
SCADA Forms

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

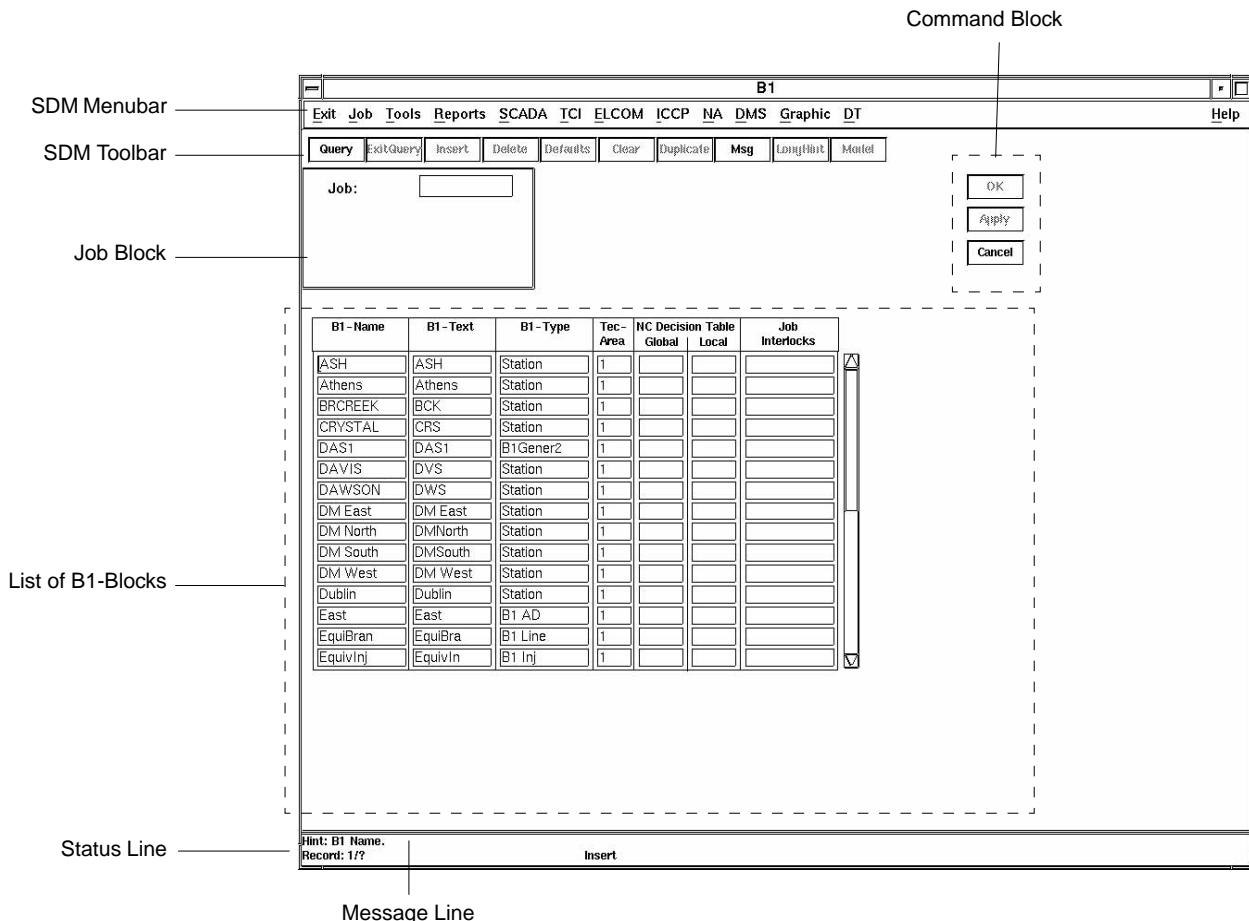
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B1 Form

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

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- 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.

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- **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.

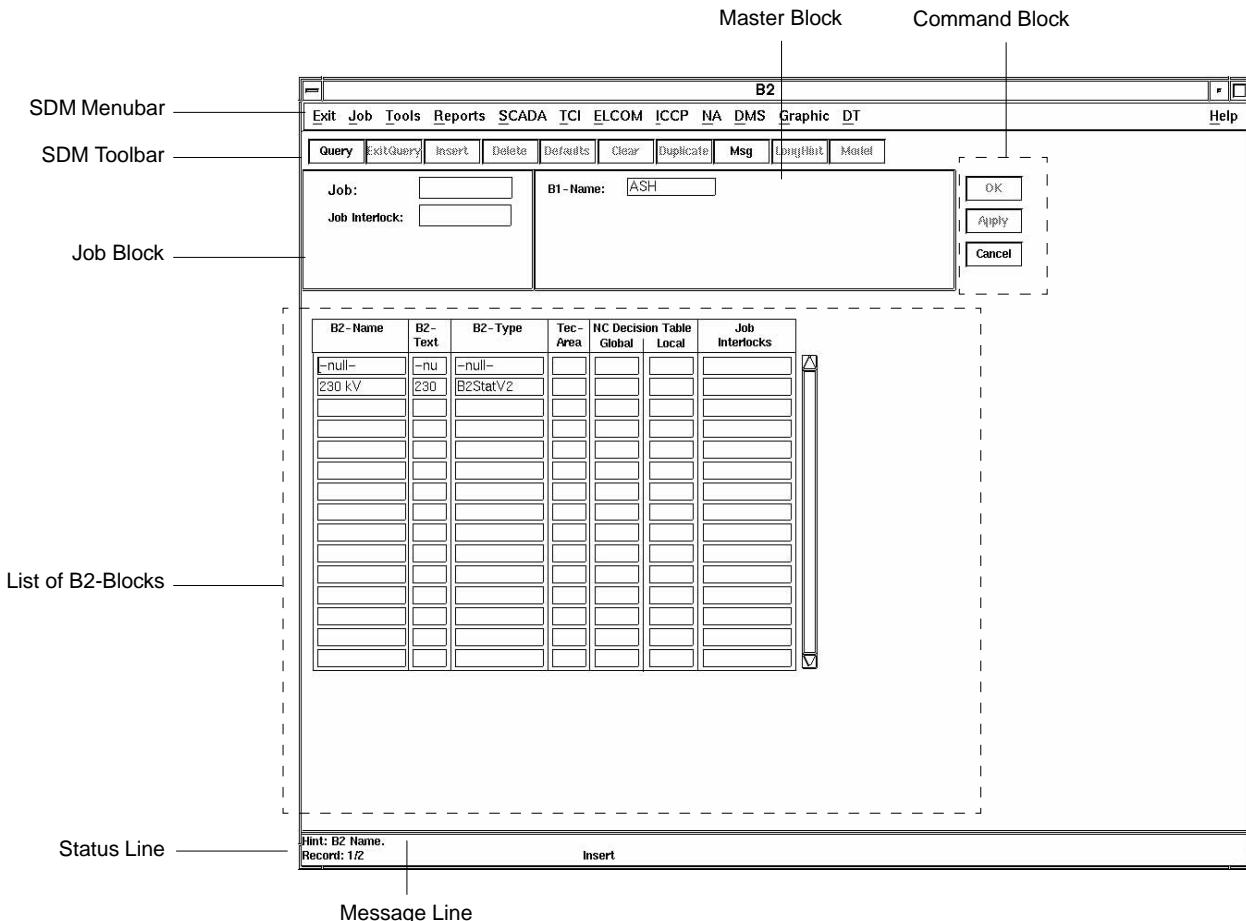
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B2 Form

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

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- 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.

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- **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**

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- **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".

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■ **Job Interlock**

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

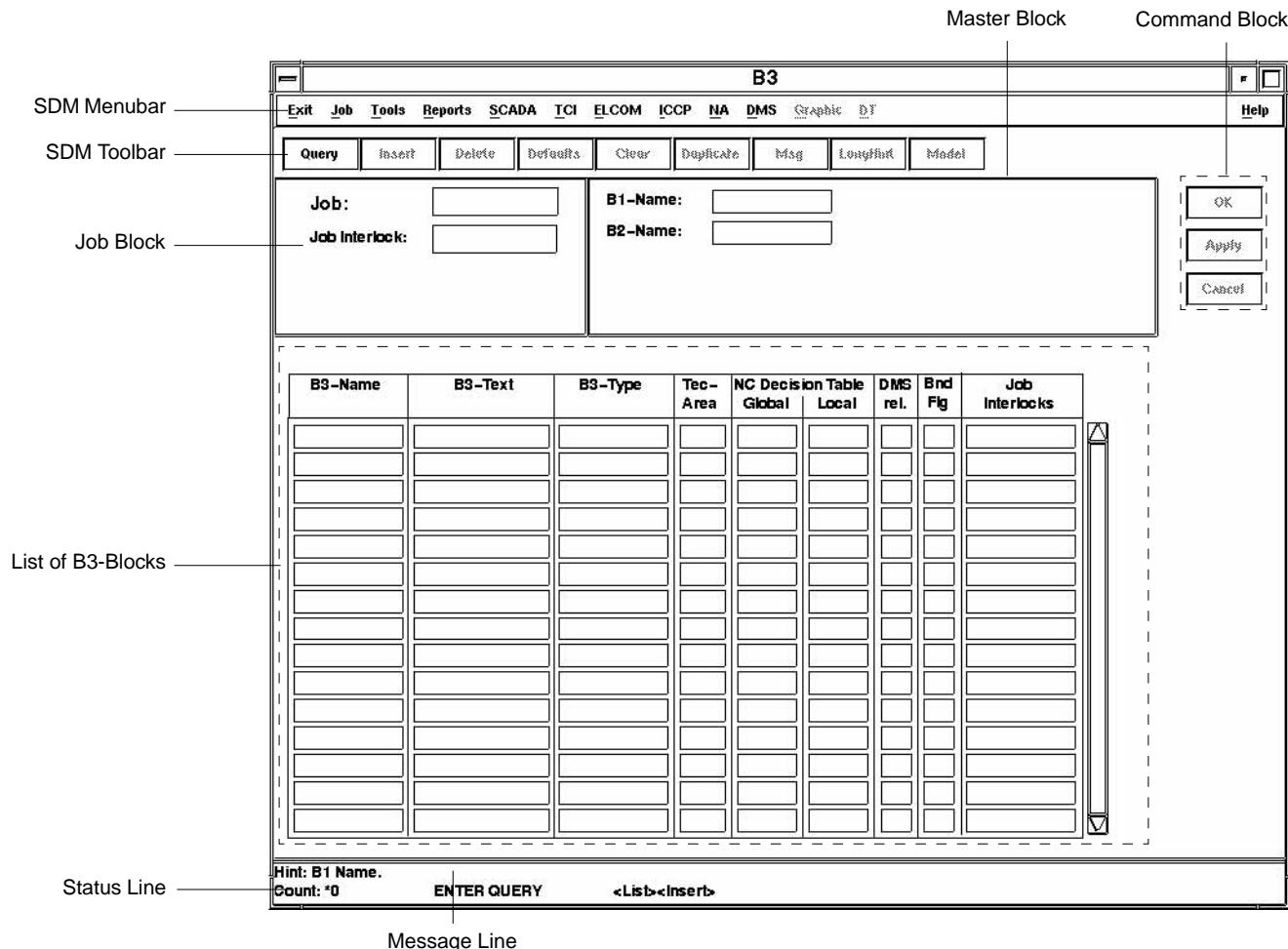
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B3 Form

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



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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.

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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.

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■ **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.

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Network Components

- **cmpLine**
Line
- **cmpEquBr**
Equivalent branch
- **cmpLiInL**
Injection-/Load-Line
- **cmplInj**
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)

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- **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)
- **cmplnj-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)

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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
- **swCoupI**
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

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- **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.

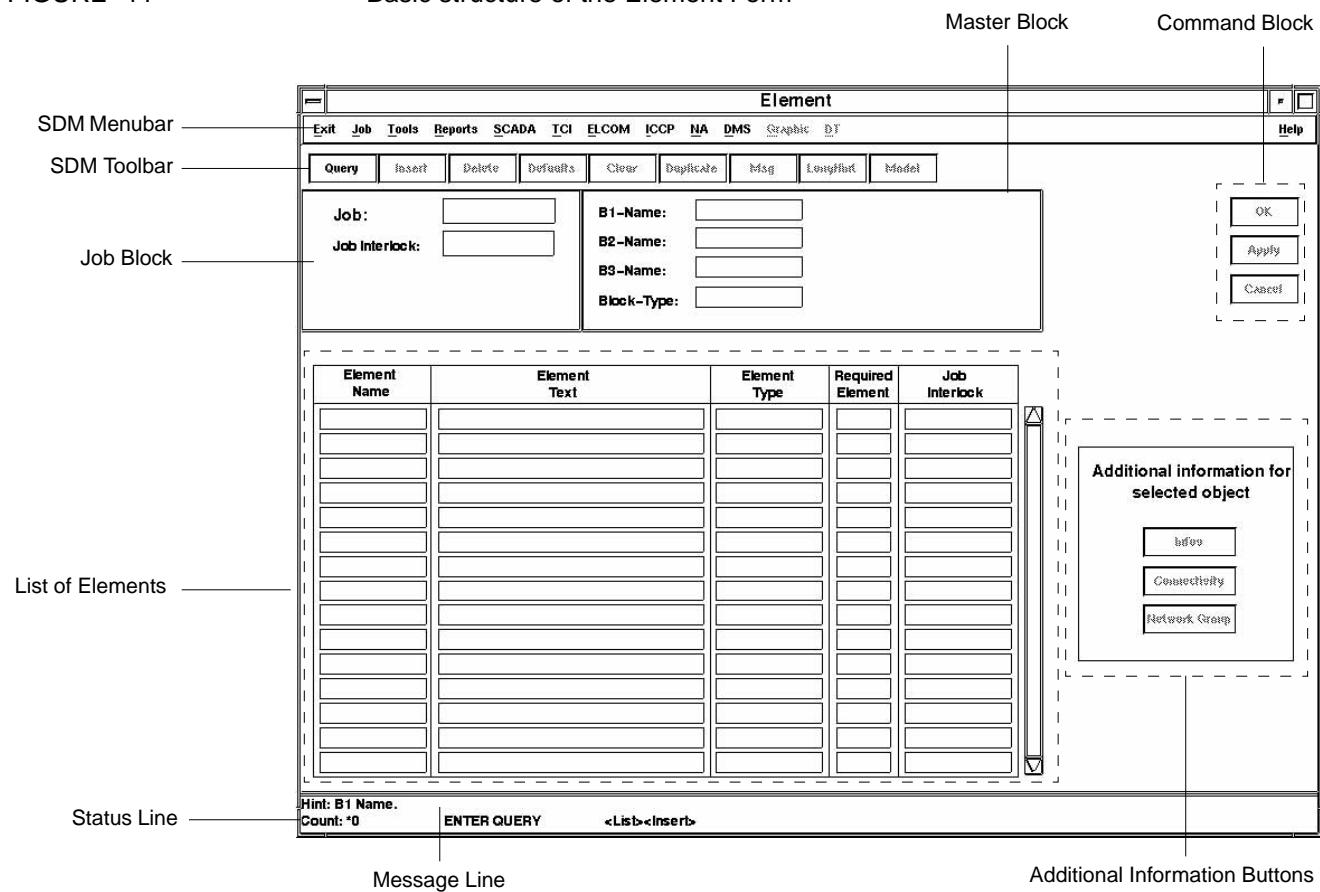
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Element Form

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

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- 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:**

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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.

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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.

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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' dialog box. The dialog is organized into several sections:

- SDM Menubar:** Contains standard menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Type.
- SDM Toolbar:** Includes buttons for Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and LongHint.
- Job Block:** Displays the current job name (test) and job interlock status. It also lists three digital attributes: B1-Name (Vienna), B2-Name (220), and B3-Name (Paris).
- Detail Block:** Contains detailed configuration for the element. It includes sections for Info (Info: ANOPExcl, Info Type: ANOPExcl, Info Text), Value (Initial: 13, Name Index: 0), Signalling (Persistant State: N, Spontaneous Change: N), Archive (Historic Database: N, Disturbance Type: 0), Acknowledge List (Appearing: N, Disappearing: N), Lists (List1: 1, List2: 9, List3: 0, List4: 0), and Message (Class: 4, Text: [redacted]).
- Status Line:** Shows a message line and various status indicators.
- Message Line:** Located at the bottom of the dialog.

The Digital Form is composed of the following components:

- SDM Menubar
- Job Block
- SDM Toolbar

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- 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**

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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.

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■ **Message Format**

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

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

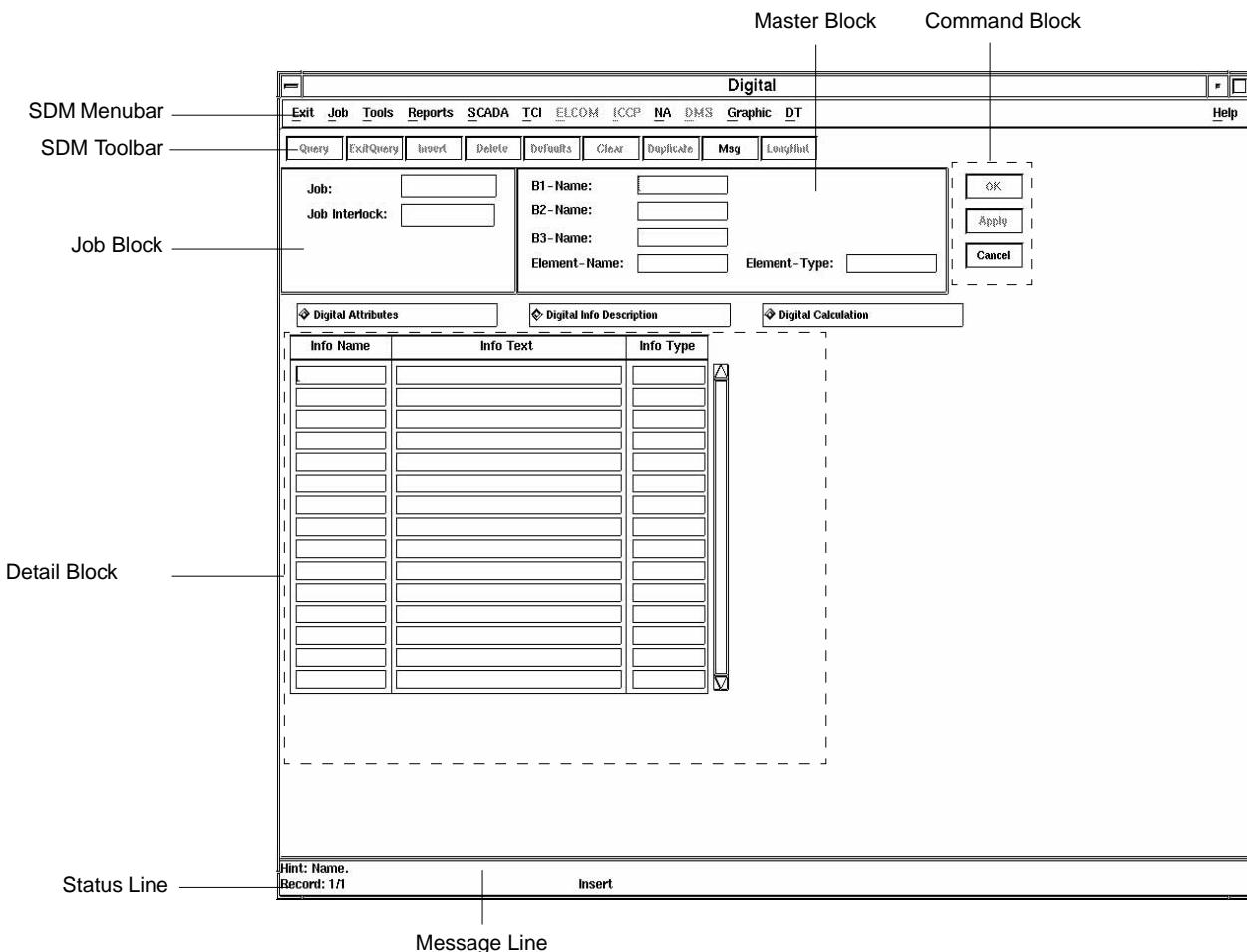
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Worksheet for Digital Info Description

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

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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.

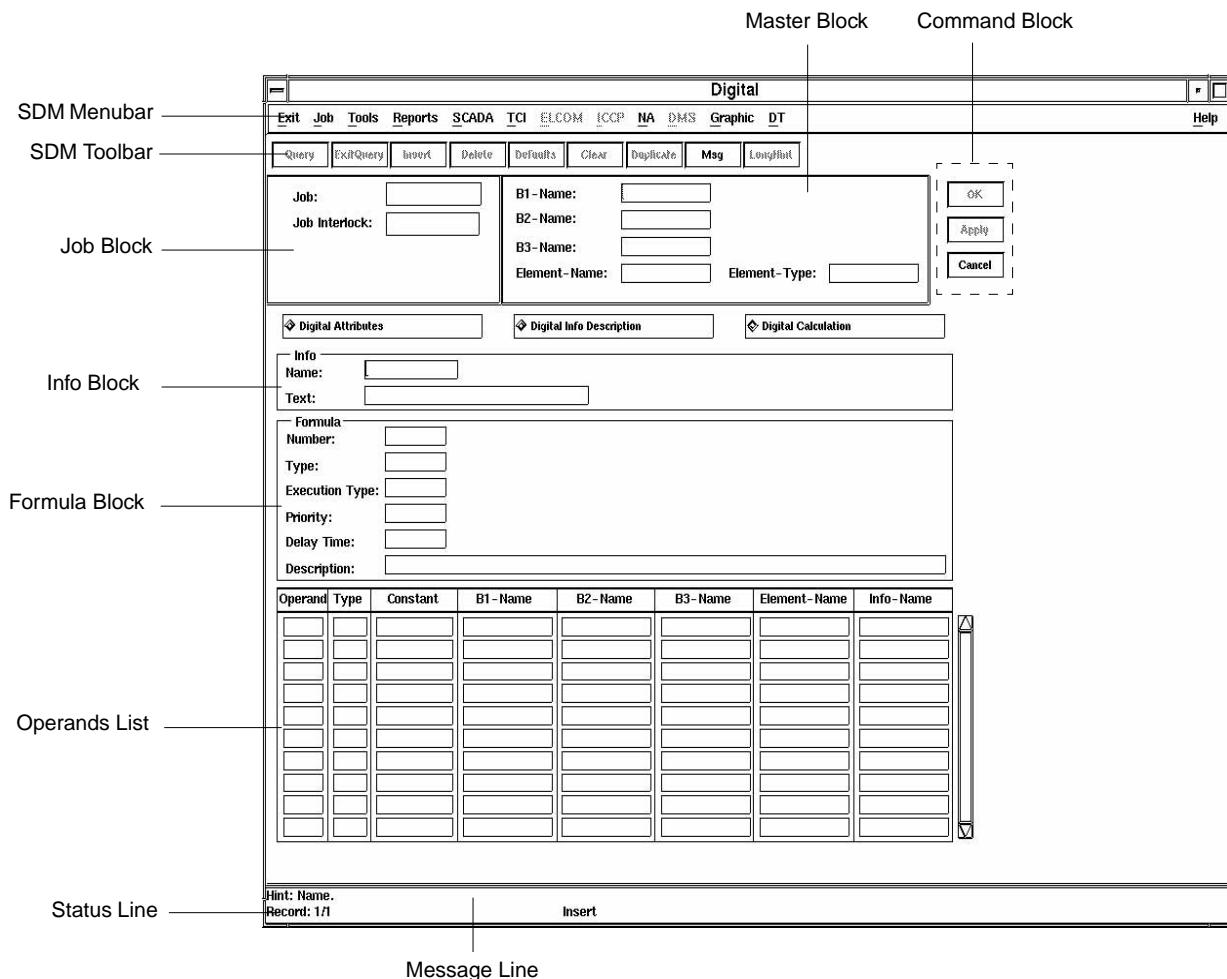
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Worksheet for Digital Calculation

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



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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

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■ 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.

SCADA Forms

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.

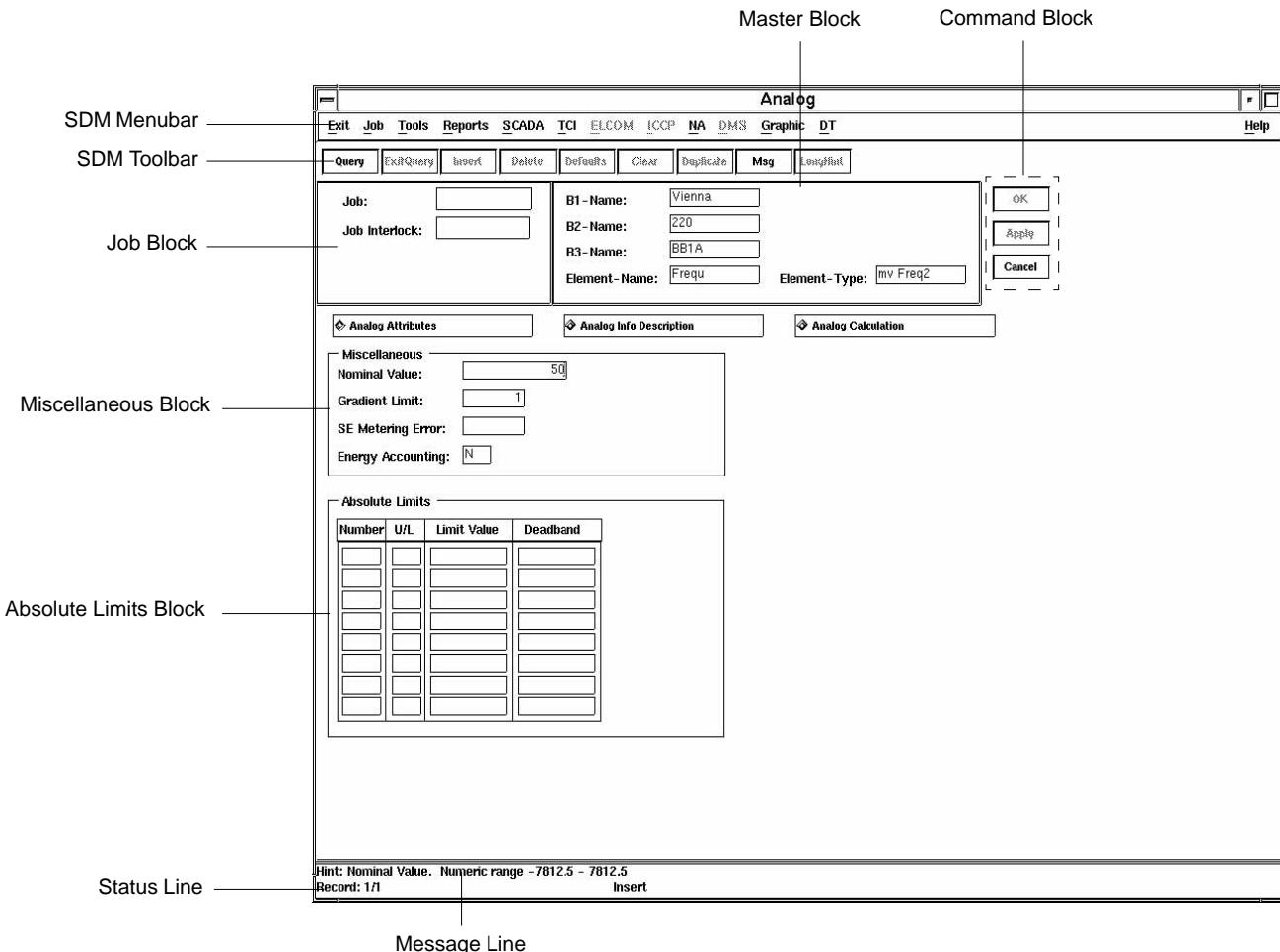
SCADA Forms

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

SCADA Forms

- 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.

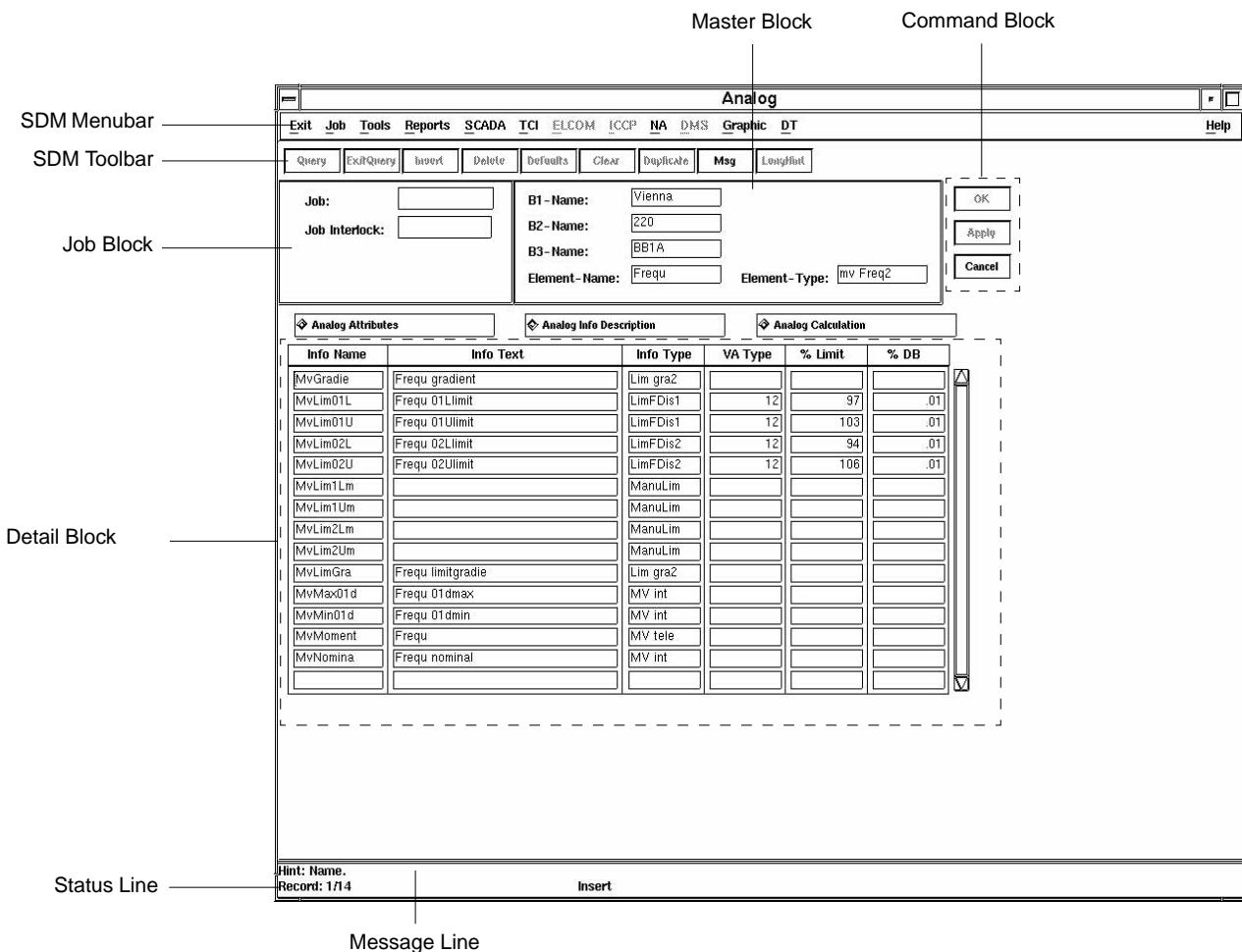
SCADA Forms

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



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.

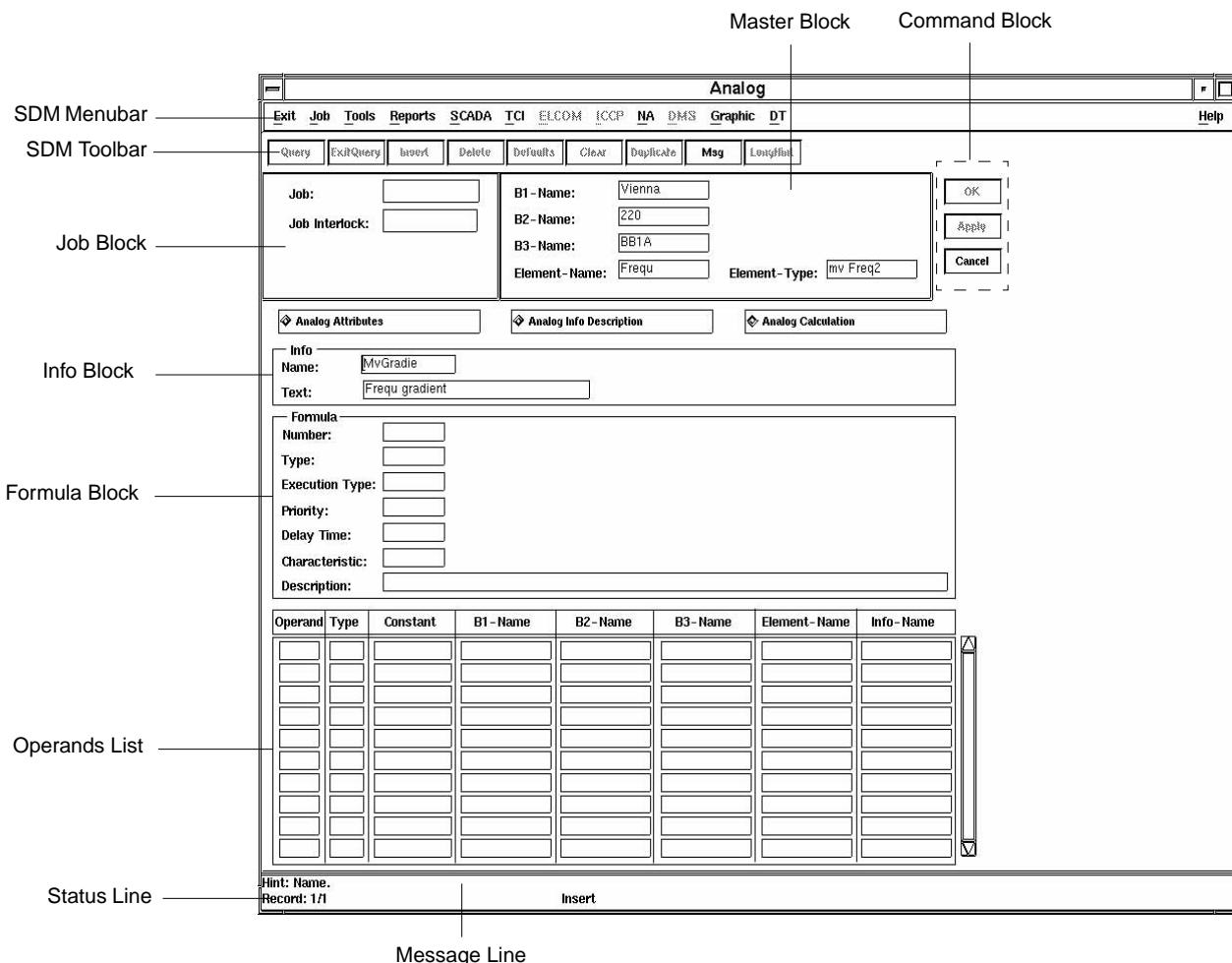
SCADA Forms

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



SCADA Forms

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

SCADA Forms

■ 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

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

The screenshot shows the 'Worksheet for Accumulator Attributes' dialog box. The dialog is organized into several sections:

- SDM Menubar:** Contains standard menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Help.
- SDM Toolbar:** Includes buttons for Query, ExQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, and Length.
- Job Block:** Contains fields for Job (with a dropdown for Job Interlock) and three B1-B3 Name fields.
- Miscellaneous Block:** Contains fields for Conversion Factor, Rollover, Rate Group, and Energy Accounting.
- Limits Block:** Contains fields for Lower and Upper limits.
- Difference Limits Block:** Contains fields for Main-Integral, Main-Control, and Control-Integral.
- Status Line:** Displays the message: "Query returned no rows for B1='Vienna', B2='220', B3='BB1A', Element='Frequ', Info=''. Record: 1/1 Insert".
- Message Line:** An empty line at the bottom.

The Accumulator Form is composed of the following components:

- SDM Menubar
- Job Block
- SDM Toolbar

SCADA Forms

- 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.

SCADA Forms

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.

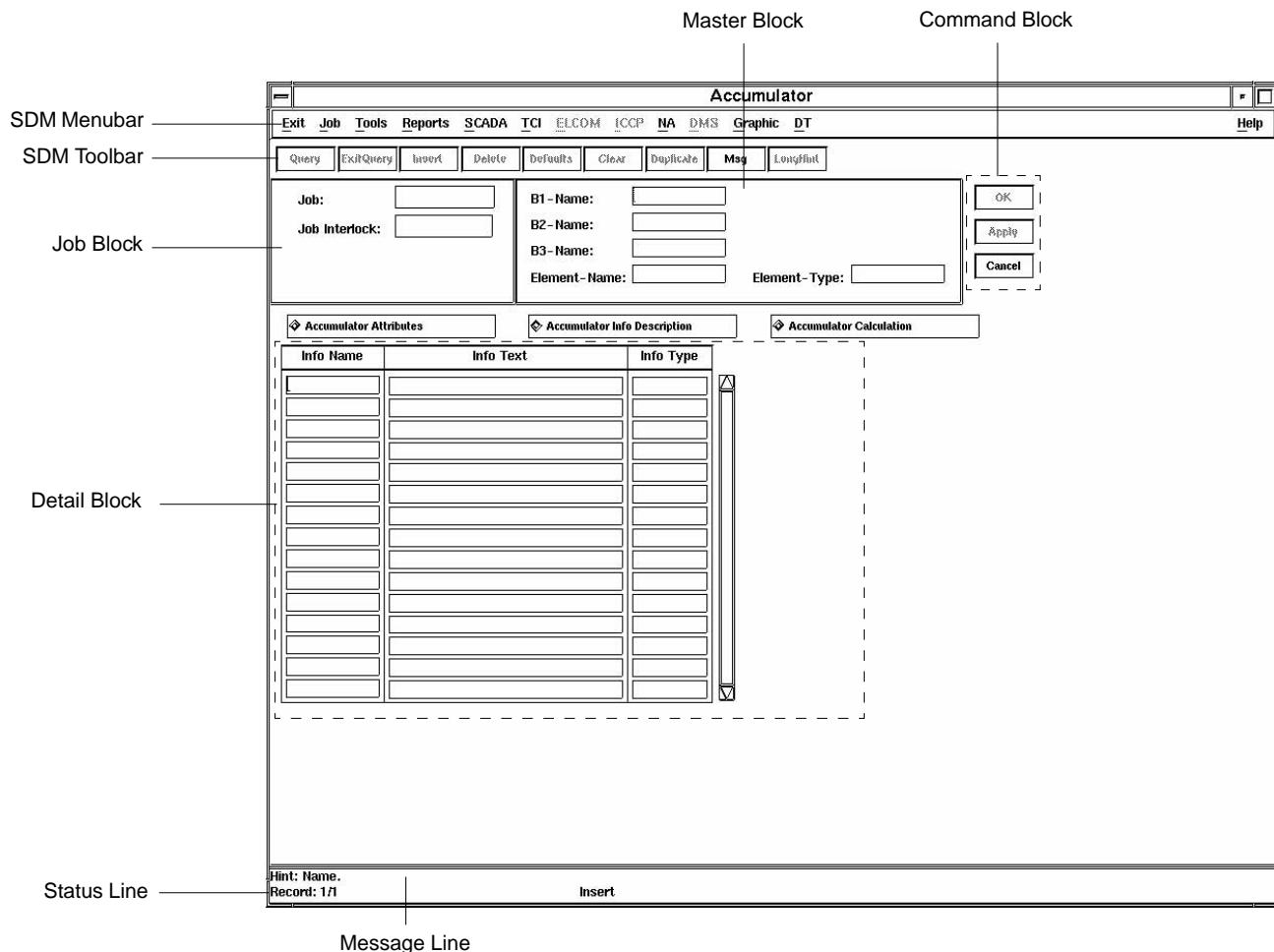
SCADA Forms

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

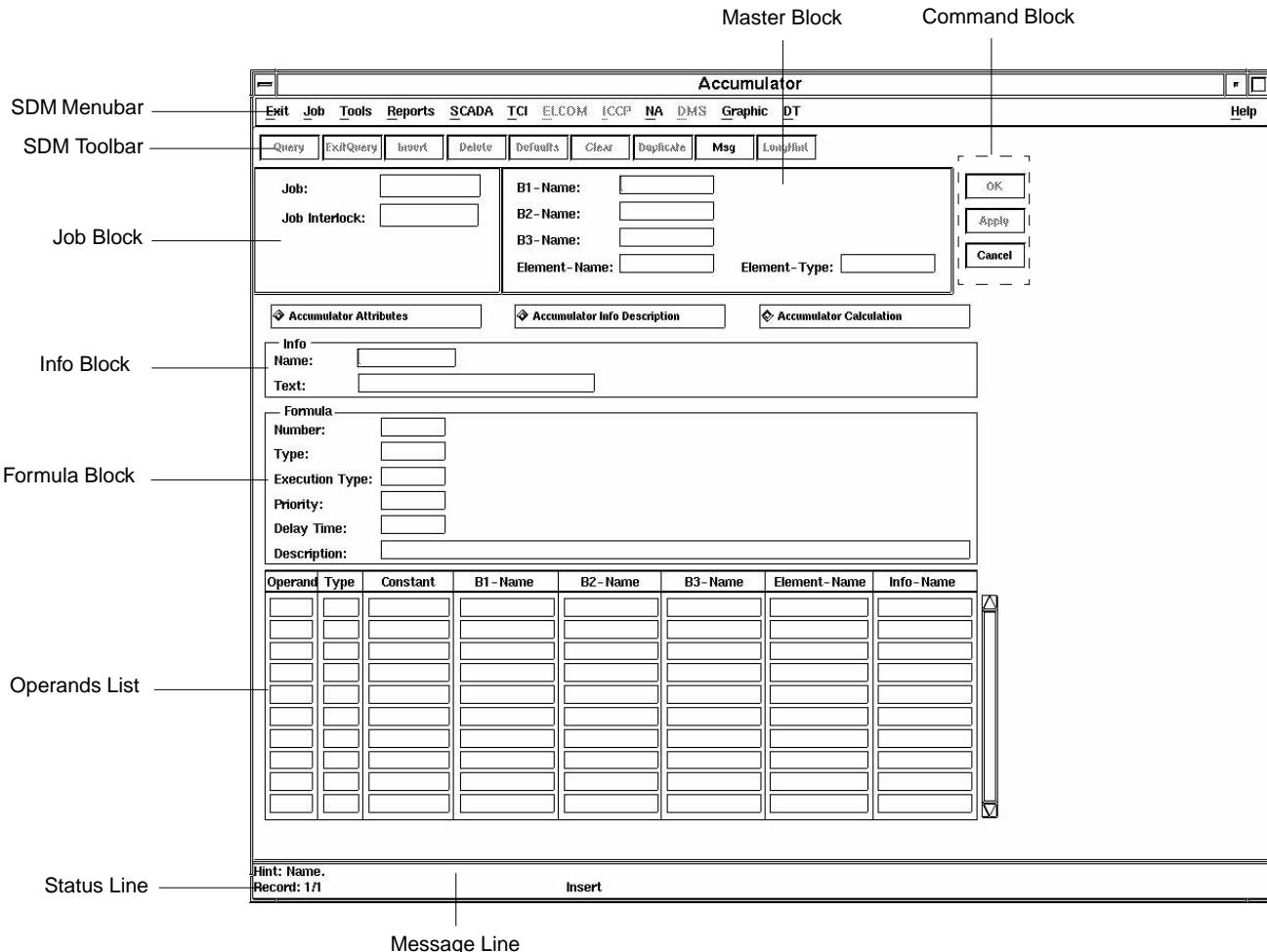
Worksheet for Accumulator Calculation

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



SCADA Forms

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

SCADA Forms

■ 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.

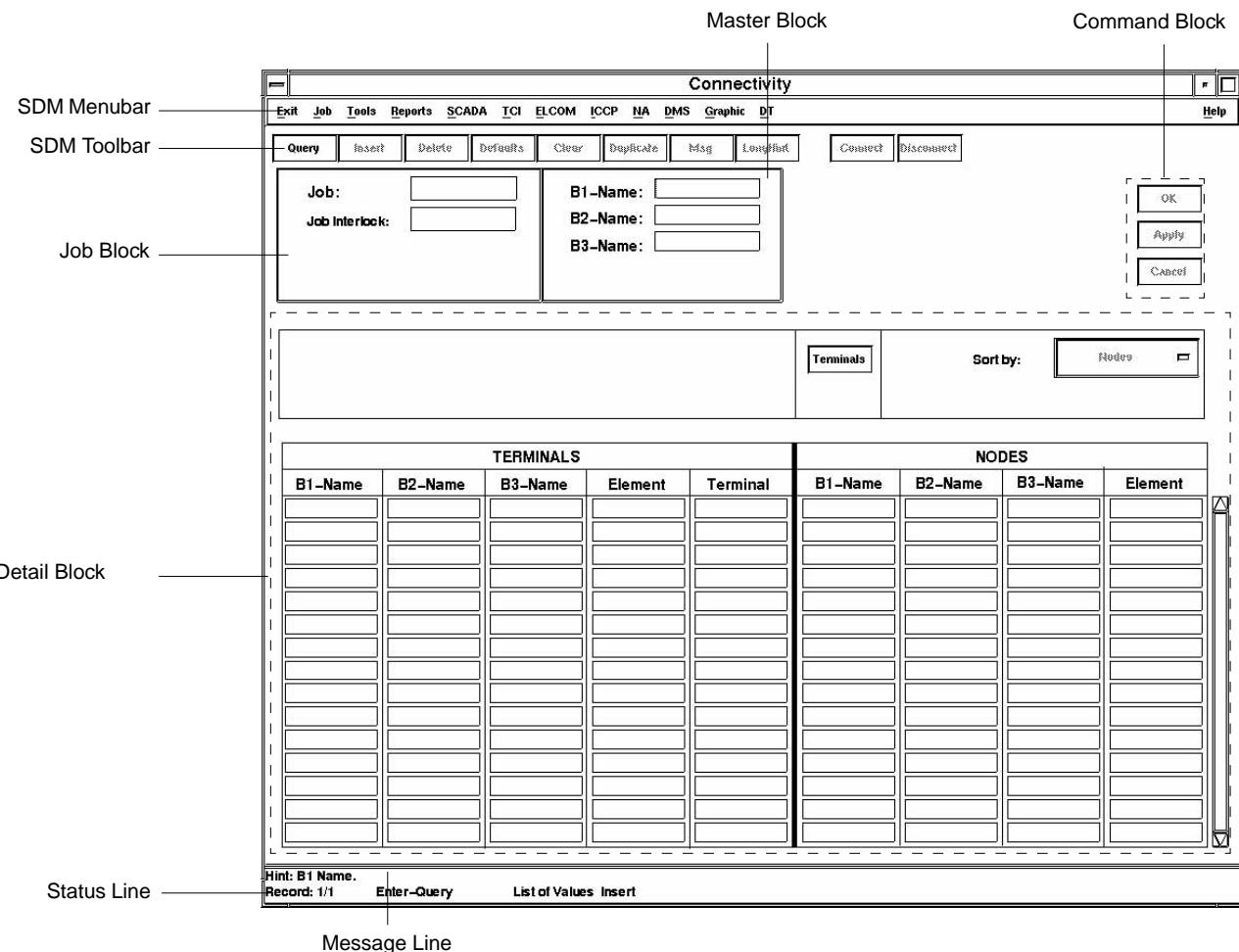
SCADA Forms

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

SCADA Forms

- 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.

- 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.

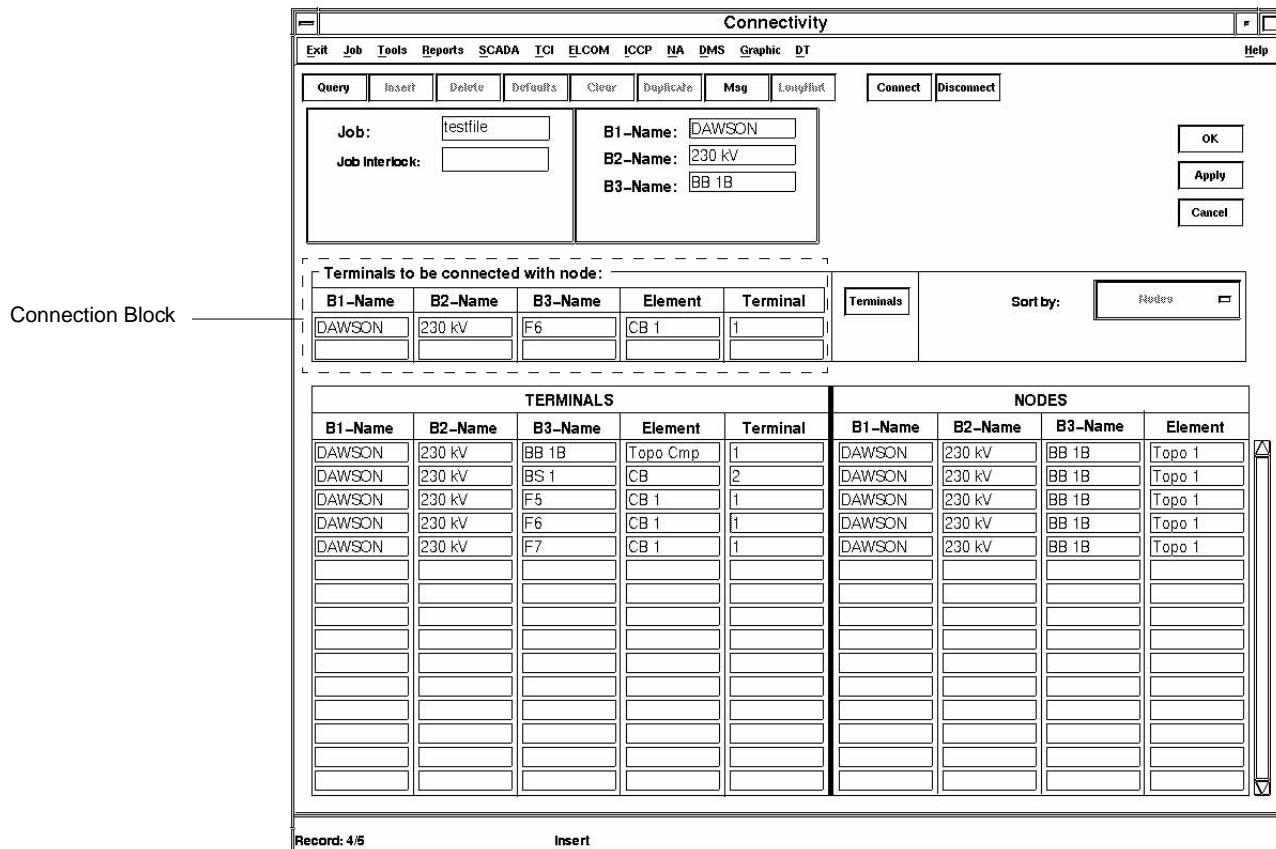
When connecting two terminals, select the first terminal to be connected, then press button **Connect** and select the second terminal. After pressing button **Connect**, the Connection Block showing the terminals to be connected is added to the Detail Block of the Connectivity Form.

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.

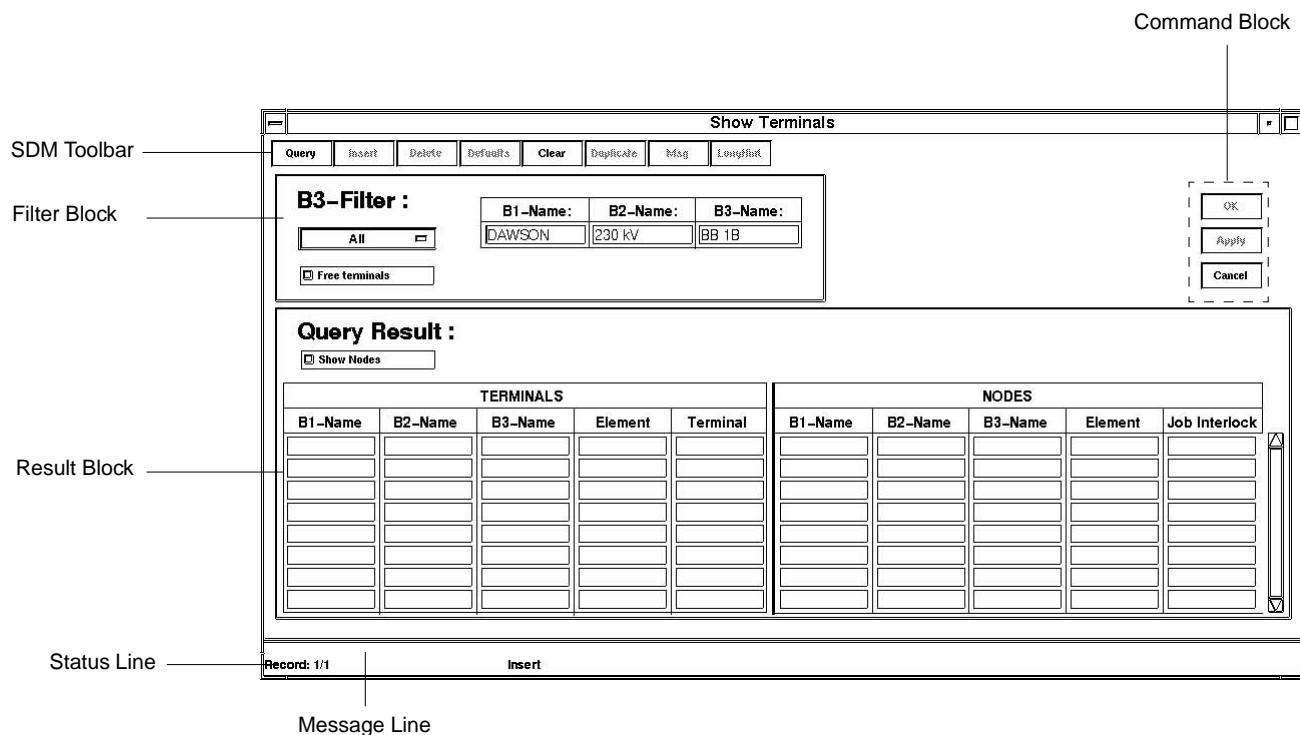
If you want to connect a terminal of the selected B3 block with a terminal of another B3 block, press button Terminals to open the Terminal Query Window for performing a query for terminals.

SCADA Forms

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**

SCADA Forms

- **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:

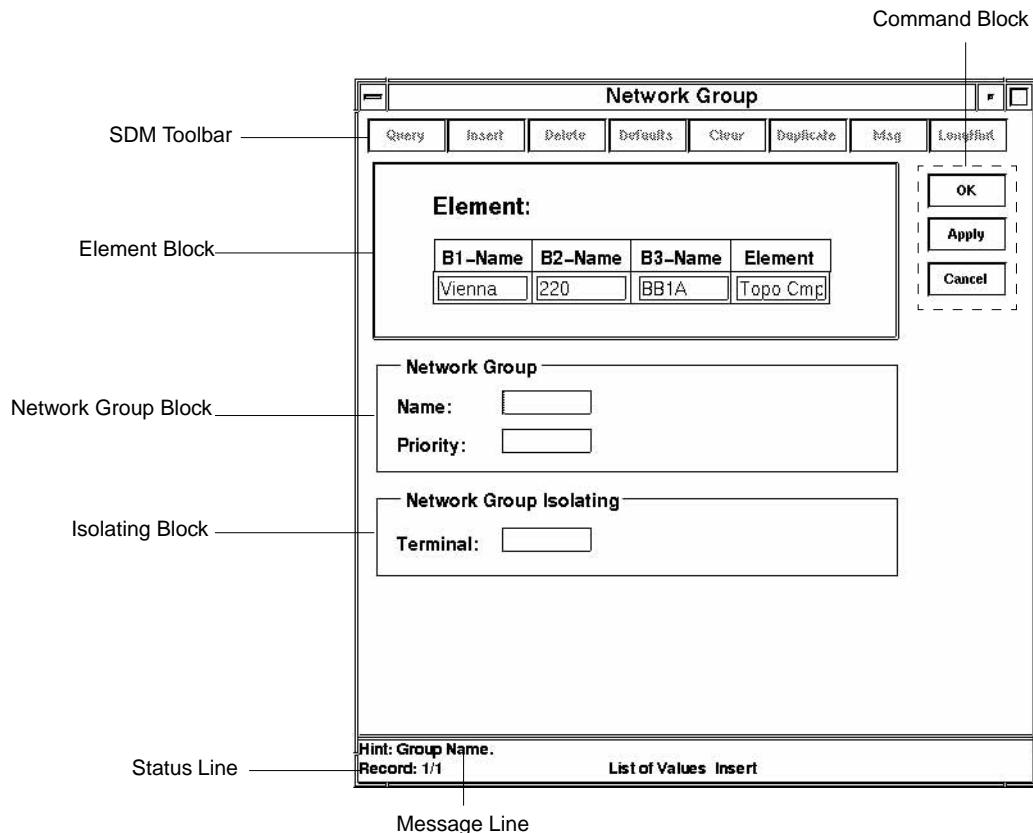
 - **B1-Name**
 - **B2-Name**
 - **B3-Name**
 - **Element**
 - **Job Interlock**

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

SCADA Forms

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.

SCADA Forms

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**CHAPTER 7**

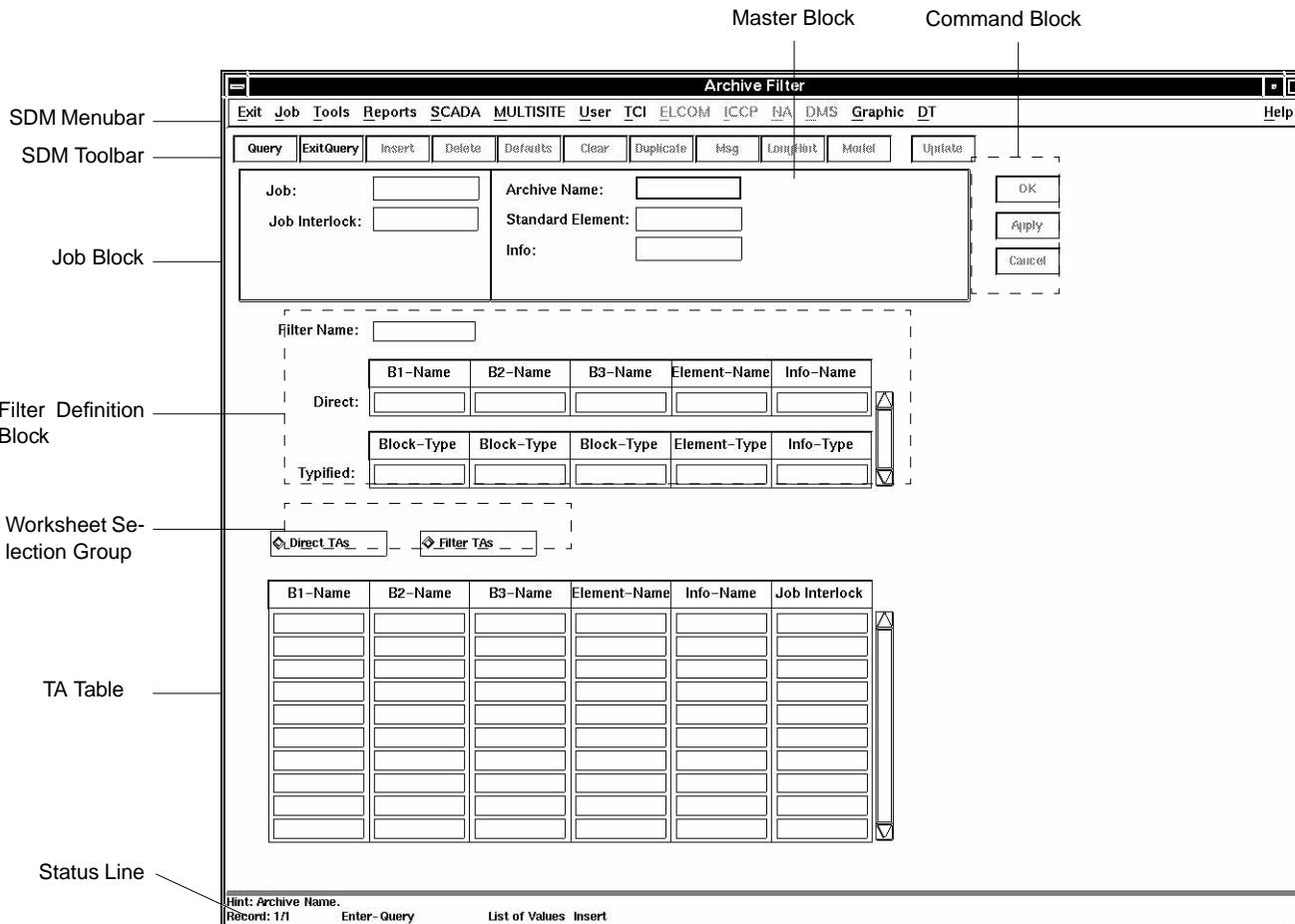
Archive Filter Form

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.

Archive Filter Form

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**CHAPTER 8**

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 Forms

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:

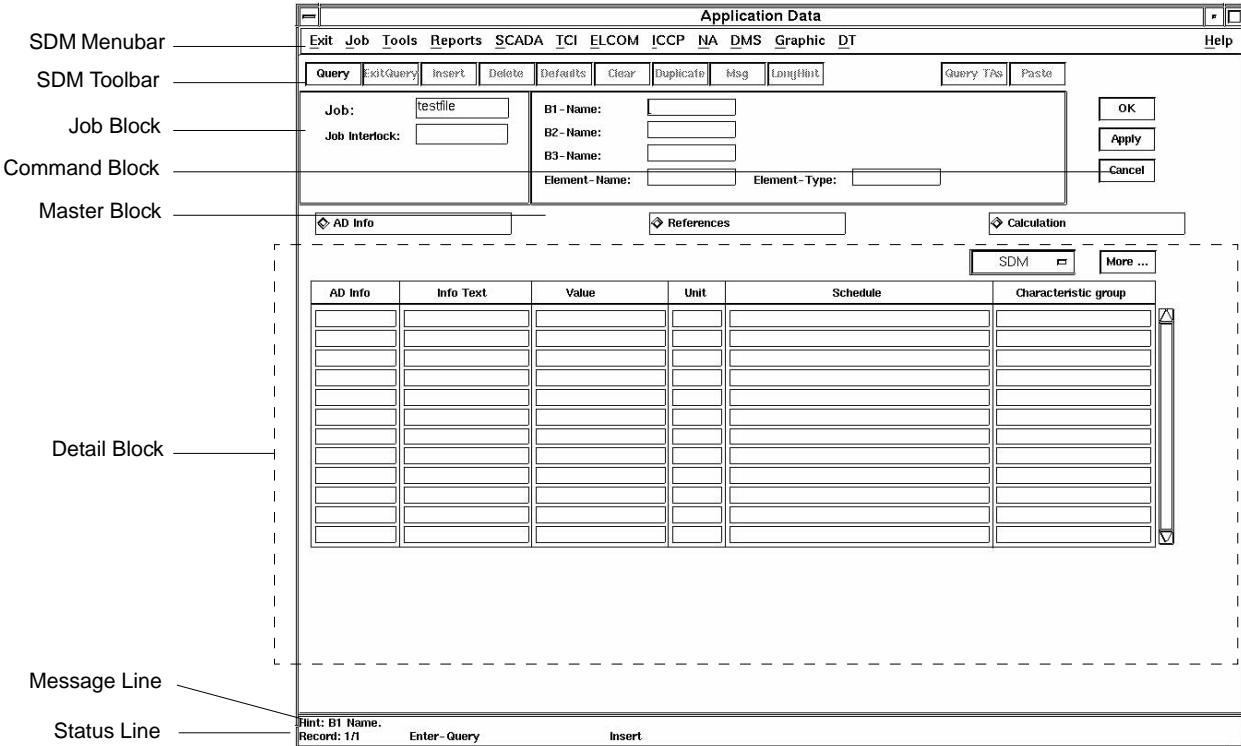
- View or modify attributes of application data infos
- Enter or modify additional information associated with application data infos
- View, enter or modify calculation attributes of calculated application data infos
- View, enter or modify application data references.

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.

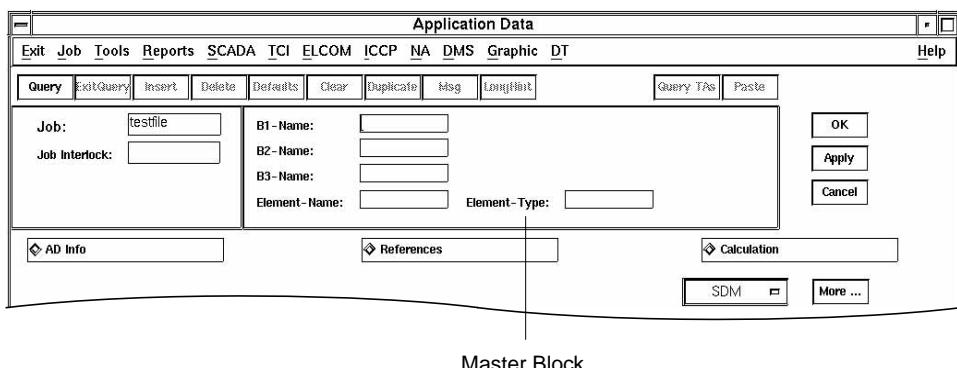
 **Note:**

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



Master Block

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

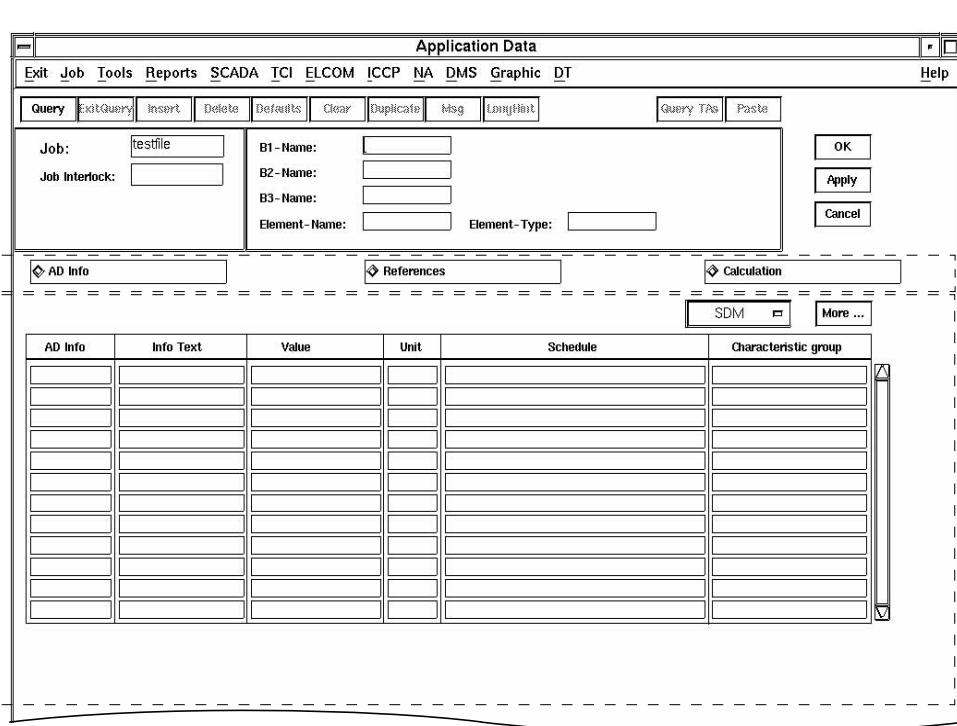
database key) and the attribute **Element-Type** showing the element type of the currently selected application data element to which the listed application data infos belong. These attributes can be used to enter query criteria if performing a query.

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



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.

Application Data Forms

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.

Application Data Forms

- 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:**

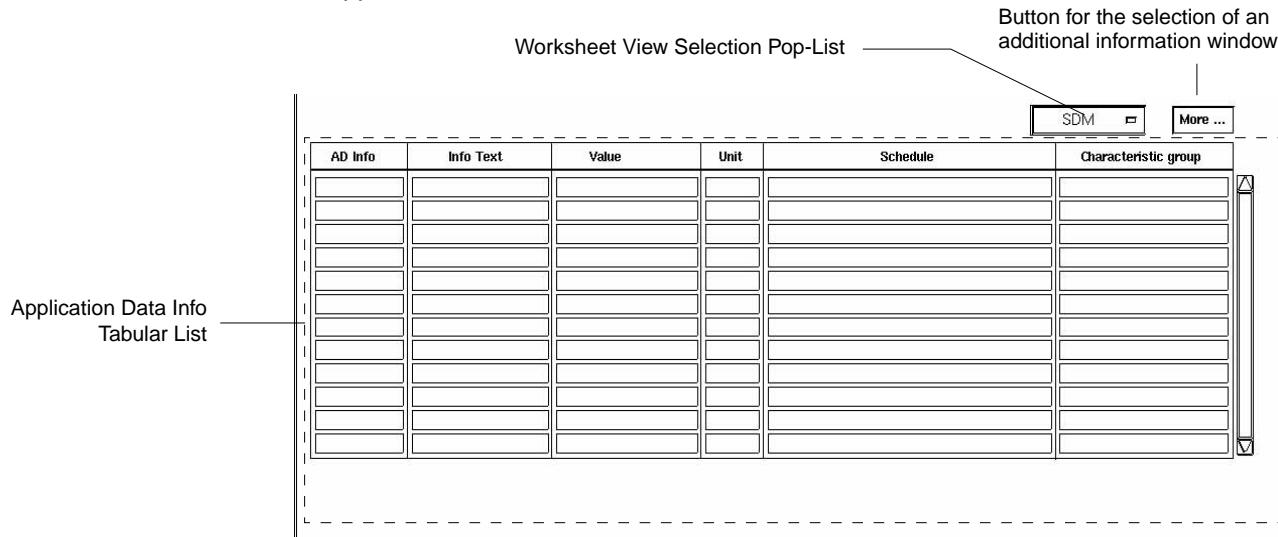
*It is not necessary to press the button **Apply** each time you have entered a single attribute value. You may also perform all desired data modifications on a single data record first and then press the button **Apply** to apply all data modifications.*

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**

Application Data Forms

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*

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- *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-

Application Data Forms

- 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.

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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.

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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 the 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

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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:**

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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.*

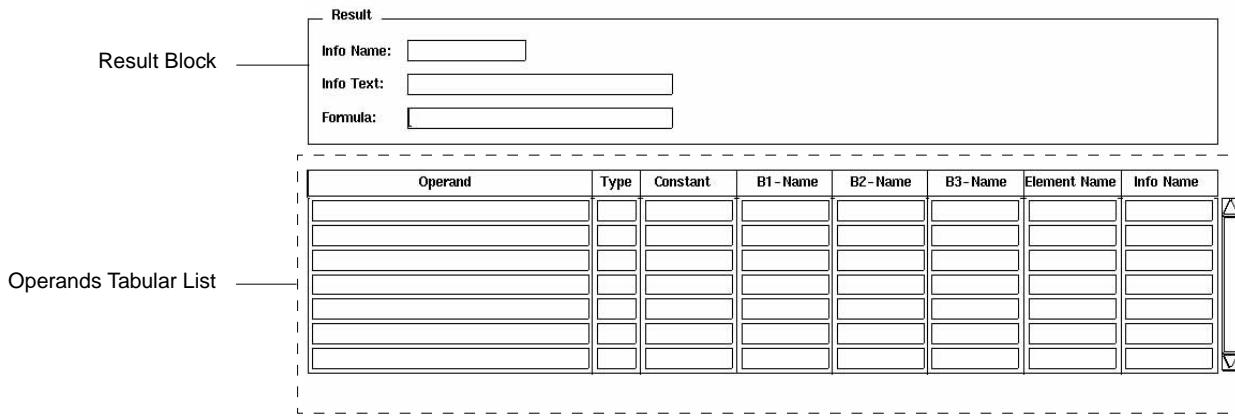
Calculation Worksheet

Clicking the radio button **Calculation** in the worksheet selection group selects the Calculation Worksheet in the worksheet block.

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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.

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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:

Application Data Forms

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).

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- **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.

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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.

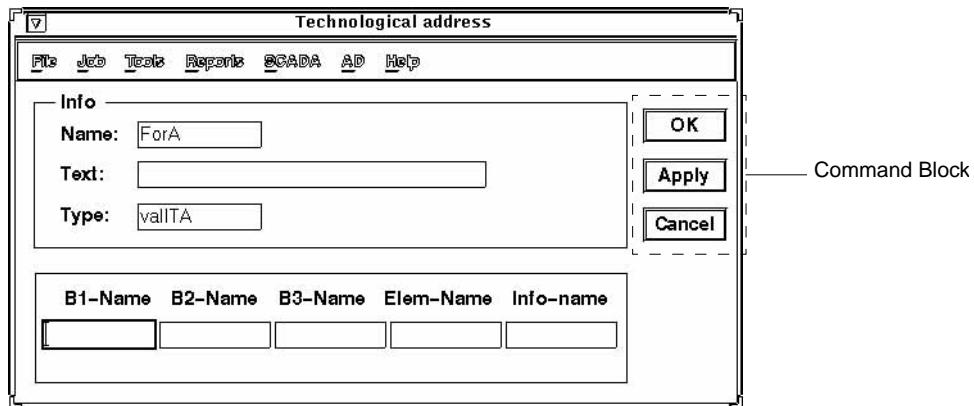
These nonexistent TAs have been specified by and imported from IDDug files.

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.

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Time Window

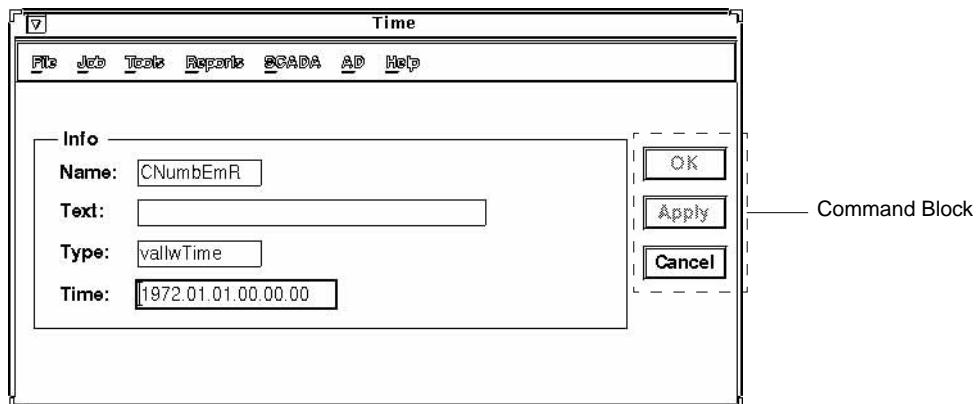
The Time Window is opened by clicking on the button **Time ...** (see section 'Additional Information Window Button' on page 160). It can be used to view a time information associated with the selected application data info.

☞ **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.

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Time Format Window

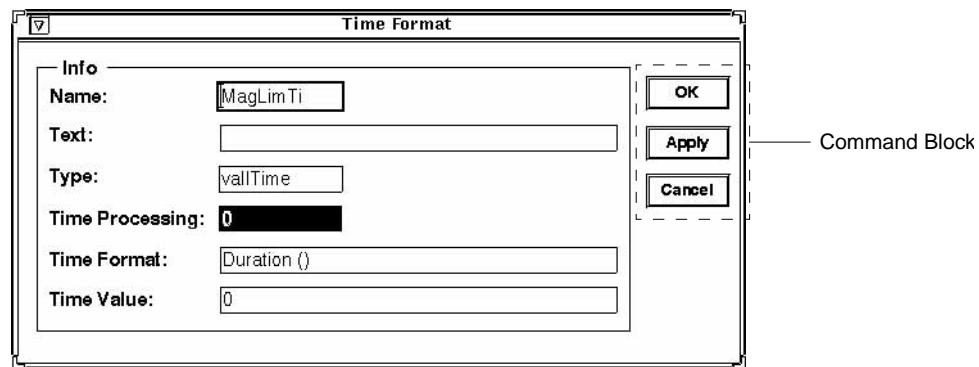
The time format window is opened by clicking on the button **Tfrm ...** (see section 'Additional Information Window Button' on page 160). It is used to view the time format and time processing attributes associated with the selected application data info whose main info value is a time value.

 **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.

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■ **Time Value**

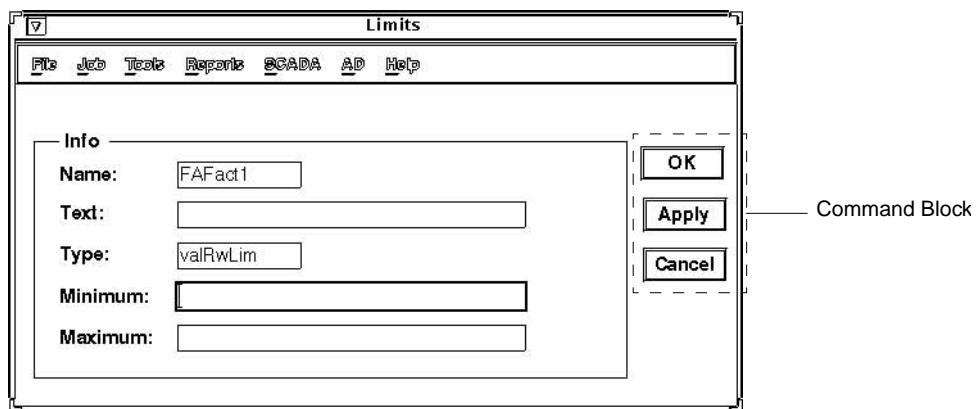
Time interpretation indicator. The time interpretation indicator is an integer number that specifies how the main info value (time value) will be interpreted. For example: Time value will be processed as seconds, as hour and minutes, as hours, minutes and seconds, etc. Read-only display field.

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.

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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

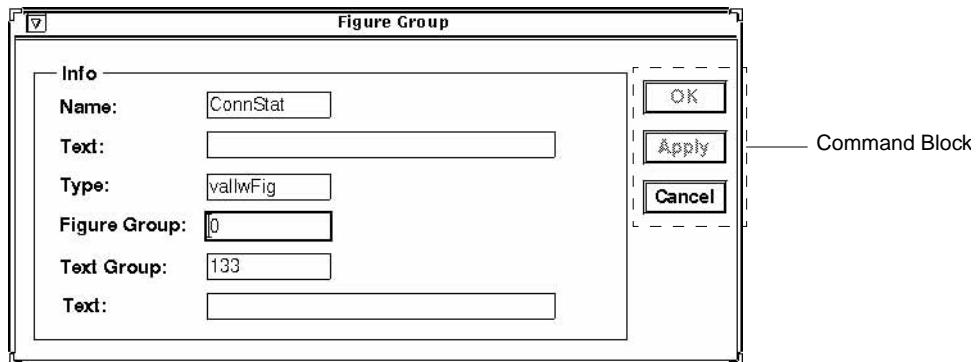
The figure group/text group window is opened by clicking on the button **Figure ...** (see section 'Additional Information Window Button' on page 160). It is used to enter or modify a figure group number, a text group number and/or a text alternative associated with an application data info.

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

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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.

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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.