSitype
Default Value:	
Dependencies:	
Description:	status type
Field for SDM entry:	Form: Info Type Definition Form Component: Characteristics Block Field: Status Type

Record Type INTYDEA

Supervision Time Min/Sec

Required:	No
Data Type and Size:	character(1)
Columns:	9-9
Valid Values:	Y, N
Default Value:	N
Dependencies:	
Description:	Supervision Time Min/Sec
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Supervision Time Min/Sec

Record Type INTYDEA

Supervision Time

Required: No
Data Type and Size: Number
Columns: 11-13
Valid Values: 0 - 127
Default Value: 0
Dependencies:
Description: remote control command reply timeout in sec/min
Field for SDM entry: Form: Info Type Definition Form
Component: Base Processing Block
Field: Command Supervision Time

Remote control command duration

Required: No
Data Type and Size: Number
Columns: 15-17
Valid Values: 0 - 127
Default Value: 0
Dependencies:
Description: remote control command duration
Field for SDM entry: Form: Info Type Definition Form
Component: Base Processing Block
Field: Command Output Time

Record Type INTYDEA

Dist Typ Nr

Required:	No
Data Type and Size:	Number
Columns:	19-21
Valid Values:	0 - 127
Default Value:	0
Dependencies:	
Description:	status type
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Disturbance Type

Real Time Intyde

Required:	No
Data Type and Size:	character(8)
Columns:	30-37
Valid Values:	name from intypname
Default Value:	NoType
Dependencies:	
Description:	reference to INTYDE for realtime
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Info Type for Realtime Alarm

Record Type INTYDEA

Inhibit info type

Required:	No
Data Type and Size:	character(8)
Columns:	39-46
Valid Values:	name from intypname
Default Value:	NoType
Dependencies:	
Description:	Inhibit info type
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Inhibit Info Type

Rc Term Timeout

Required:	No
Data Type and Size:	Number
Columns:	48-52
Valid Values:	0 - 32676
Default Value:	0
Dependencies:	
Description:	time for termination from RTU in sec
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: RTU Termination Time

Record Type INTYDEA

Status Monitoring Time

Required:	No
Data Type and Size:	Number
Columns:	54-58
Valid Values:	0 - 32767
Default Value:	0
Dependencies:	
Description:	status monitoring time in sec
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Status Monitoring Time

Alarm Message Delay

Required:	No
Data Type and Size:	Number
Columns:	60-64
Valid Values:	0 - 127
Default Value:	0
Dependencies:	
Description:	alarm message delay

Alarm Delay App

Required:	No
Data Type and Size:	character(1)
Columns:	66-66
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	delay message for app. event

Record Type INTYDEA

NCO relevance

Required:	No	
Data Type and Size:	character(1)	
Columns:	68-68	
Valid Values:	Y, N	
Default Value:	N	
Dependencies:		
Description:	NCO relevance	
Field for SDM entry:	Form: Component: Field:	Info Type Definition Form Base Processing Block Relevant for Interlocking Check

Topo relevance

Required:	No	
Data Type and Size:	character(1)	
Columns:	70-70	
Valid Values:	Y, N	
Default Value:	N	
Dependencies:		
Description:	topology relevance	
Field for SDM entry:	Form: Component: Field:	Info Type Definition Form Base Processing Block Relevant for Topology

Record Type INTYDEA

Pc Job

Required:	No
Data Type and Size:	character(1)
Columns:	72-72
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	infostat relevant for Activate SC Job
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Relevant for Activate SC-Job

Dynamic value in NIM

Required:	No
Data Type and Size:	character(1)
Columns:	74-74
Valid Values:	Y/N
Default Value:	N
Dependencies:	
Description:	value in NIM dynamic
Field for SDM entry:	Form: Info Type Definition Form Component: Base Processing Block Field: Info in NIM

Record Type INTYDEB

Archive

Required:	No
Data Type and Size:	character(1)
Columns:	9-9
Valid Values:	Y, N
Default Value:	N
Dependencies:	
Description:	archive changes
Field for SDM entry:	Form: Info Type Definition Form Component: Archive Block Field: Storage

Archive Modus

Required:	No
Data Type and Size:	Number
Columns:	11-13
Valid Values:	0 - 127
Default Value:	
Dependencies:	if ARCHIVE = N Archive modus must be 0
Description:	archive - text modus number
Field for SDM entry:	Form: Info Type Definition Form Component: Archive Block Field: Message Format

Record Type INTYDEB

Indicator of Graphic

Required:	No
Data Type and Size:	character(1)
Columns:	15-15
Valid Values:	Y,N
Default Value:	Y
Dependencies:	
Description:	show changes in graphic
Field for SDM entry:	Form: Info Type Definition Form Component: Representation Block Field: Update worldmap

Acknowl List App

Required:	No
Data Type and Size:	character(1)
Columns:	17-17
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	acknowledge in summary if appearing
Field for SDM entry:	Form: Info Type Definition Form Component: Representation Block Field: Acknowledge Summary Appearing

Record Type INTYDEB

Acknow List Disapp

Required:	No
Data Type and Size:	character(1)
Columns:	19-19
Valid Values:	Y,N
Default Value:	N
Dependencies:	
Description:	acknowledge in summary if disappearing
Field for SDM entry:	Form: Info Type Definition Form Component: Representation Block Field: Acknowledge Summary Disappearing

Signal State

Required:	No
Data Type and Size:	character(1)
Columns:	21-21
Valid Values:	Y, N
Default Value:	N
Dependencies:	if INDIC_GRAPHIC=N then SIGNALLING_STATE must be N
Description:	Selection guidance for persistent event
Field for SDM entry:	Form: Info Type Definition Form Component: Representation Block Field: Selection Guidance persistent

Record Type INTYDEB

Signal Spon Change

Required: No
Data Type and Size: character(1)
Columns: 23-23
Valid Values: Y,N
Default Value: N
Dependencies: if INDIC_GRAPHIC=N then SIGNALLING_SPON_CHANGE must be N
Description: selection guidance for acknow. event
Field for SDM entry: Form: Info Type Definition Form
Component: Representation Block
Field: Selection Guidance spontaneous

Acknowledge from/to Grafic/ List

Required: No
Data Type and Size: character(1)
Columns: 25-25
Valid Values: Y,N
Default Value: Y
Dependencies: if SIGNALLING_SPON_CHANGE =N or number of Lists =0 then ACK_GRAF_LI must be N
Description: acknowledge from/to Grafic/List
Field for SDM entry: Form: Info Type Definition Form
Component: Representation Block
Field: Acknowledge Graphic/Summary

Record Type INTYDEB

Acknowledge from/to List/Grafic

Required:	No
Data Type and Size:	character(1)
Columns:	27-27
Valid Values:	Y,N
Default Value:	N
Dependencies:	if SIGNALLING_SPON_CHANGE =N or number of Lists =0 then ACK_LI_GRAF must be N
Description:	acknowledge from/to List/Grafic
Field for SDM entry:	Form: Info Type Definition Form Component: Representation Block Field: Acknowledge Summary/Graphic

Expert system Class Identification

Required:	No
Data Type and Size:	Number
Columns:	29-33
Valid Values:	0 - 127
Default Value:	0
Dependencies:	if ES_SLOT_ID = 0 ES_CLAS_ID must be 0
Description:	Identification of the class
Field for SDM entry:	Form: Info Type Definition Form Component: Expert System Block Field: Class

Record Type INTYDEB

Expert system Slot Identification

Required:	No
Data Type and Size:	Number
Columns:	35-39
Valid Values:	0 - 127
Default Value:	0
Dependencies:	if ES_CLAS_ID = 0 ES_SLOT_ID must be 0
Description:	Identification of the slot
Field for SDM entry:	Form: Info Type Definition Form Component: Expert System Block Field: Slot

Alarm Delay Seco

Required:	No
Data Type and Size:	Number
Columns:	41-45
Valid Values:	0 - 32767
Default Value:	0
Dependencies:	
Description:	time for delayed alarm message in sec

Remote control

Required:	No
Data Type and Size:	Number
Columns:	47-47
Valid Values:	Y/N
Default Value:	N
Dependencies:	
Description:	remote control
Field for SDM entry:	Form: Info Type Definition Form Component: Characteristics Block Field: Remote Message Processing

Record Type INTYDEB

Telesignalled

Required:	No						
Data Type and Size:	Number						
Columns:	49-49						
Valid Values:	Y/N						
Default Value:	N						
Dependencies:							
Description:	telesignalled						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>Info Type Definition Form</td></tr><tr><td>Component:</td><td>Characteristics Block</td></tr><tr><td>Field:</td><td>Telesignaled Message Processing</td></tr></tbody></table>	Form:	Info Type Definition Form	Component:	Characteristics Block	Field:	Telesignaled Message Processing
Form:	Info Type Definition Form						
Component:	Characteristics Block						
Field:	Telesignaled Message Processing						

Record Type INTYCOM

Short comment

Required:	No						
Data Type and Size:	character						
Columns:	9-48						
Valid Values:	1-5						
Default Value:	1						
Dependencies:							
Description:	Short comment						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>Info Type Definition Form</td></tr><tr><td>Component:</td><td>Master Block of the Info Type Definition Form</td></tr><tr><td>Field:</td><td>Comment</td></tr></tbody></table>	Form:	Info Type Definition Form	Component:	Master Block of the Info Type Definition Form	Field:	Comment
Form:	Info Type Definition Form						
Component:	Master Block of the Info Type Definition Form						
Field:	Comment						

Connectivity Hierarchy

Connections

The connection records (CONN ... terminal record, CONNA ... node record) are used to describe connections between network equipment. Connections are always made "from" a terminal of one equipment "to" a connection node. For example, to define a connection between two switchbays, two CONN/CONNA record pairs are required: Switchbay A <-> Connection Node and Switchbay B <-> (same) Connection Node. The "from" and "to" designations are not meant to imply any sense of directionality.

The following classes of connections are permitted:

1. An element of a switchbay connected to another element of the same switchbay,
2. A switchbay connected to any other type of equipment and
3. Any type of equipment (except a switchbay) connected to a busbar.

Although "from" and "to" are arbitrary designations you cannot swap reference data entries around, i.e., switchbays can only be "from" and busbars can only be "to".

All network components must be connected by means of CONN and CONNA records. Switchbay terminals should be connected by means of CONN and CONNA records except that records to connect ground terminals of switchbays are not needed. Ground connections are created automatically. It is permissible for some kinds of switchbay terminals to remain unconnected. Any equipment which remains unconnected after all reference data is entered, or is found to be undefined, will be reported in error by a validation process.

 **Note:**

There is an exception when defining busbars. Busbars consist of a network component with one terminal and a busbar-internal connection node. The busbar-internal connection node serves as the connection node for all connected switchbays and network components.

Before you can connect any switchbay or network component with a busbar you need to connect the busbar terminal with the busbar-internal connection node. This connection must be defined one time for each concerned busbar.

Be aware that you must use the same B1, B2 and B3 for the busbar terminal and for the busbar-internal connection node when you create the CONN and CONNA record for this connection.

The order in which ALL references are described in the import data is maintained during import. Therefore, it is important that the user describes a complete set of connections in the import data (i.e., each terminal record must be followed by an accompanying node record).

Both automatic import and interactive editing allow for the insertion of new IDD records within an existing set of connections, however, during automatic import, all of the CONN and CONNA records (the new insertion as well as the original existing records) must be included so that the Import process can recognize the new order.

Below follows a description of the record types CONN and CONNA:

Terminal Record

This record type specifies a single terminal of a certain equipment (switch or topological element of any type of network component). Each terminal record must be followed by an accompanying node record (CONNA). The element specified by the CONN record determines the maximum number of CONN/CONNA record pairs for the concerned element (one record pair for each valid terminal):

Equipment	Number of Terminals	Maximum number of CONN/CONNA record pairs
Switch	2	2
Transformer	4	4
Line	2	2
Any other network component	1	1

Record Type CONN - Connection (Terminal Record)

B1_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 9-16
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B1 Name of the terminal
Field for SDM entry: Form: Connectivity Form
Component: Terminals List
Field: B1-Name

B2_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 18-25
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B2 Name of the terminal
Field for SDM entry: Form: Connectivity Form
Component: Terminals List
Field: B2-Name

Record Type CONN - Connection (Terminal Record) (Continued)

B3_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 27-34
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B3 Name of the terminal
Field for SDM entry: Form: Connectivity Form
Component: Terminals List
Field: B3-Name

Element_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 36-43
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: Element Name of the terminal
Field for SDM entry: Form: Connectivity Form
Component: Terminals List
Field: Element

Record Type CONN - Connection (Terminal Record) (Continued)

Terminal_ID

Required:	Yes	
Data Type and Size:	Character(8)	
Columns:	45-52	
Valid Values:	Depend on the type of the element specified by the attribute Element_Name:	
	Element type	Valid terminal IDs
	TopoCmp for a Transformer	HI VOLT LO VOLT STP1 STP2
	TopoCmp for a Line	BEGIN END
	TopoCmp for any other operational device	1
	Any switch	1 2
Default Value:		
Dependencies:	The value of the attribute Element_Name determines the valid values.	
Description:	Terminal ID of the respective terminal.	
Field for SDM entry:	Form:	Connectivity Form
	Component:	Terminals List
	Field:	Terminal

Node Record

This record type defines a connection node. It is applicable only if the preceding record specifies a terminal (record type CONN).

Record Type CONNA - Connection (Node Record)

B1_Node

Required:	Yes
Data Type and Size:	Character(8)
Columns:	9-16
Valid Values:	Must be a valid name.
Default Value:	
Dependencies:	
Description:	B1 Name of the connectivity node
Field for SDM entry:	Form: Connectivity Form Component: Nodes List Field: B1-Name

B2_Node

Required:	Yes
Data Type and Size:	Character(8)
Columns:	18-25
Valid Values:	Must be a valid name.
Default Value:	
Dependencies:	
Description:	B2 Name of the connectivity node
Field for SDM entry:	Form: Connectivity Form Component: Nodes List Field: B2-Name

Record Type CONNA - Connection (Node Record) (Continued)

B3_Node

Required: Yes
Data Type and Size: Character(8)
Columns: 27-34
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B3 Name of the connectivity node
Field for SDM entry: Form: Connectivity Form
Component: Nodes List
Field: B3-Name

Element_Node

Required: No
Data Type and Size: Character(8)
Columns: 36-43
Valid Values: Must be a topological element
Default Value:
Dependencies:
Description: Element Name of the connectivity node. A node name is generated when this field is not filled out.
Field for SDM entry: Form: Connectivity Form
Component: Nodes List
Field: Element

Network Group Hierarchy

The IDD definitions for network groups consists of the top-level records NWG (network Group) and NWG_ISO (Network Group Isolation):

Network Group Record

Record Type Network Group - NWG

group_name

Required: Yes
Data Type and Size: Character(8)
Columns: 9-16
Valid Values:
Default Value:
Dependencies:
Description: Name of the network group
Field for SDM entry: Form: Network Group Form
Component: Network Group Block
Field: Name

group_number

Required: Yes
Data Type and Size: Character(8)
Columns: 18-25
Valid Values:
Default Value:
Dependencies:
Description: Number of the network group

Record Type Network Group - NWG (Continued)

B1_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 27-34
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B1 Name of the terminal
Field for SDM entry: Form: Network Group Form
Component: Element Block
Field: B1-Name

B2_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 36-43
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B2 Name of the terminal
Field for SDM entry: Form: Network Group Form
Component: Element Block
Field: B2-Name

Record Type Network Group - NWG (Continued)

B3_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 45-52
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: B3 Name of the terminal
Field for SDM entry: Form: Network Group Form
Component: Element Block
Field: B3-Name

Element_Name

Required: Yes
Data Type and Size: Character(8)
Columns: 54-61
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: Element Name of the terminal
Field for SDM entry: Form: Network Group Form
Component: Element Block
Field: Element

Record Type Network Group - NWG (Continued)

Priority

Required: Yes
Data Type and Size: Number(3)
Columns: 72-74
Valid Values:
Default Value:
Dependencies:
Description: Priority of the element
Field for SDM entry: Form: Network Group Form
Component: Network Group Block
Field: Priority

Network Group Isolation Record

Record Type Network Group Isolation - NWG_ISO

Terminal_ID

Required: Yes
Data Type and Size: Character(8)
Columns: 45-52
Valid Values: Must be a valid name.
Default Value:
Dependencies:
Description: Terminal ID of the terminal
Field for SDM entry: Form: Network Group Form
Component: Isolating Block
Field: Terminal

Application Data Info Record

The application data info record can be used to form the info part of the 5-level Technological Address. Unlike the analog, accumulator and digital records, each ADINFO record describes a single application data info, its available additional information, application data references and processing options.

An ADINFO record requires a parent ELEM record which defines an application data element.

Record Type ADINFO - Application Data

Application Data Info

Required:	Yes
Data Type and Size:	character(8)
Columns:	9 - 16
Valid Values:	An info name.
Dependencies:	The info name must be the name of an application data info and must have been defined in the source database table AD_INFO_DEF for the parent application data element.
Description:	The name of the respective application data info.

Value

Required:	Yes
Data Type and Size:	character(40)
Columns:	18 - 57
Valid Values:	Real value in ASCII character format.
Description:	Application data main info value.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Info Worksheet Component: Application Data Info Tabular List Field: Value

Record Type ADINFOA - Application Data

Schedule name

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 42
Valid Values:	A schedule name.
Dependencies:	The attribute value must be one of the schedule names of the source database table SCHEDULE whose schedules have been assigned to the respective combination of application data element and application data info
Description:	Name of an associated schedule.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Info Worksheet Component: Application Data Info Tabular List Field: Schedule

An ADINFOB record can be used to define the name of an application data characteristic group associated with the application data info. It requires a parent ADINFO record which defines an application data info with an application data type configured as valIwChar.

Record Type ADINFOB - Application Data

Characteristic group name

Required:	Yes
Data Type and Size:	character(40)
Columns:	9 - 48
Valid Values:	The name of an application data characteristic group.
Dependencies:	The attribute value must be among the available names of application data characteristic groups in the source database table AD_CHARAC_GROUP.
	The application data type of the parent application data info must be valIwChar.
Description:	Name of an associated application data characteristic group.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Info Worksheet Component: Application Data Info Tabular List Field: Characteristic group

Application Data Info Additional Information

An ADITIME record can be used to define a time stamp as an additional information of an application data info. It requires a parent ADINFO record which defines an application data info with an application data type configured as valRwTime or valIwTime.

Record Type ADITIME - Application Data Additional Information

Time

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 40
Valid Values:	Real or integer value (depending on ADType) in ASCII character format. - Real value if ADType is valRvTime - Integer value if ADType is valIwTime
Dependencies:	The application data type of the parent application data info must be valRvTime or valIwTime.
Description:	A time information as an additional information.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Time Window Field: Time

An ADITA record can be used to define a technological address as an additional information of an application data info. It requires a parent ADINFO record which defines an application data info with an application data type configured as valITA.

Record Type ADITA - Application Data Additional Information

TA

Required:	Yes
Data Type and Size:	character(45)
Columns:	9 - 53
Valid Values:	A technological address in the following format: B1;B2;B3;ELEM;INFO; For example: "Vienna;220;Paris;CB;Status"
Dependencies:	The application data type of the parent application data info must be valITA.
Description:	Technological Address as an additional information.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Technological Address Window Fields: B1-Name B2-Name B3-Name Elem-Name Info-Name

An ADIFIG record can be used to define the number of a figure group and the number of a text group as additional information of an application data info. It requires a preceding AD-INFO record which defines an application data info with an application data type configured as valIwFig.

Record Type ADIFIG - Application Data Additional Information

Figure Group

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 40
Valid Values:	Integer value represented in ASCII character format.
Dependencies:	The application data type of the parent application data info must be valIwFig.
Description:	Figure group number as an additional information .
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Figure Group/Text Group Window Field: Figure Group

Text Group

Required:	Yes
Data Type and Size:	character(32)
Columns:	42 - 73
Valid Values:	Integer value represented in ASCII character format.
Dependencies:	The application data type of the parent application data info must be valIwFig.
Description:	Text group number as an additional information.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Figure Group/Text Group Window Field: Text Group

An ADIFORM record can be used to define a time format and a processing time as an additional information of an application data info. It requires a preceding ADINFO record which defines an application data info with an application data type configured as valITime.

Record Type ADIFORM - Application Data Additional Information

Time Format

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 40
Valid Values:	Integer value in ASCII character format.
Dependencies:	The application data type of the parent application data info must be valITime
Description:	Number of the time format used for the representation of the time value. The time format number is stored as an additional information
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Time Format Window Field: Time Format

Proc Time

Required:	Yes
Data Type and Size:	character(32)
Columns:	42 - 73
Valid Values:	Integer value. Valid values are: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
Dependencies:	The application data type of the parent application data info must be valITime
Description:	Time processing indicator as an additional information.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Time Format Window Field: Time Value

An ADILIM record can be used to define upper and lower limit values as additional information of an application data info. It requires a preceding ADINFO record which defines an application data info with an application data type configured as valRwLim, valRwHLim, valIwLim or valIwHLim.

Record Type ADILIM - Application Data Additional Information

Minimum

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 40
Valid Values:	Real or integer value (depending on ADType) in ASCII character format. <ul style="list-style-type: none">- Real value if ADType is valRwLim or valRwHLim- Integer value if ADType is valIwLim or valIwHLim
Dependencies:	The application data type of the parent application data info must be valRwLim, valRwHLim, valIwLim or valIwHLim.
Description:	Lower limit value as an additional information
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Limits Window Field: Minimum

Maximum

Required:	Yes
Data Type and Size:	character(32)
Columns:	42 - 73
Valid Values:	Real or integer value (depending on ADType) in ASCII character format. <ul style="list-style-type: none">- Real value if ADType is valRwLim or valRwHLim- Integer value if ADType is valIwLim or valIwHLim
Dependencies:	The application data type of the parent application data info must be valRwLim, valRwHLim, valIwLim or valIwHLim.
Description:	Upper limit value as an additional information.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Additional Information Windows Component: Limits Window Field: Maximum

An ADICCHAR record can be used to assign an application data characteristic group to an application data info. The application data characteristic group information specified by the ADICCHAR record are stored as additional information for the parent application data info.

An ADICCHAR record requires a preceding ADINFO record which defines an application data info with an application data type configured as valIwChar.

Record Type ADICCHAR - Application Data Additional Information

Characteristic group

Required:	Yes
Data Type and Size:	character(32)
Columns:	9 - 40
Valid Values:	Integer value in ASCII character format.
Dependencies:	The application data type of the parent application data info must be valIwChar.
Description:	Number of an assigned application data characteristic group as an additional information (database key for table AD_CHARAC_GROUP).

Characteristic text group

Required:	Yes
Data Type and Size:	character(40)
Columns:	42 - 81
Valid Values:	Integer value in ASCII character format.
Dependencies:	The application data type of the parent application data info must be valIwChar.
Description:	Number of the title of the application data characteristic group (database key for table TXTGRDEF) specified by the attribute Characteristic group (description see above).

An ADCALC record can be used to assign a calculation formula to an application data info. An ADCALC record requires a preceding ADINFO record whose input mode has been configured as `IO` (calculated application data info).

Record Type ADCALC - Application Data Additional Information

Formula number

Required:	Yes								
Data Type and Size:	number(4)								
Columns:	9 - 12								
Valid Values:	The number of a formula.								
Dependencies:	If a formula is specified, one ADCAOP record is required for each operand in the formula.								
Description:	The attribute value must be a number of a formula that has already been defined via SDM. The formula must be available in the source database table FORMULA.								
Field for SDM entry:	<table><tr><td>Form:</td><td>Application Data Info Form</td></tr><tr><td>Worksheet/Window:</td><td>Calculation Worksheet</td></tr><tr><td>Component:</td><td>Result Block</td></tr><tr><td>Field:</td><td>Formula</td></tr></table>	Form:	Application Data Info Form	Worksheet/Window:	Calculation Worksheet	Component:	Result Block	Field:	Formula
Form:	Application Data Info Form								
Worksheet/Window:	Calculation Worksheet								
Component:	Result Block								
Field:	Formula								

Calculation type

Required:	Yes
Data Type and Size:	number(1)
Columns:	14 - 14
Valid Values:	6 - Binary 1:1 combination 7 - Binary combination 8 - Value 1:1 combination 9 - Value combination
Description:	Calculation processing type. Specifies the type of the calculation (1:1 or other) and the data type of the result (value or binary).

Application Data Calculation Operand Record

This record type is only applicable if the preceding info record specifies a formula (record type ADCALC). One ADCAOP record is required for every operand in the formula.

Record Type ADCAOP – Application Data Calculation Operand Data

Operand Identifier

Required:	Yes
Data Type and Size:	character (1)
Columns:	9 - 9
Valid Values:	A - Z (uppercase letters), a - z (lowercase letters)
Description:	Name of an operand (variable) used in the concerned formula.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Calculation Worksheet Component: Operands Tabular List Field: Operand

Type

Required:	Yes
Data Type and Size:	character (3)
Columns:	11 - 13
Valid Values:	TA Value is taken from info specified by a technological address -TA Value is taken from info specified by a technological address and multiplied by -1. On For binary application data info: value is taken from info specified by a technological address Off For binary application data info: value is taken from info specified by a technological address and inverted CON Constant value
Description:	Type of the operand (variable or constant).
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Calculation Worksheet Component: Operands Tabular List Field: Type

Record Type ADCAOP – Application Data Calculation Operand Data (Continued)

Constant

Required: Conditional
Data Type and Size: float (10)
Columns: 15 - 24
Valid Values: -99999992 - 99999992
Dependencies: The constant value is only required if the attribute Type is set to CON.
Description: Constant value to be used in the calculation.
Field for SDM entry: Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: Constant

Operand B1 Name

Required: Conditional
Data Type and Size: character (8)
Columns: 26 - 33
Valid Values: A B1 Block Name
Dependencies: The operand B1 Name is only required if the attribute Type is set to TA.
Description: Name of the B1 block of the technological address that specifies the info to be used in the calculation.
Field for SDM entry: Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: B1-Name

Record Type ADCAOP – Application Data Calculation Operand Data (Continued)

Operand B2 Name

Required: Conditional
Data Type and Size: character (8)
Columns: 35 - 42
Valid Values: A B2 Block Name
Dependencies: A B2 Name is only needed if attribute Type is set to TA and the technological address for this calculation includes a B2 level.
Description: Name of the B2 block of the technological address that specifies the info to be used in the calculation.
Field for SDM entry: Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: B2-Name

Operand B3 Name

Required: Conditional
Data Type and Size: character (8)
Columns: 44 - 51
Valid Values: A B3 Block Name
Dependencies: The B3 Name is only required if attribute Type is set to TA and the technological address for this calculation includes a B3 level.
Description: Name of the B3 block of the technological address that specifies the info to be used in the calculation.
Field for SDM entry: Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: B3-Name

Record Type ADCAOP – Application Data Calculation Operand Data (Continued)

Operand Element Name

Required: Conditional
Data Type and Size: character (8)
Columns: 53 - 60
Valid Values: An Element Name
Dependencies: The Operand Element Name is only required if attribute Type is set to TA.
Description: Name of the element of the technological address that specifies the info to be used in the calculation.
Field for SDM entry:
Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: Element-Name

Operand Info Name

Required: Conditional
Data Type and Size: character (8)
Columns: 62 - 69
Valid Values: An Info Name
Dependencies: The Info Name is only required if attribute Type is set to TA.
Description: Name of the info to be used in the calculation.
Field for SDM entry:
Form: Application Data Info Form
Worksheet/Window: Calculation Worksheet
Component: Operands Tabular List
Field: Info-Name

Application Data Reference Record

This record type is only applicable if the preceding record defines an application data element (record type ELEM). One ADREF record is required for every application data reference of the respective application data info.

Record Type ADREF - Application Data Reference

Reference Name

Required:	Yes
Data Type and Size:	character(8)
Columns:	9 - 16
Valid Values:	Name of a reference “terminal”.
Dependencies:	The attribute value must be any of the references associated with the respective application data element. The reference must be available in the source database table AD_REFERENCE_DEF.
Description:	Name of a reference “terminal”.

B1 Name To Site

Required:	Yes
Data Type and Size:	character(8)
Columns:	18 - 25
Valid Values:	A B1 block name.
Description:	Name of the referenced B1 block.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Reference Worksheet Component: Application Data Reference Tabular List Field: B1-Name

Record Type ADREF - Application Data Reference (Continued)

B2 Name To Site

Required:	Yes
Data Type and Size:	character(8)
Columns:	27 - 34
Valid Values:	A B2 block name.
Description:	Name of the referenced B2 block.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Reference Worksheet Component: Application Data Reference Tabular List Field: B2-Name

B3 Name To Site

Required:	Yes
Data Type and Size:	character(8)
Columns:	36 - 43
Valid Values:	A B3 block name.
Description:	Name of the referenced B3 block.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Reference Worksheet Component: Application Data Reference Tabular List Field: B3-Name

Record Type ADREF - Application Data Reference (Continued)

Elem Name To Site

Required:	Yes
Data Type and Size:	character(8)
Columns:	45 - 52
Valid Values:	The name of an allowed element.
Dependencies:	The element name must be an allowed element for the respective reference "terminal" (element must be available as ADAllowed in table AD_REFERENCE_DEF).
Description:	Name of the referenced element.
Field for SDM entry:	Form: Application Data Info Form Worksheet/Window: Application Data Reference Worksheet Component: Application Data Reference Tabular List Field: Element-Name

Decision Table Hierarchy

General Decision Table Data

Record Type DT_Head

DtNr

Required: Yes
Data Type and Size: number(4)
Columns: 9 -12
Valid Values: depending on DtGroup and DtType (1,2,3-..)
Default Value: 0
Dependencies: The number must be unique over all decision table types
Description: decision table number
Field for SDM entry: Form: Decision Table Definition Form
Component:
Field: DT-Nr

DTGroup

Required: Yes
Data Type and Size: character(12)
Columns: 31- 42
Valid Values: 'interlocking' or 'combinations'
Default Value: '-----'
Dependencies: No
Description: Group (supervisory control interlocking dt's or combination dt's)
Field for SDM entry: Form: Decision Table Definition Form
Component:
Field: DT-Group

Record Type DT_Head (Continued)

DTType

Required: Yes
Data Type and Size: character(16)
Columns: 44-59
Valid Values: 'funcspec-interl.', 'superior-interl.', local-interlock.', global-interlock' for DTGroup 'Interlocking'. For DTGroup 'combinations' there are 'circuit-comb.', 'elemspec-comb.' and 'individual-comb.' valid.
Default Value: '-----'
Dependencies: No
Description: Kind of decision table
Field for SDM entry: Form: Decision Table Definition Form
Component:
Field: DT-Type

DTName

Required: Yes
Data Type and Size: character(16)
Columns: 14-29
Valid Values: 'FreeNameWith16Ch'
Default Value: 'Dec.Table No.xxx'
Dependencies: No
Description: Name of decision table
Field for SDM entry: Form: Decision Table Definition Form
Component:
Field: DT-Name

Record Type DT_Head (Continued)

Comment

Required:	No
Data Type and Size:	character(64)
Columns:	14-77
Valid Values:	Free Comment up to 64 character
Default Value:	Blancs
Dependencies:	No
Description:	comment 0 - 64 characters
Field for SDM entry:	Form: Decision Table Definition Form Component: Field: Comment

Condition Line Data for Decision Tables

Record Type DT_Cond_Line

CondLine

Required:	Yes
Data Type and Size:	number(2)
Columns:	9 -10
Valid Values:	(1,2,3..)
Default Value:	0
Dependencies:	The number must be unique over this decision table
Description:	condition line number

Record Type DT_Cond_Line (Continued)

Codeword

Required:	Yes
Data Type and Size:	number(3)
Columns:	12 - 14
Valid Values:	'Cowomin' .. 'Cowomax'
Default Value:	'Cowomin'
Dependencies:	Must be among the data sets in DT_COWO_NAME
Description:	Number of the assigned codeword (database key for DT_COWO_NAME).

Locking Condition

Required:	No
Data Type and Size:	character(1)
Columns:	65- 65
Valid Values:	'U'(nlock)
Default Value:	''
Dependencies:	NcDeTa only
Description:	'U'- report may be unlocked

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form:	Superior Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	U
	Form:	Global Area Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	U
	Form:	Local Area Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	U
	Form:	Function Specific Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	U

Record Type DT_Cond_Line (Continued)

Report

Required:	No
Data Type and Size:	number(4)
Columns:	69- 72
Valid Values:	(1,2,3-..), existing in SVCTEXT
Default Value:	‘’
Dependencies:	NcDeTa only
Description:	Number of the assigned report text (database key for SVCTEXT)

Record Type DT_Cond_Line (Continued)

Abbreviation

Required: Yes
Data Type and Size: varchar2(8)
Columns: 74- 81
Valid Values:
Default Value: ''
Dependencies: No
Description: Abbreviations used in condline

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry: Form: Circuit Specific Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation
Form: Individual (1:1) Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation
Form: Superior Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation
Form: Global Area Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation
Form: Local Area Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation
Form: Function Specific Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Abbreviation

Record Type DT_Cond_Line (Continued)

B1

Required: Yes (in global (1:1) decision tables and depending on 'Cow' too
Data Type and Size: varchar2(8)
Columns: 20- 27
Valid Values: existing in B1Name
Default Value: ''
Dependencies: No
Description:

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry: Form: Individual (1:1) Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: B1-Name
Form: Global Area Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: B1 Name

Record Type DT_Cond_Line (Continued)

B2

Required:	Yes (in global (1:1) decision tables and depending on 'Cow' too
Data Type and Size:	varchar2(8)
Columns:	29- 36
Valid Values:	existing in B2Name
Default Value:	''
Dependencies:	B1 is necessary
Description:	

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form: Individual (1:1) Combinations Form Worksheet/Window: Parameters Worksheet
	Component: Field: B2-Name
	Form: Global Area Interlocking Conditions Form Worksheet/Window: Parameters Worksheet
	Component: Field: B2 Name

Record Type DT_Cond_Line (Continued)

B3

Required:	Yes (in global (1:1) decision tables and depending on 'Cow' too)
Data Type and Size:	varchar2(8)
Columns:	38- 45
Valid Values:	existing in B3Name
Default Value:	''
Dependencies:	B1 and B2 are necessary
Description:	

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form: Individual (1:1) Combinations Form Worksheet/Window: Parameters Worksheet Component: Field: B3-Name
	Form: Global Area Interlocking Conditions Form Worksheet/Window: Parameters Worksheet Component: Field: B3 Name

Record Type DT_Cond_Line (Continued)

Elem

Required: Use of Attributes depending on 'CowO'
Data Type and Size: varchar2(8)
Columns: 47- 54
Valid Values: existing in EIName
Default Value: ''
Dependencies: No

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form: Circuit Specific Combinations Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name
	Form: Individual (1:1) Combinations Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name
	Form: Superior Interlocking Conditions Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name
	Form: Global Area Interlocking Conditions Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name
	Form: Local Area Interlocking Conditions Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name
	Form: Function Specific Interlocking Conditions Form
	Worksheet/Window: Parameters Worksheet
	Component:
	Field: Element Name

Record Type DT_Cond_Line (Continued)

Info

Required: Use of Attributes depending on 'CowO'
Data Type and Size: varchar2(8)
Columns: 56- 63
Valid Values: existing in InName
Default Value: ''
Dependencies: Elem is necessary
Description:

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry: Form: Circuit Specific Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name
Form: Element Specific Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info-Name
Form: Individual (1:1) Combinations Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name
Form: Superior Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name
Form: Global Area Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name
Form: Local Area Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name
Form: Function Specific Interlocking Conditions Form
Worksheet/Window: Parameters Worksheet
Component:
Field: Info Name

Record Type DT_Cond_Line (Continued)

InfoNr

Required:	Yes
Data Type and Size:	number(3)
Columns:	16 - 18
Valid Values:	existing in NEDE
Default Value:	
Dependencies:	CoEIDT only
Description:	Number of the assigned standard element (database key for NEDE)

Knowncond

Required:	Yes
Data Type and Size:	character(1)
Columns:	67- 67
Valid Values:	'F' ' '
Default Value:	
Dependencies:	NcDeTa only
Description:	defines filter lines

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form:	Superior Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	F
	Form:	Global Area Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	F
	Form:	Local Area Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	F
	Form:	Function Specific Interlocking Conditions Form
	Worksheet/Window:	Parameters Worksheet
	Component:	
	Field:	F

DT_RULE - Rule Description

Record Type DT_Rule

Rule

Required:	Yes
Data Type and Size:	number(2)
Columns:	9 - 10
Valid Values:	1, 2, 3-
Default Value:	"
Dependencies:	
Description:	number of rule

Attribute

Required:	Yes
Data Type and Size:	number(2)
Columns:	12 -13
Valid Values:	> 0
Default Value:	
Dependencies:	only for dtcoed, dtcooled
Description:	alternative for attribute group (MEDI)

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form:	Circuit Specific Combinations Form
	Worksheet/Window:	Rules Worksheet
	Component:	
	Field:	Alternative
	Form:	Element Specific Combinations Form
	Worksheet/Window:	Rules Worksheet
	Component:	
	Field:	Alternative
	Form:	Individual (1:1) Combinations Form
	Worksheet/Window:	Rules Worksheet
	Component:	
	Field:	Alternative

DT_Cond - Condition

Record Type DT_Cond

ConditionLine

Required:	Yes
Data Type and Size:	number(2)
Columns:	12 -13
Valid Values:	> 0
Default Value:	'1'
Dependencies:	
Description:	number of condition line

Rule

Required:	Yes
Data Type and Size:	number(2)
Columns:	9 - 10
Valid Values:	> 0
Default Value:	'1'
Dependencies:	
Description:	number of rule

Record Type DT_Cond (Continued)

Condition

Required: Yes
Data Type and Size: character(8)
Columns: 15 -22
Valid Values:
Default Value:
Dependencies:
Description:

Note: The field for SDM entry depends on the decision table type!

Field for SDM entry:	Form: Circuit Specific Combinations Form Worksheet/Window: Rules Worksheet
Component:	Field: Rule <n>
Form: Element Specific Combinations Form Worksheet/Window: Rules Worksheet	Component:
Field: Rule <n>	Form: Individual (1:1) Combinations Form Worksheet/Window: Rules Worksheet
Component:	Field: Rule <n>
Form: Superior Interlocking Conditions Form Worksheet/Window: Rules Worksheet	Component:
Field: Rule <n>	Form: Global Area Interlocking Conditions Form Worksheet/Window: Rules Worksheet
Component:	Field: Rule <n>
Form: Local Area Interlocking Conditions Form Worksheet/Window: Rules Worksheet	Component:
Field: Rule <n>	Form: Function Specific Interlocking Conditions Form Worksheet/Window: Rules Worksheet
Component:	Field: Rule <n>

Application Data Characteristic Groups Hierarchy

Application Data Characteristic Group Record

The application data characteristic group record (CHGR record) can be used to define a "family" of X/Y curves (application data characteristics) which describe the characteristic of a value (e.g., if a certain characteristic has been assigned to an application data info, it describes the characteristic of that application data info).

One CHGR record is required for each application data characteristic group.

Record Type CHGR - Application Data Characteristic Group

Characteristic Group Name

Required:	Yes
Data Type and Size:	character(16)
Columns:	9 - 24
Valid Values:	
Description:	Name of application data characteristic group.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Component: Application Data Characteristic Groups Tabular List Field: Name

Characteristic Group Number

Required:	Yes
Data Type and Size:	number(3)
Columns:	26 - 28
Valid Values:	> 0 (zero)
Description:	Number of the respective application data characteristic group.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Component: Application Data Characteristic Groups Tabular List Field: GrNo.

Record Type CHGRA - Application Data Characteristic Group

Group Title

Required:	Yes
Data Type and Size:	character(40)
Columns:	9 - 48
Valid Values:	Character string.
Description:	Title of the respective application data characteristic group.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Component: Application Data Characteristic Groups Tabular List Field: Title

Group Slope

Required:	Yes
Data Type and Size:	character(14)
Columns:	50 - 63
Valid Values:	FreeSlope, FreeCont, Increasing, IncrStrict, IncrCont, IncrStrictCont, Decreasing, DecrStrict, DecrCont, DecrStrictCont
Description:	Group slope of the respective application data characteristic group.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Characteristic Group Attributes Block Field: Group Slope

Record Type CHGRA - Application Data Characteristic Group (Continued)

Abscisse

Required:	Yes
Data Type and Size:	character(6)
Columns:	65 - 70
Valid Values:	SameX OtherX
Description:	Method of abscissa specification
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Characteristic Group Attributes Block Field: Abscisse

Size

Required:	Yes
Data Type and Size:	character(9)
Columns:	72 - 80
Valid Values:	Unlimited Limited
Description:	Size restriction (limited size or unlimited size).
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Characteristic Group Attributes Block Field: Size

Application Data Characteristic Record

This record type is only applicable if the preceding record defines an application data characteristic group (record type CHGR). One CHAR record is required for every application data characteristic of the parent application data characteristic group.

Record Type CHAR - Application Data Characteristic

Characteristic Number

Required:	Yes
Data Type and Size:	number(3)
Columns:	9 - 11
Valid Values:	> 0 (zero)
Description:	Number of the respective application data characteristic.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Application Data Characteristics Tabular List Field: Number

Characteristic Title

Required:	Yes
Data Type and Size:	character(40)
Columns:	13 - 52
Valid Values:	Character string.
Description:	Title of the respective application data characteristic.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Application Data Characteristics Tabular List Field: Title

Record Type CHAR - Application Data Characteristic (Continued)

Characteristic Type

Required:	Yes
Data Type and Size:	character(11)
Columns:	54 - 64
Valid Values:	Discrete DiscreteAdI
Description:	Type of the respective application data characteristic.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Application Data Characteristics Worksheet Component: Application Data Characteristics Tabular List Field: Type

Record Type CHAR - Application Data Characteristic (Continued)

Characteristic Slope

Required: Yes
Data Type and Size: character(14)
Columns: 66 - 79
Valid Values: Depend on the attribute Group Slope of the parent application data characteristic group:

Group Slope	Valid Values for Characteristic Slope
FreeSlope	FreeSlope, FreeCont, Increasing, IncrStrict, IncrCont, IncrStrictCont, Decreasing, DecrStrict, DecrCont, DecrStrictCont
FreeCont	FreeSlope, IncrCont, IncrStrictCont, DecrCont, DecrStrictCont
Increasing	Increasing, IncrStrict, IncrCont, IncrStrictCont
IncrStrict	IncrStrict, IncrStrictCont
IncrCont	IncrCont, IncrStrictCont
IncrStrictCont	IncrStrictCont
Decreasing	Decreasing, DecrStrict, DecrCont, DecrStrictCont
DecrStrict	DecrStrict, DecrStrictCont
DecrCont	DecrCont, DecrStrictCont
DecrStrictCont	DecrStrictCont

Dependencies: The value of the characteristic group attribute Group Slope (see description on page 466) restricts the valid characteristic slope values.
Description: Slope of the respective application data characteristic.
Field for SDM entry:
Form: Application Data Characteristic Groups Form
Worksheet/Window: Application Data Characteristics Worksheet
Component: Application Data Characteristics Tabular List
Field: Slope

Record Type CHARA - Application Data Characteristic

Value Z

Required: Yes
Data Type and Size: number(10.10)
Columns: 9 - 29
Valid Values: Real value
Description: Third dimension value for access to application data characteristic.
Field for SDM entry: Form: Application Data Characteristic Groups Form
Worksheet/Window: Application Data Characteristics Worksheet
Component: Application Data Characteristics Tabular List
Field: Value Z

Integration Constant

Required: Yes
Data Type and Size: number(10.10)
Columns: 31 - 51
Valid Values: Real value
Description: Integration constant.
Field for SDM entry: Form: Application Data Characteristic Groups Form
Worksheet/Window: Application Data Characteristics Worksheet
Component: Application Data Characteristics Tabular List
Field: Int. Constant

Application Data Characteristic Segment Record

This record type is only applicable if the preceding record defines an application data characteristic (record type CHAR). One CHSEGM record is required for every application data characteristic segment of the parent application data characteristic.

Record Type CHSEGM - Application Data Characteristic Segment

Segment Number

Required:	Yes
Data Type and Size:	number(3)
Columns:	9 - 11
Valid Values:	> 0 (zero)
Description:	Characteristic segment number.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Characteristic Segments Worksheet Component: Characteristic Segments Tabular List Field: Segment

Record Type CHSEGM - Application Data Characteristic Segment (Continued)

Segment Starting Point (X-coordinate)

Required:	Yes
Data Type and Size:	number(21)
Columns:	13 - 33
Valid Values:	The valid values depend on the attribute Abscisse of the respective application data characteristic group: Abscisse Valid Values for Segment Starting Point (X-coordinate) SameX each characteristic segment of a given application data characteristic group must have the same X-coordinate value OtherX the characteristic segments in a given application data characteristic group may have different X-coordinate values
Dependencies:	The value of the characteristic group attribute Abscisse (see description of the attribute 'Abscisse' on page 467) restricts the valid X-coordinate values for the segment starting point.
Description:	X-coordinate for segment starting point.
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Characteristic Segments Worksheet Component: Characteristic Segments Tabular List Field: X-Begin

Record Type CHSEGM - Application Data Characteristic Segment (Continued)

Segment Starting Point (Y-coordinate)

Required:	Yes														
Data Type and Size:	number(21)														
Columns:	35 - 55														
Valid Values:	The valid values depend on the attribute Characteristic Slope of the respective application data characteristic: <table><thead><tr><th>Characteristic Slope</th><th>Valid Values for Y-coordinate</th></tr></thead><tbody><tr><td>FreeCont</td><td>Y-coordinate value must be identical with</td></tr><tr><td>IncrCont</td><td>Y-coordinate value of the segment end point of</td></tr><tr><td>IncrStrictCont</td><td>the previous segment.</td></tr><tr><td>DecrCont</td><td></td></tr><tr><td>DecrStrictCont</td><td></td></tr><tr><td>all other values</td><td>Y-coordinate value needs not to be identical with Y-coordinate value of the segment end point of the previous segment.</td></tr></tbody></table>	Characteristic Slope	Valid Values for Y-coordinate	FreeCont	Y-coordinate value must be identical with	IncrCont	Y-coordinate value of the segment end point of	IncrStrictCont	the previous segment.	DecrCont		DecrStrictCont		all other values	Y-coordinate value needs not to be identical with Y-coordinate value of the segment end point of the previous segment.
Characteristic Slope	Valid Values for Y-coordinate														
FreeCont	Y-coordinate value must be identical with														
IncrCont	Y-coordinate value of the segment end point of														
IncrStrictCont	the previous segment.														
DecrCont															
DecrStrictCont															
all other values	Y-coordinate value needs not to be identical with Y-coordinate value of the segment end point of the previous segment.														
Dependencies:	The value of the attribute Characteristic Slope (see description of the attribute 'Characteristic Slope' on page 470) restricts the valid Y-coordinate values for the segment starting point.														
Description:	Y-coordinate for segment starting point.														
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Characteristic Segments Worksheet Component: Characteristic Segments Tabular List Field: Y-Begin														

Record Type CHSEGM - Application Data Characteristic Segment (Continued)

Additional value

Required:	Yes	
Data Type and Size:	number(21)	
Columns:	57 - 77	
Valid Values:	The valid values depend on the attribute Characteristic Type of the respective application data characteristic:	
	Characteristic Type	Valid Values
	Discrete	Additional value is empty
Dependencies:	The value of the attribute Characteristic Type (see description of the attribute 'Characteristic Type' on page 469) restricts the valid additional values.	
Description:	Additional characteristic segment point.	
Field for SDM entry:	Form:	Application Data Characteristic Groups Form
	Worksheet/Window:	Characteristic Segments Worksheet
	Component:	Characteristic Segments Tabular List
	Field:	Additional

Record Type CHSEGMA - Application Data Characteristic Segment

Segment End Point (X-coordinate)

Required:	Yes	
Data Type and Size:	number(10.10)	
Columns:	9 - 29	
Valid Values:	Real value; must be > value of attribute Segment Starting Point (X-coordinate)	
Dependencies:	Attribute value must be greater than value of attribute Segment Starting Point (X-coordinate)	
Description:	X-coordinate for segment end point.	
Field for SDM entry:	Form:	Application Data Characteristic Groups Form
	Worksheet/Window:	Characteristic Segments Worksheet
	Component:	Characteristic Segments Tabular List
	Field:	X-End

Record Type CHSEGMA - Application Data Characteristic Segment (Continued)

Segment End Point (Y-coordinate)

Required:	Yes						
Data Type and Size:	number(10.10)						
Columns:	31 - 51						
Valid Values:	Real value; The valid values depend on the attribute Characteristic Slope of the respective application data characteristic: <table><thead><tr><th>Characteristic Slope</th><th>Valid Values</th></tr></thead><tbody><tr><td>Increasing IncrStrict IncrCont IncrStrictCont</td><td>in these 4 cases, the value must be greater than the value of the attribute Segment Starting Point (Y-coordinate)</td></tr><tr><td>Decreasing DecrStrict DecrCont DecrStrictCont</td><td>in these 4 cases, the value must be smaller than the value of the attribute Segment Starting Point (Y-coordinate)</td></tr></tbody></table>	Characteristic Slope	Valid Values	Increasing IncrStrict IncrCont IncrStrictCont	in these 4 cases, the value must be greater than the value of the attribute Segment Starting Point (Y-coordinate)	Decreasing DecrStrict DecrCont DecrStrictCont	in these 4 cases, the value must be smaller than the value of the attribute Segment Starting Point (Y-coordinate)
Characteristic Slope	Valid Values						
Increasing IncrStrict IncrCont IncrStrictCont	in these 4 cases, the value must be greater than the value of the attribute Segment Starting Point (Y-coordinate)						
Decreasing DecrStrict DecrCont DecrStrictCont	in these 4 cases, the value must be smaller than the value of the attribute Segment Starting Point (Y-coordinate)						
Dependencies:	The value of the attribute Characteristic Slope (see description of the attribute 'Characteristic Slope' on page 470) restricts the valid Y-coordinate values for the segment end point.						
Description:	Y-coordinate for segment end point.						
Field for SDM entry:	Form: Application Data Characteristic Groups Form Worksheet/Window: Characteristic Segments Worksheet Component: Characteristic Segments Tabular List Field: Y-End						

Schedule Hierarchy

Schedule Record

The SCHED record can be used to define application data schedules. One SCHED record is required for each application data schedule.

Record Type SCHED - Schedule

Schedule Element

Required:	Yes
Data Type and Size:	character(8)
Columns:	9 - 16
Valid Values:	Name of an application data element.
Dependencies:	Element name must identify an application data element available in the column ADElemName of the source database table AD_INFO_DEF.
Description:	Name of the application data element to which the which schedule has been assigned.

Schedule name

Required:	Yes
Data Type and Size:	character(25)
Columns:	18 - 42
Valid Values:	A character string.
Description:	Name of schedule type.

Schedule Info

Required:	Yes
Data Type and Size:	character(8)
Columns:	51 - 58
Valid Values:	Name of an application data info
Dependencies:	Info name must identify an application data info available in the column ADInfoName of the source database table AD_INFO_DEF.
Description:	Name of the application data info to which the which schedule has been assigned.

Record Type SCHED - Schedule (Continued)

Sequence Period

Required:	Yes
Data Type and Size:	number(32)
Columns:	60 - 91
Valid Values:	> 0 (zero)
Dependencies:	The attributes Past (see description on page 479), Future and Sequence Period (see description on page 478) restrict the valid values of the attribute Maximum Rows (see description on page 479).
Description:	Time period in seconds between two schedule entries.
Field for SDM entry:	Form: Schedule Form Component: Schedule Time Range Configuration Block Field: Period

Record Type SCHEDA - Schedule

Future

Required:	Yes
Data Type and Size:	number(32)
Columns:	9 - 40
Valid Values:	> 0 (zero)
Description:	Schedule time range in the future (in seconds, relative to current time).
Dependencies:	The attributes Past (see description on page 479), Future and Sequence Period (see description on page 478) restrict the valid values of the attribute Maximum Rows (see description on page 479).
Field for SDM entry:	Form: Schedule Form Component: Schedule Time Range Configuration Block Field: Future

Record Type SCHEDA - Schedule (Continued)

Past

Required:	Yes
Data Type and Size:	number(32)
Columns:	42 - 73
Valid Values:	> 0 (zero)
Dependencies:	The attributes Past (see description on page 479), Future and Sequence Period (see description on page 478) restrict the valid values of the attribute Maximum Rows (see description on page 479).
Description:	Schedule time range in the past (in seconds, relative to current time).
Field for SDM entry:	Form: Schedule Form Component: Schedule Time Range Configuration Block Field: Past

Record Type SCHEDB - Schedule

Maximum Rows

Required:	Yes
Data Type and Size:	number(32)
Columns:	9 - 40
Valid Values:	The valid value is: (Past + Future) / Sequence Period
Dependencies:	The valid attribute value is calculated from the values of the attributes Past (see description on page 479), Future (see description on page 478) and Sequence Period (see description on page 478).
Description:	Maximum number of rows in schedule.

Record Type SCHEDB - Schedule (Continued)

Offset

Required: Yes
Data Type and Size: number(4)
Columns: 42 - 45
Valid Values: -3, -2, -1, 0, 1, 2, 3
Default Value: 0 (zero)
Description: Schedule entry offset for update of application data infos.
Field for SDM entry:
Form: Schedule Form
Component: Schedule Configuration Block
Field: Offset

Name of Next or Previous Info 1

Required: Yes
Data Type and Size: character(8)
Columns: 47 - 54
Valid Values: Name of an application data info.
Dependencies: Info name must identify an application data info available in the source database table AD_INFO. The application data info must have been assigned to the parent application data element.
Description: Name of an application data info to be updated by the value of the schedule entry specified by the attribute Offset (see description of attribute Offset on page 480, too).
Field for SDM entry:
Form: Schedule Form
Component: Schedule Configuration Block
Field: Info 0

Record Type SCHEDB - Schedule (Continued)

Name of Next or Previous Info 2

Required: Yes
Data Type and Size: character(8)
Columns: 56 - 63
Valid Values: Name of an application data info.
Dependencies: Info name must identify an application data info available in the source database table AD_INFO. The application data info must have been assigned to the parent application data element.
Description: Name of an application data info to be updated by the value of the schedule entry specified by the attribute Offset + 1 (see description of attribute Offset on page 480, too).
Field for SDM entry:
Form: Schedule Form
Component: Schedule Configuration Block
Field: Info +1

Name of Next or Previous Info 3

Required: Yes
Data Type and Size: character(8)
Columns: 65 - 72
Valid Values: Name of an application data info.
Dependencies: Info name must identify an application data info available in the source database table AD_INFO. The application data info must have been assigned to the parent application data element.
Description: Name of an application data info to be updated by the value of the schedule entry specified by the attribute Offset + 2 (see description of attribute Offset on page 480, too).
Field for SDM entry:
Form: Schedule Form
Component: Schedule Configuration Block
Field: Info +2

Record Type SCHEDC - Schedule

Update Period

Required:	Yes
Data Type and Size:	number(32)
Columns:	9 - 40
Valid Values:	> 0 (zero)
Description:	Update period in seconds.
Field for SDM entry:	Form: Schedule Form Component: Schedule Configuration Block Field: Period

Validation

Required:	Yes
Data Type and Size:	character(14)
Columns:	42 - 55
Valid Values:	sliding_window round_robin
Description:	Organization of the schedule.
Field for SDM entry:	Form: Schedule Form Component: Schedule Configuration Block Field: Validation

Interpolation

Required:	Yes
Data Type and Size:	character(6)
Columns:	57 - 62
Valid Values:	linear step
Description:	Interpolation method.
Field for SDM entry:	Form: Schedule Form Component: Schedule Configuration Block Field: Interpolation

Record Type SCHEDC - Schedule (Continued)

Data type

Required:	Yes
Data Type and Size:	character(13)
Columns:	64 - 76
Valid Values:	analog+time, counter+time, status+time, real+time, longreal+time, integer+time, anlong+time, analog, counter, status, real, longreal, integer, anlong
Description:	Data type of the schedule entry.
Field for SDM entry:	Form: Schedule Form Component: Schedule Configuration Block Field: Data Type

Attribute Groups Hierarchy

Attribute Group Record

ATTRGR records can be used to define attribute groups. One ATTRGR record is required for each attribute group.

Record Type ATTRGR- Attribute Group

Attribute Group Number

Required:	Yes
Data Type and Size:	integer(3)
Columns:	9 - 11
Valid Values:	Integer value (0 ... 999)
Dependencies:	Attribute group number must be unique among all other attribute group numbers available in the database.
Description:	Number of the respective attribute group.

Attribute Group Name

Required:	Yes
Data Type and Size:	character(8)
Columns:	13 - 20
Valid Values:	Character String
Dependencies:	Attribute group name must be unique among all other attribute group names available in the database.
Description:	Name of the respective attribute group.

Record Type ATTRGRA- Attribute Group

Comment

Required:	Yes
Data Type and Size:	character(80)
Columns:	9 - 88
Valid Values:	Character String
Description:	Comment for the respective attribute group.

Attribute Alternative Record

This record type is only applicable if the preceding record defines an attribute group (record type ATTRGR). One ATTRALT record is required for every attribute alternatives of the parent attribute group..

Record Type ATTRALT - Attribute Alternative

Alternative Number

Required:	Yes
Data Type and Size:	integer(3)
Columns:	9 - 11
Valid Values:	Integer value (0 ... 999)
Dependencies:	Attribute alternative number must be unique among all other attribute alternative numbers of the parent attribute group.
Description:	Number of the respective attribute alternative.

Color

Required:	Yes
Data Type and Size:	integer(3)
Columns:	13 - 15
Valid Values:	Integer value (0 ...255)
Description:	Number of the color specified by the attribute alternative.

Figure Groups Hierarchy

Figure Group Record

FIGRGR records can be used to define attribute groups. One FIGRGR record is required for each attribute group.

Record Type FIGRGR - Figure Group

Figure Group Number

Required:	Yes
Data Type and Size:	integer(3)
Columns:	9 - 11
Valid Values:	Integer value (0 ... 999)
Dependencies:	Figure group number must be unique among all other figure group numbers available in the database.
Description:	Number of the respective figure group.

Figure Group Name

Required:	Yes
Data Type and Size:	character(8)
Columns:	13 - 20
Valid Values:	Character String
Dependencies:	Figure group name must be unique among all other figure group names available in the database.
Description:	Name of the respective figure group.

Record Type FIGRGRA - Figure Group

Comment

Required:	Yes
Data Type and Size:	character(80)
Columns:	9 - 88
Valid Values:	Character String
Description:	Comment for the respective figure group.

Figure Alternative Record

This record type is only applicable if the preceding record defines a figure group (record type FIGRGR). One FIGRALTrecord is required for every attribute alternatives of the parent attribute group..

Record Type FIGRALT - Figure Alternative

Alternative Number

Required:	Yes
Data Type and Size:	integer(3)
Columns:	9 - 11
Valid Values:	Integer value (0 ... 999)
Dependencies:	Figure alternative number must be unique among all other figure alternative numbers of the parent figure group.
Description:	Number of the respective figure alternative.

Record Type FIGRALT - Figure Alternative (Continued)

Figure

Required:	Yes
Data Type and Size:	integer(3)
Columns:	13 - 15
Valid Values:	Integer value (0 ...999)
Dependencies:	Attribute value must identify a figure available in the database.
Description:	Number of the figure specified by the figure alternative.
