
Typification Forms

CHAPTER 11

Typification Forms

Definition and modification of type data require a thorough understanding of the SINAUT **Spectrum** data model and of internal processings.

The typification forms described in the following mainly serve for representing type data on the SDM user interface. Upon agreement the forms may also be used to define new types or to modify existing ones. For this purpose the following forms are provided:

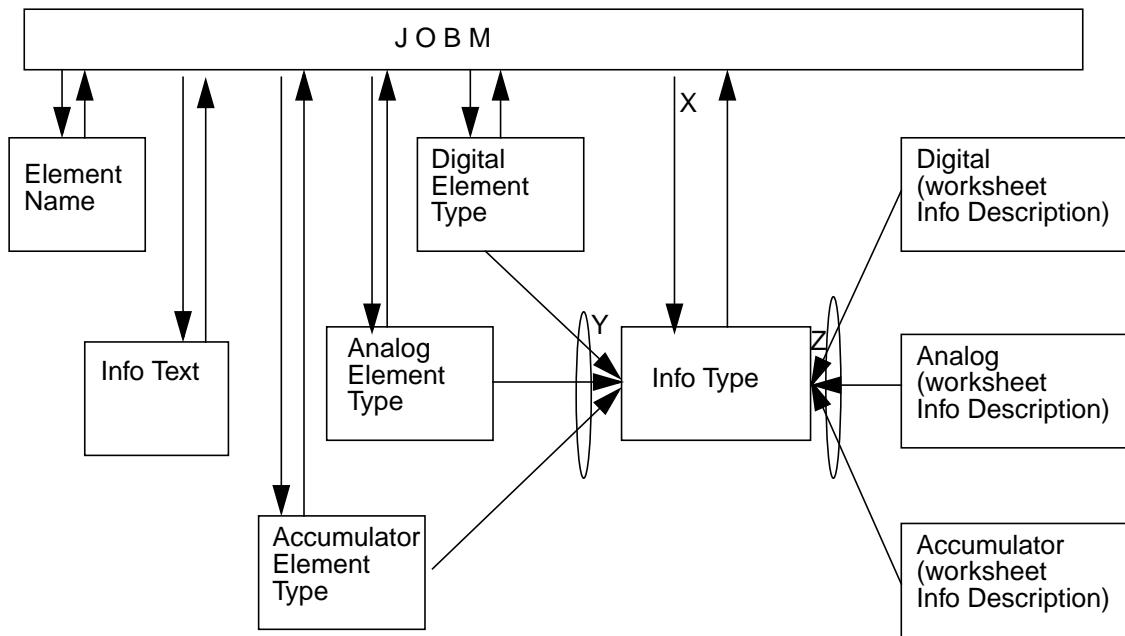
- Info Type Definition Form
- Digital Element Type Form
- Analog Element Type Form
- Accumulator Element Type Form
- Element Name Definition Form
- Info Text Definition Form

The following figure gives you an overview of how you can select the individual forms.

Typification Forms

FIGURE 110

Navigation overview



X - In form Info Type Definition all Infotypes may be displayed and changed

Y -Select <Infotype> press InfoType... Only selected Infotype is displayed

Z -Select <Infotype> press InfoType... Only selected Infotype is displayed (read-only)

Typification Forms

Info Type Definition Form

With this form you can define a new info type as well as modify or delete an existing info type.

FIGURE 111

Basic structure of the Info Type Definition Form - Basic Attributes Worksheet

The screenshot shows the 'Info Type Definition' dialog box. It is divided into several sections:

- SDM Menubar:** Located at the top left, containing menu items like Exit, Job, Tools, Reports, SCADA, TCI, ELCOM, ICCP, NA, DMS, Graphic, DT, and Type.
- SDM Toolbar:** Located below the menubar, with buttons for Query, ExitQuery, Insert, Delete, Defaults, Clear, Duplicate, Msg, LongList, Model, OK, Apply, and Cancel.
- Job Block:** A section containing fields for Job (with a dropdown menu), Info Type Name (DevComp), Info Type Number (1), and Comment.
- Master Block:** A large area containing tabs for 'Basic Attributes' and 'Representation'. Under 'Basic Attributes', there are sections for Characteristics (Message Class: 8, Status Type: DevStm) and Base Processing (Supervision Time in Minutes: 0, Command Supervision Time: 0, etc.). There are also checkboxes for Relevant for Interlocking Check, Relevant for Topology, Relevant for Activate SC-Job, and Info in NIM. To the right of these are sections for User Programs and User Services, each with a scrollable list of items.
- Detail Block:** A section containing fields for Storage (checkbox), Message Format (0), and RTU Termination Time (0).
- Archive:** A section containing fields for Class (ES not attached) and Slot (ES not attached).
- Message Line:** A dashed line indicating the end of the main form area.
- Status Line:** A line at the bottom displaying a hint message: 'Hint-Info Type Name. Character. Info Type Name must be unique. Record: 1?/?' followed by an 'Insert' button.

The Info Type Definition Form is composed of the following elements:

- SDM Menubar
- Job Block
- Command Block

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- Message Line
- Status Line

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

- SDM Toolbar
- Master Block
- Detail Block

SDM Toolbar of the Info Type Definition Form

In addition to the standard toolbar buttons the toolbar of the Info Type Definition Form also contains the following button:

- **Model**

By pressing this button you can create a new info type using an existing info type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.

Master Block of the Info Type Definition Form

The Master Block of the Info Type Definition Form contains the following fields for selecting the info type, when in Query mode:

- **Info Type Name**

Shows the name of the currently selected info type. Its data are displayed in the Detail Block described below.

- **Info Type Number**

Shows the number of the currently selected info type.

- **Comment**

In this field a comment for the info type can be entered.

and checkbox

- **In use**

This checkbox indicates, whether this info type is already used. If the info type is already assigned to any of the element types, deletion and modification of the info type is not allowed.

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Detail Block of the Info Type Definition Form

The Detail Block of the Info Type Definition Form consists of a worksheet selection group and two worksheets.

The worksheet selection group is provided for selecting the Basic Attributes Worksheet and the Representation Worksheet respectively.

Basic Attributes Worksheet

The Basic Attributes Worksheet is shown in Figure 111. It consists of the following blocks:

Characteristics Block**■ Message Class**

In this field you can insert the number of the message class for selection guidance.

■ Appear/Disappearing

This checkbox determines whether the information is an appearing/disappearing event. This definition is necessary if a selection guidance to appearing/disappearing events is required. If the checkbox is set, this indicates an appearing/disappearing event.

■ Value Offset Message

This parameter determines the first text for a sequence of information texts of the specified information in the database.

The first text represents the corresponding text with the information value 0. The information value is added to the number of the first text to determine the corresponding information text. This result represents the number of the corresponding text. Table 1 shows an example.

TABLE 1

Example for parameter **Value Offset**

Single-pole message	value 0 ... disappearing
	value 1 appearing
Offset text	"Disappearing" ... text no. in database is 42
Sequence of texts in database:	
	#41 ...
	#42 "Disappearing"
	#43 "Appearing"
	#44 ...

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The text number for an appearing message is determined as *number of the first text + value for appearing*: $42 + 1 = 43$, i. e. the text "Appearing".

In this field you can enter the offset text for messages. Valid input are all names from table VANAME.

■ **Value Offset Command**

This parameter determines the first text for a sequence of information texts of the specified information in the database (see description of parameter **Value Offset Message**). In this field you can enter the offset text for commands. Valid input are all names from table VANAME.

■ **Status Type**

Information signal types:

- **singles** – Single-pole
- **doubles** – Double-pole
- **fleet** – Fleeting
- **Tapset** – Transformer tap (byte-integer value)
- **DevStm** – Device state
- **DigVal2** – 2-byte-integer value
- **DigVal4** – 4-byte-integer value
- **noSitype** – none of the types described above

The following two parameters are only displayed and may be changed, if in table type_ctrl type = 'DAS' and attribute = 'Y':

■ **Remote Message Processing**

Checkbox to select whether the information can be remote controlled. If the checkbox is set, the information can be remote controlled.

■ **Telesignaled Message Processing**

Checkbox to select whether the information state is telesignaled. If the checkbox is set, the information is telesignaled.

Base Processing Block

■ **Supervision Time Min/Sec**

This checkbox determines, whether the supervision time is entered in minutes or seconds. If the checkbox is set, the supervision time is entered in minutes, otherwise it is entered in seconds.

■ **Command Supervision Time**

This field contains the remote control command reply timeout. The unit - minutes or seconds - is determined by the setting of checkbox **Supervision Time Min/Sec**.

Value range: 0..127

Typification Forms

■ **Command Output Time**

Determines the code for command output duration (relevant only for remote controlled information).

The code depends on the RTU and the output function module of the command output program.

Value range: 0..127

■ **Disturbance Type**

If you want a message with the currently selected information type to initiate a disturbance event, input in this field specifies the disturbance type.

Value range: 0..127

■ **Info Type for Realtime Alarm**

In case of a Sequence of Events (SOE), the setting of this parameter specifies the processing (information type) of the second transmitted message. Valid input are all names from table INTYPNAME. Default entry is NoType.

■ **Inhibit Info Type**

Info type to be used, if tag Alarm Inhibit is set. Valid input are all names from table INTYPNAME. Default entry is NoType.

■ **RTU Termination Time**

Time for termination from RTU, indicating that command output has been finished.

■ **Status Monitoring Time**

Time after command return signal for monitoring that the switch has remained in its target position.

■ **Relevant for Interlocking Check**

Checkbox indicating whether a status change must be considered for interlocking checks. If the checkbox is set, this indicates that a status change has to be considered for interlocking checks.

■ **Relevant for Topology**

Checkbox indicating whether a status change must be considered for topological calculations. If the checkbox is set, this indicates that a status change has to be considered for topological calculations.

■ **Relevant for Activate SC-Job**

Checkbox to determine whether a status change activates a process controlled switching procedure. If the checkbox is set, this indicates that a status change activates a process controlled switching procedure.

■ **Info in NIM**

Defines if the current information state is stored in the network image. If the checkbox is set, this indicates that the information state is stored in the network image.

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■ **User Programs**

This list shows the user programs that shall be informed about information status changes. A maximum of five programs may be specified.

■ **User Services**

This list shows the user services that shall be informed about information status changes. A maximum of five services may be specified.

Archive Block

■ **Storage**

This checkbox indicates whether storage of spontaneous changes in the archive is desired.

■ **Message Format**

Determines the number of the text processing module for archives.

Value range: 0..127

If checkbox **Storage** is not set, then "0" has to be entered.

Expert System Block

■ **Class**

Identification of the expert system class.

Value range: 0..127

If parameter **Slot** is set to zero, also parameter **Class** has to be zero.

■ **Slot**

Identification of the expert system slot.

Value range: 0..127

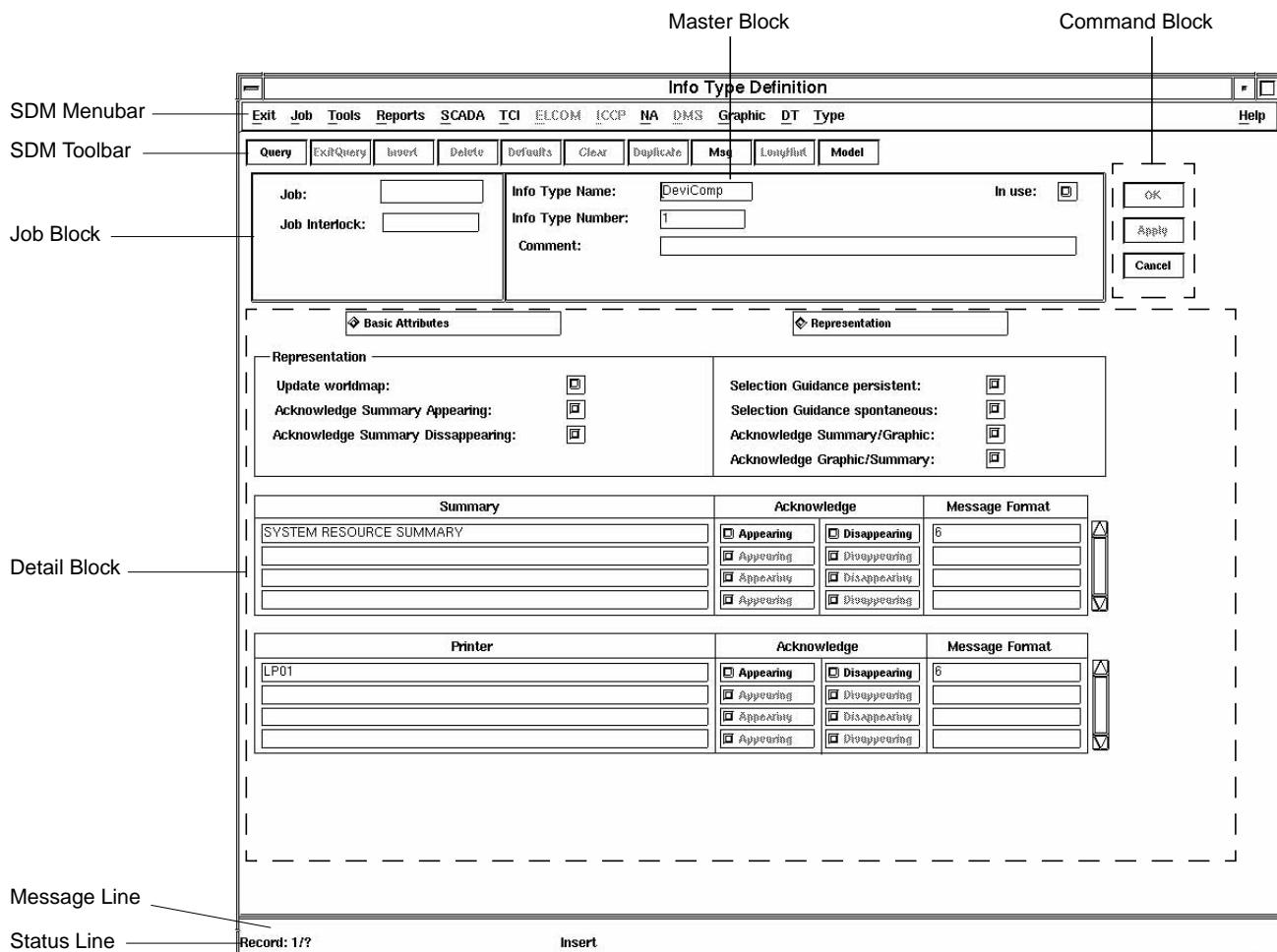
If parameter **Class** is set to zero, also parameter **Slot** has to be zero.

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Representation Worksheet

FIGURE 112

Basic structure of the Info Type Definition Form - Representation Worksheet



Representation Block

■ **Update worldmap**

If this checkbox is set, information changes are shown in a worldmap.

■ **Acknowledge Summary Appearing**

If this checkbox is set, this indicates that appearing messages must be acknowledged in summaries.

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- **Acknowledge Summary Disappearing**
If this checkbox is set, this indicates that disappearing messages must be acknowledged in summaries.
- **Selection Guidance persistent**
If this checkbox is set, this indicates that selection guidance for persistent messages in worldmaps is switched on. This checkbox may not be set if checkbox **Update worldmap** is not selected.
- **Selection Guidance spontaneous**
If this checkbox is set, this indicates that selection guidance for spontaneous status changes in worldmaps is switched on. This checkbox may not be set if checkbox **Update worldmap** is not selected.
- **Acknowledge Summary/Graphic**
If this checkbox is set, this indicates that a message acknowledgment in a summary also acknowledges affected worldmaps. This checkbox may not be set if checkbox **Selection Guidance spontaneous** is not selected or no summaries have been defined.
- **Acknowledge Graphic/Summary**
If this checkbox is set, this indicates that a message acknowledgment in a worldmap also acknowledges affected summaries. This checkbox may not be set if checkbox **Selection Guidance spontaneous** is not selected or no summaries have been defined.

Summary Block

A maximum of four summaries can be defined.

The Summary Block consists of a list with the following columns:

- **Summary**
Name of the summary for which processing of the message is specified.
- **Acknowledge**
 - **Appearing**
Checkbox indicating whether appearing messages and fleetings shall be stored in the summary.
 - **Disappearing**
Checkbox indicating whether disappearing messages shall be stored in the summary.
- **Message Format**
Determines which function module creates the text of the message line. For possible input values refer to 'Basic Attributes Worksheet', parameter **Message Format**.

Printer Block

A maximum of four printers can be defined.

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The Printer Block consists of a list with the following columns:

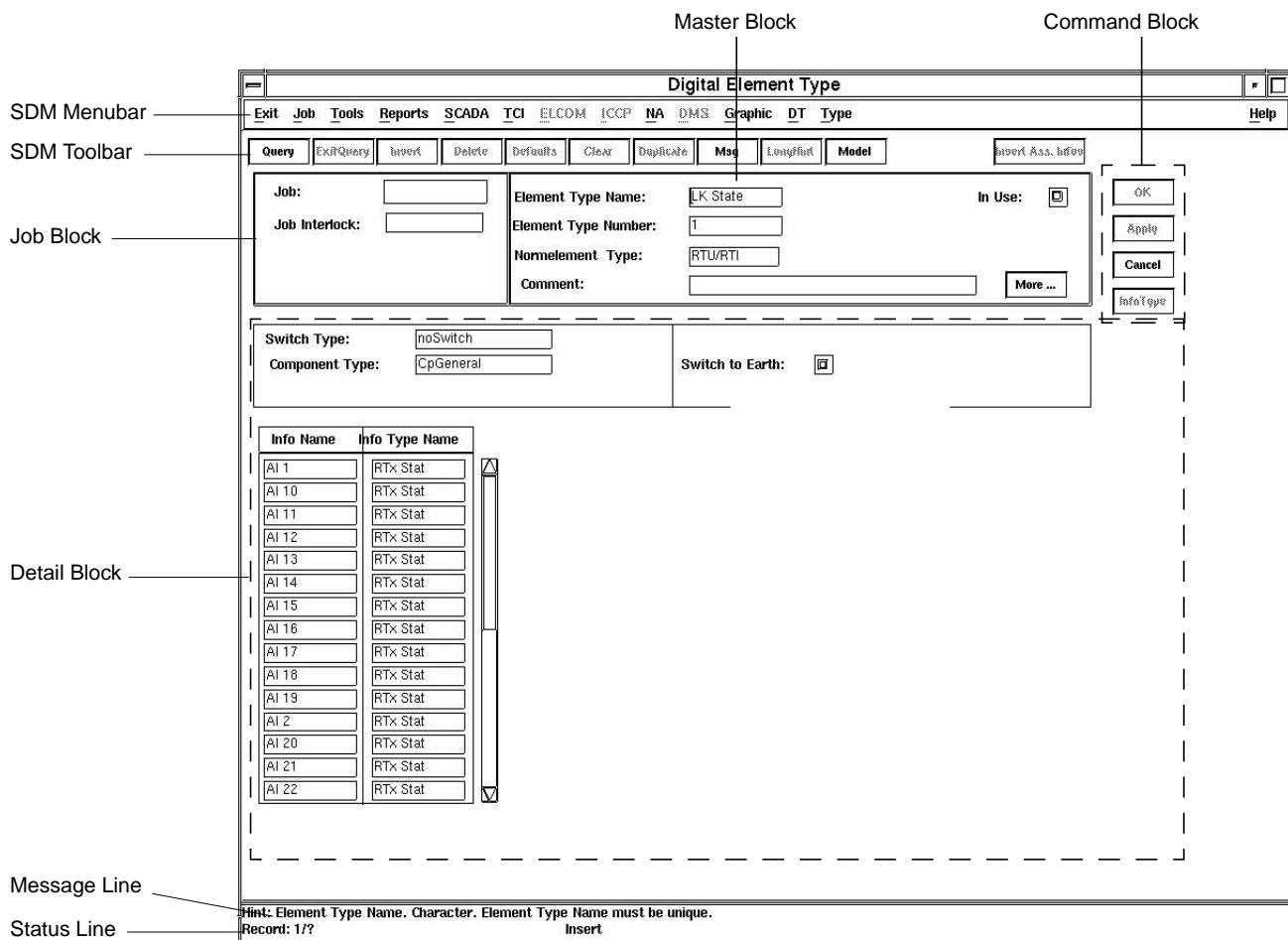
- **Printer**
Name of the printer for which processing of message output is specified.
- **Acknowledge**
 - **Appearing**
Checkbox indicating whether appearing messages and fleetings shall be stored.
 - **Disappearing**
Checkbox indicating whether disappearing messages shall be stored.
- **Message Format**
Determines which function module creates the text of the message line. For possible input values refer to 'Basic Attributes Worksheet', parameter **Message Format**.

Typification Forms

Digital Element Type Form

In this form you can define a new digital element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 113 Basic structure of the Digital Element Type Form



The Digital Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block
- Message Line

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- Status Line

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

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Digital Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Digital Element Type Form also contains the following buttons:

- Model

By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.

- Insert Ass. Infos

For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button Insert Ass. Infos.

Master Block of the Digital Element Type Form

The Master Block of the Digital Element Type Form contains the following fields for selecting the digital element type, when in Query mode:

- Element Type Name

Shows the name of the currently selected digital element type. Its data are displayed in the Detail Block described below.

- Element Type Number

Shows the number of the currently selected digital element type.

- Normelement Type

Shows the norm element type name of the currently selected digital element type.

- Comment

In this field a comment for the element type can be entered.

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checkbox

■ **In use**

This checkbox indicates, whether this digital element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

■ **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Digital Element Type Form

Additionally to the standard buttons OK, Apply and Cancel the Command Block of the Digital Element Type Form also contains button

■ **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Digital Element Type Form

The Detail Block of the Digital Element Type Form consists of the following elements:

■ **Switch Type**

This field indicates, whether the element is a switch, and if it is a switch, its type. Relevant for element types of normelement type "Switch" only.

Possible values:

noSwitch, Isolator, RemLoadBrSw, LoadBrSw, RemBraker, Breaker

■ **Component Type**

Indicates the component type of the operational device. Relevant for element types of normelement type "Topological Node" only.

Possible values:

noComponent, CpConnNode, CpGround, CpGeneral, CpBusbar, CpAuxiBusbar, CpCombiBusbar, CpGenerator, CpInjection, CpLoad, CpHauseSupply, CpCompensator, CpPetersenCoil, CpLine, CpTransformer, CpThreeWindings

■ **Switch to Earth**

The checkbox indicates whether the element is a switch to earth. Relevant for element types of normelement type "Switch" only.

as well as a table with the columns

Typification Forms

- **Info Name**

This column shows all information names assigned to this element type.

- **Info Type Name**

This column shows the information type of the respective information name.

where you can select an info.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button **Insert** of the SDM Toolbar, you can define a new digital element type.

By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected digital element type.

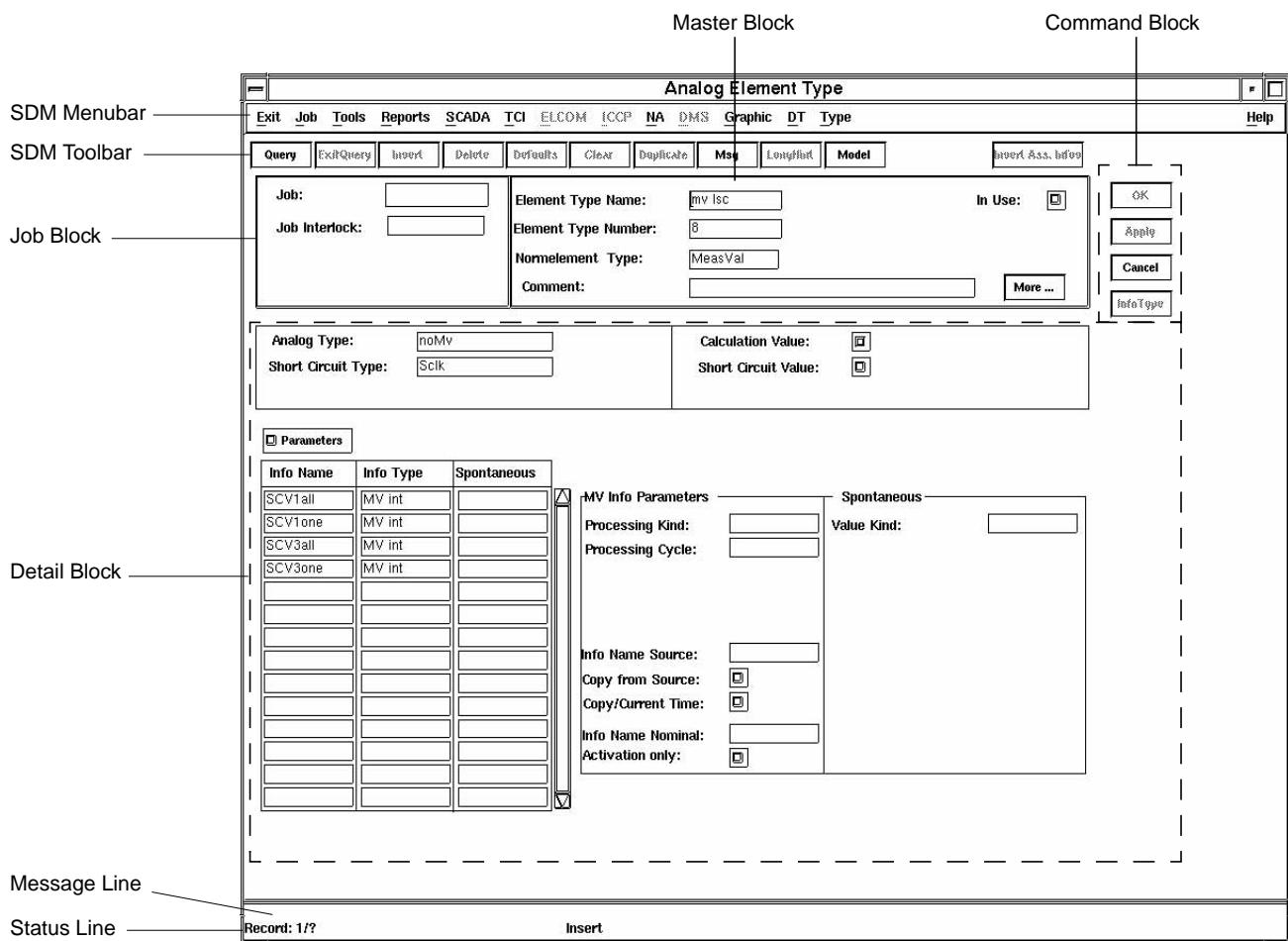
Typification Forms

Analog Element Type Form

In this form you can define a new analog element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 114

Basic structure of the Analog Element Type Form



The Analog Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block

Typification Forms

- Message Line
- Status Line

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

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Analog Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Analog Element Type Form also contains the following buttons:

- **Model**
By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.
- **Insert Ass. Infos**
For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button Insert Ass. Infos.

Master Block of the Analog Element Type Form

The Master Block of the Analog Element Type Form contains the following fields for selecting the analog element type, when in Query mode:

- **Element Type Name**
Shows the name of the currently selected analog element type. Its data are displayed in the Detail Block described below.
- **Element Type Number**
Shows the number of the currently selected analog element type.
- **Normelement Type**
Shows the norm element type name of the currently selected analog element type.
- **Comment**
In this field a comment for the element type can be entered.

Typification Forms

checkbox

■ **In use**

This checkbox indicates, whether this analog element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

■ **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Analog Element Type Form

Additionally to the standard buttons **OK**, **Apply** and **Cancel** the Command Block of the Analog Element Type Form also contains button

■ **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Analog Element Type Form

The Detail Block of the Analog Element Type Form consists of the following elements:

■ **Analog Type**

This field indicates the type of the analog value.

Possible values:

noMv, Voltage, Current, ActPower, ReactPower, Frequency, Temperature, CosPhi, Phi, VirtPower, Elevation, GatePos, TransfTap

■ **Short Circuit Type**

This field indicates the type of the short circuit value.

Possible values:

noSc, ScSk, ScLk, ScPhi, ScUrest

■ **Calculation Value**

Selecting this checkbox determines, whether the element type also has calculation values.

■ **Short Circuit Value**

Selecting this checkbox determines, whether the element type also has short circuit values.

Typification Forms

a table with the columns

■ **Info Name**

This column shows all information names assigned to this element type.

■ **Info Type**

This column shows the information type of the respective information name.

■ **Spontaneous**

This column shows the kind of spontaneous processing.

Possible values:

The value must exist in table MVINTYDE.

and checkbox

■ **Parameters**

When you select this checkbox, an additional block with information about the info currently selected in the table is displayed at the right side of the list (see figure 114). This block is read-only.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button **Insert** of the SDM Toolbar, you can define a new analog element type.

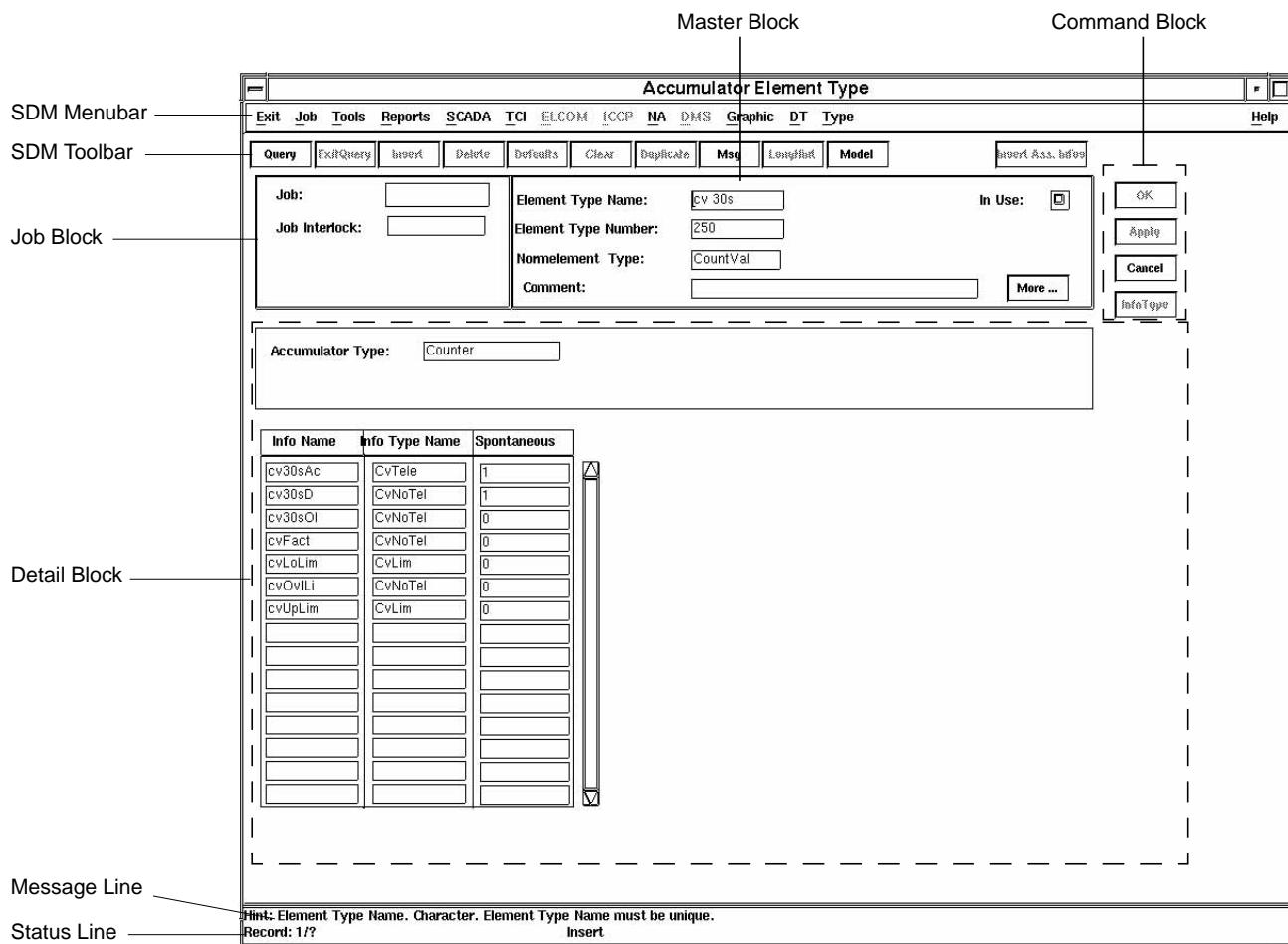
By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected analog element type.

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Accumulator Element Type Form

In this form you can define a new accumulator element type as well as modify or delete an existing element type. You can assign a new info to an element type, delete an existing info and change the info type assignment.

FIGURE 115 Basic structure of the Accumulator Element Type Form



The Accumulator Element Type Form is composed of the following elements:

- SDM Menubar
- Job Block

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- Message Line
- Status Line

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

- SDM Toolbar
- Master Block
- Command Block
- Detail Block

SDM Toolbar of the Accumulator Element Type Form

Additionally to the standard toolbar buttons the SDM Toolbar of the Accumulator Element Type Form also contains the following buttons:

- **Model**
By pressing this button you can create a new element type using an existing element type as a model. For more information about the model feature refer to chapter 3 'SDM Basics' in this document.
- **Insert Ass. Infos**
For each main info there also exists a set of associated infos. You can insert all the infos which are associated to any of the already assigned infos by selecting button Insert Ass. Infos.

Master Block of the Accumulator Element Type Form

The Master Block of the Accumulator Element Type Form contains the following fields for selecting the accumulator element type, when in Query mode:

- **Element Type Name**
Shows the name of the currently selected accumulator element type. Its data are displayed in the Detail Block described below.
- **Element Type Number**
Shows the number of the currently selected accumulator element type.
- **Normelement Type**
Shows the norm element type name of the currently selected accumulator element type.
- **Comment**
In this field a comment for the element type can be entered.

Typification Forms

checkbox

■ **In use**

This checkbox indicates, whether this accumulator element type is already used. If the element type is already assigned to a technological address, deletion and modification of the element type is not allowed.

and button

■ **More...**

Selecting this button opens a separate window for entering a long comment for this element type.

Command Block of the Accumulator Element Type Form

Additionally to the standard buttons OK, Apply and Cancel the Command Block of the Accumulator Element Type Form also contains button

■ **InfoType**

With this button you can open the Info Type Definition Form for the currently selected info/info type.

Detail Block of the Accumulator Element Type Form

The Detail Block of the Accumulator Element Type Form consists of the following elements:

■ **Accumulator Type**

This field indicates the type of the accumulator.

Possible values:

noCv, Counter, SwitchCount, OpTimCount

and a table with the columns

■ **Info Name**

This column shows all information names assigned to this element type.

■ **Info Type Name**

This column shows the information type of the respective information names.

■ **Spontaneous**

This column shows the kind of spontaneous processing.

If you place the cursor in the Master Block or in the element type definition fields of the Detail Block and then press button **Insert** of the SDM Toolbar, you can define a new accumulator element type.

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By placing the cursor in the info list of the Detail Block and then pressing button **Insert** of the SDM Toolbar, you can define a new info for the currently selected accumulator element type.

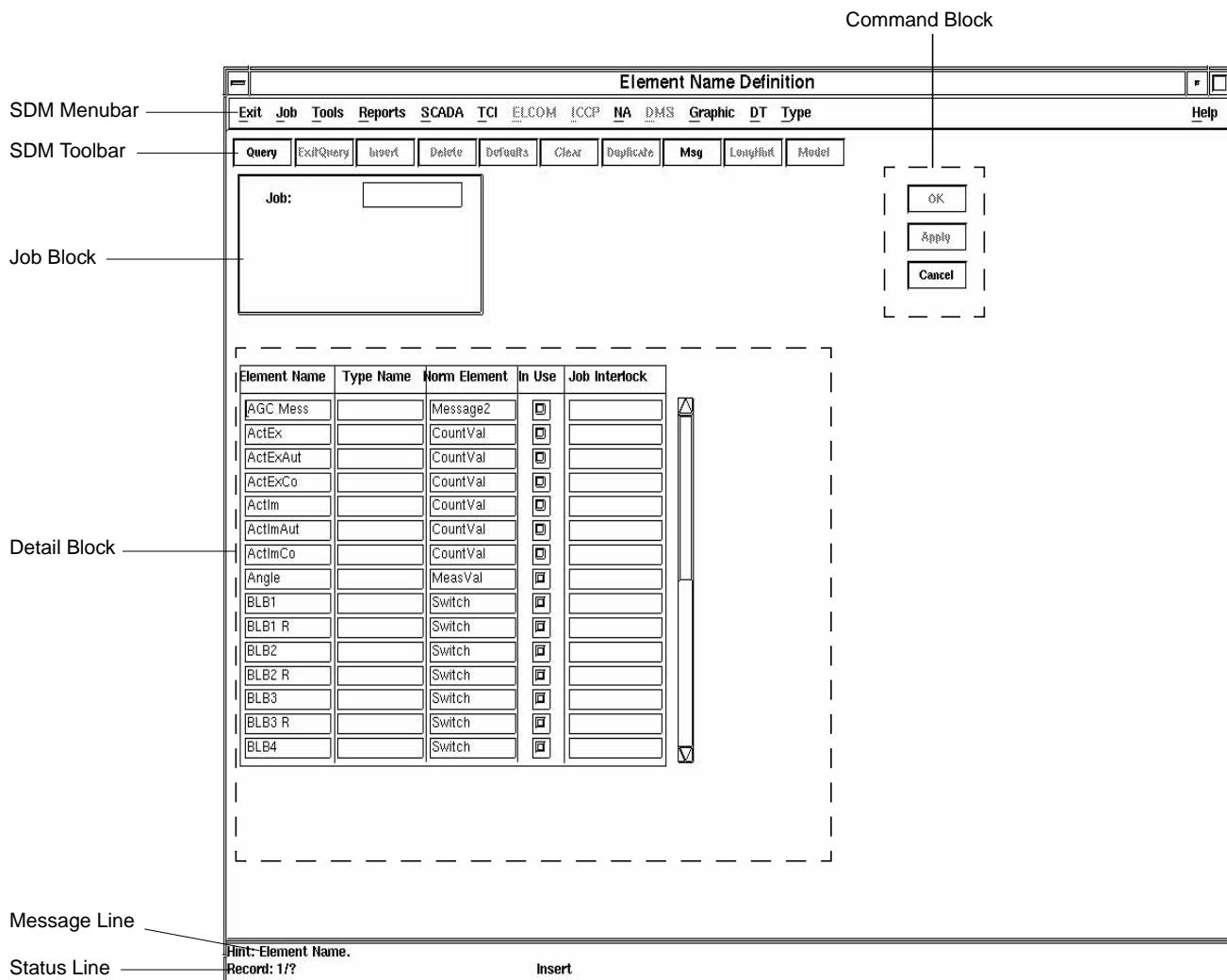
Typification Forms

Element Name Definition Form

With this form you can modify element names. Modification is not allowed if the element name is already used as part of a Technological Address.

FIGURE 116

Basic structure of the Element Name Definition Form



The Element Name Definition Form is composed of the following elements:

- SDM Menubar

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

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

- Detail Block

Detail Block of the Element Name Definition Form

The Detail Block of the Element Name Definition Form consists of a tabular list with the following columns:

- **Element Name**

This column contains the element names, which can be changed.

- **Type Name**

It is possible to preset an element name with a definite element type. For these cases the element type is shown in this column. This field cannot be edited.

- **Norm Element**

This column shows the norm element type name of the respective element. This field cannot be edited.

- **In Use**

This checkbox indicates, whether the element is already used. If the checkbox is set (the element is already used), no modification is allowed.

- **Job Interlock**

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

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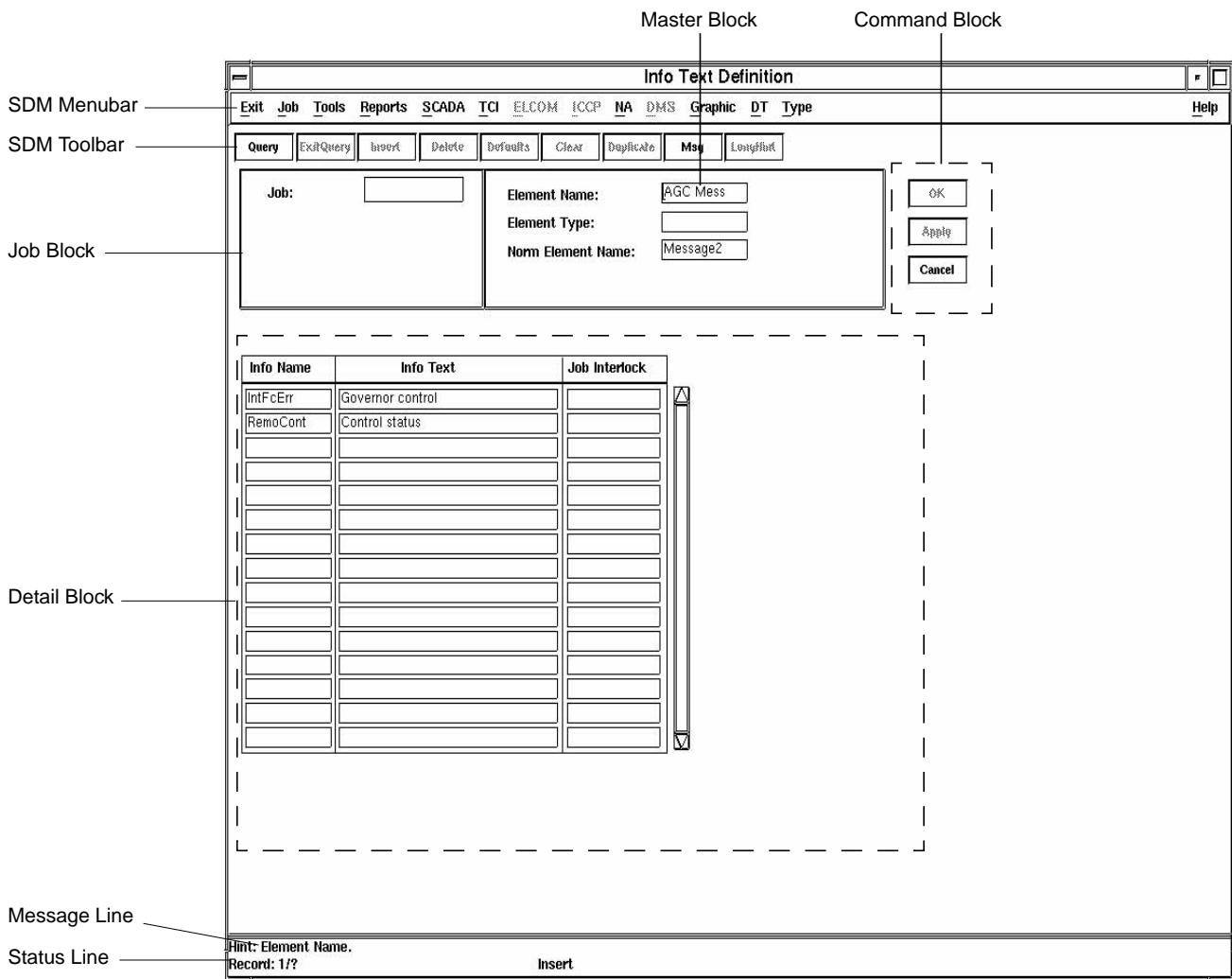
Info Text Definition Form

With this form you can modify an existing info text or insert a new info text for existing infos.

Changes in this form are only allowed, if in table type_ctrl
type = 'GLOBAL_INFOTEXTS', attribute = 'Y'.

FIGURE 117

Basic structure of the Info Text Definition Form



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The Info Text Definition Form is composed of the following elements:

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

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

- Master Block
- Detail Block

Master Block of the Info Text Definition Form

The Master Block of the Info Text Definition Form contains the following fields for selecting the element whose infos shall be displayed.

- **Element Name**
Shows the name of the currently selected element. The infos assigned to this element are shown in the Detail Block described below.
- **Element Type**
It is possible to preset an element name with a definite element type. For these cases the element type is shown in this field. This field cannot be edited.
- **Norm Element Name**
Shows the name of the norm element of the currently selected element.

Detail Block of the Info Text Definition Form

The Detail Block of the Info Text Definition Form consists of a tabular list with the following columns:

- **Info Name**
This column shows the names of the infos assigned to the element selected in the Master Block.
- **Info Text**
In this column you can edit information texts for the listed infos.
- **Job Interlock**

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

Base Applications Import Data Definitions

CHAPTER 12

Base Applications Import Data Definitions

Introduction

This chapter is a reference that aids in the process of collecting and defining the source data for SINAUT **Spectrum** Applications (e.g., Base Applications). The information provided in this guide includes guidelines for collecting the source data, interactive data entry form definitions, the import record formats, and the detailed definitions of the import record attributes.

The information in this chapter is intended for data engineers who understand the power system characteristics and are thoroughly knowledgeable about the topics covered by the various data analysis user guides. Additionally, the data engineer's role requires an understanding of database concepts to ensure that the correct and appropriate data is both initially incorporated and maintained in the source database.

This chapter supports the collecting, specifying, and formatting of the source data for SINAUT **Spectrum** Applications (e.g., Base Applications). Use this chapter initially to understand and set up the source data import file. This includes collecting the source data according to the detailed record attribute definitions and placing the data into the import record formats.

As an additional reference source, use the concerned data analysis user guide to provide a basic understanding of the data and how each piece of data relates to the overall system. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter.

Base Applications Import Data Definitions

Prerequisites

Before attempting to set up any records, study the concerned data analysis user guide. It will help you to understand what comprises switchbays, network components, etc. .

Most, but not all, of the information needed to define the system is included within this chapter. Certain data, especially that which deals with configuring the system, is enterable only through SDM, job files (i.e., BQ jobs) or as system parameters. This type of information must be configured into the system before the import data is imported into the system. Some examples of this type of data are: block types, element types, system sizing parameters, formulae used in calculations, characteristic curves used to convert raw data to engineering units, etc.

A complete understanding of the concerned data analysis user guide and completion of the SINAUT **Spectrum** SDM class will help you to understand the information that needs to be entered. Table 2 below shows a list of applicable documents:

TABLE 2

Applicable documents

Document ID	Title
U-SC20	Base Applications Data Analysis
U-PA20	Power Applications Data Analysis ^{a)}
U-NA20	Network Applications Data Analysis ^{b)}
U-SD09	SDM Network Applications Reference ^{b)}
U-SD02	SDM Interface Maintenance ^{c)}

a) Note: This document might not be available since it belongs to the Power Applications package which might not be part of your scope of supply.

b) Note: This document might not be available since it belongs to the Network Applications package which might not be part of your scope of supply.

c) U-SD02 contains information on the involved database tables for data import, source database tables and SDM control tables.

Base Applications Import Data Definitions

Data Collection Guidelines

This section provides guidelines for collecting and organizing the source data required by the SINAUT **Spectrum** Applications. These guidelines include setting up the source data import records to describe the various entities of the system, e.g., topology of the system, switchbays and network components, application data, etc. .

Switchbay and Network Component Definition

The *Operational Database (ODB)* portion of the SINAUT **Spectrum** database, which contains information describing the power system network, consists of *Blocks* (substations, voltage levels, switchbays, network components), *Elements* (circuit breakers, disconnects, measuring points, etc.), and associated technological data units, the so-called *Infos* (statuses, analog values, quality codes, etc.) that these elements carry. There is a 3-level hierarchy associated with the blocks (B1, B2, B3).

Various possibilities of the block structure are shown below as examples:

- B1 / .. / .. ---> e.g., substation, line
- B1/ B2/.. ---> e.g., voltage level
- B1/B2/B3 ---> e.g., network components, switchbays

The switchbays and network components contain elements. The B1/B2/B3 triplet, along with the element, provides a unique identification for ODB data records. Finally, each element contains various technological data units (infos). This 5-level hierarchy is used to identify information uniquely in the system.

B1/B2/B3/Element/Info

This combination is referred to as the *Technological Address (TA)*. When processed by the SDM system, it becomes a technological identifier, which is used to identify the information uniquely in the database.

 Note:

Detailed information on the technological address and other basic concepts of the power system data model can be obtained from the document U-SC20, Base Applications Data Analysis. Descriptions of application-specific data analysis methods can be obtained from the concerned data analysis user guide. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter

The first step of data preparation consists of identifying the blocks in the system. In general, the B1-record is used to identify the substations and lines in the system. The B2-record defines the various voltage levels within each station or line. The B3-record contains the name, block type, topology type, etc. of the switchbay or the network component. The block

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type and the topology type of the switchbay or network component (on the B3-record), are best determined from examination of single-line diagrams. The SDM will, based on the topology type and block type found on the B3 record, create a skeletal set of Element records (refer to the section 'Auto Creation of Element and Info Records' on page 298 in this chapter).

After the definition of the blocks, the elements within the switchbays and network components are defined with Element records. The element type chosen for each element determines what data units are associated with the element and how that information is processed. The SDM will, based on the element name and element type found on the Element record, create a skeletal set of Info records (refer to the section 'Auto Creation of Element and Info Records' below).

This sequence of data preparation is repeated for all substations, lines, voltage levels, switchbays and network components in your system. After switchbays and network components are defined, the SDM order **Referenc** can be used to define the connectivity between B3-blocks. This connection information and the topology type of each block is needed by Supervisory Control and Network Coloring functions. Multiple reference records will have to be created. The number of records depends on which type of references are being defined/satisfied. If the references are from the switchbay to network components, the topology type of the switchbay will determine how many reference records are required. If the references are from a non-busbar network component to a busbar, the type of network component determines how many references are needed.

☞ **Note:**

Use the concerned data analysis user guide as a source for finding standard names and data. For a list of applicable documents, see table 2 'Applicable documents' on page 296 in this chapter

Auto Creation of Element and Info Records

When a B3-record is inserted into the database, its block type and topology type are used to determine a minimum number of elements necessary to complete the definition of that B3-block. These elements are automatically inserted into the element table in the database with a -null- in the element type column.

☞ **Note:**

You must correct the element type name for these elements prior to doing a job transfer. If import is running and the element is encountered in the import data definition (IDD) file, the attributes are updated to match whatever is on the IDD Element record.

When an element is inserted into the database, its element name and its element type are used to determine a minimum number of data units (infos) necessary to complete the definition of that Element. These data units are automatically inserted into the appropriate database tables (analog value, digital, accumulator or application data).

☞ **Note:**

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You must update the other attributes of the info prior to job transfer. If import is running and the data unit is encountered in the IDD file, the attributes are updated to match whatever is on the IDD info record.

Application Data

The application data Import Data Definition (IDD) is configured in the Oracle tables `IDDUG_RECORD` and `IDDUG_FIELD`. These tables have associated filltab files located in:

`$SPEC PATH/src/code/im_sdb/schema/prime/filltab/iddug_record.ad` and
`$SPEC PATH/src/code/im_sdb/schema/prime/filltab/zz_iddug_field.ad`

The start and end constants for the application data import data definition are described in `$SPEC PATH/src/code/im_sdb/include/ImIdlugAD.h`.

This chapter also presents the data import record definitions for application data, application data characteristic groups and schedules. These data is arranged hierarchically according to its function. For a complete description of the presentation format, see section 'Data Collection Guidelines' on page 297 and section 'General Format Guidelines' on page 299.

IDD descriptions are required for those application data stored in the following source database tables:

- `AD_INFO`
- `AD_REFERENCE`
- `SCHEDULE`
- `AD_CALC_INFO`
- `AD_CHARAC_GROUP`
- `AD_CHARAC`
- `AD_CHARAC_SEGMENT`

General Format Guidelines

All source data for import consists of text records that reside in files. This data may be created by whatever means is most readily available and convenient to you, including batch generation from data stored in another computer system, export from the SINAUT **Spectrum** source database, and/or interactive editing.

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Throughout this document, the term "record" is defined as a string of characters subdivided into data item fields that are delimited by some record separator. Each field is used for the entry of data values for specific attributes of power system equipment and other entities.

☞ **Note:**

Control codes such as TAB are not permitted in import data as delimiters or for any other purpose. The only exceptions are for the normal end-of-line codes such as carriage return and line feed. The presence of any other control codes will cause unpredictable results.

The use of unusual printing characters in user data should be approved during project definition. This is to make sure they will not cause system problems and can be properly displayed and printed.

The record format for import has fields in fixed-column positions. A single blank column is allocated between fields that is examined by the import process for the presence of any non-blank character, thus indicating shifted or misplaced data from adjacent fields. If a field is labeled as reserved, it should be left blank. All data records consist of the following four general areas:

- | | |
|---------------|--|
| Columns 1-7 | Record Type |
| Column 8 | Record Variation Field (<blank> for insert/update) |
| Columns 9-80 | Data Fields |
| Columns 82-86 | Record Identifier (optional) |

This format enhances portability, permits viewing and editing on most CRTs, and permits identification of source records in error messages. If the record identifier field of a record is blank, a default sequential record number is supplied by the import process.

Any record with an asterisk ("*") or blank in column 1 is treated as a comment. Remaining columns of the comment record may contain any sequence of printing characters including the delimiter character and/or blank spaces. Comment records may be freely interspersed in any input data. Comments are generally ignored by the import process except in some cases where they are copied to reports.

Each different record type is identified by a unique code that begins in the first character position of the record. When the data does not fit on a single record, a second record type exists to handle the additional data. The record type name for these overflow records is distinguished from the original record by adding an alpha character at the end of the record type name. This sequence character identifies continuation subtypes within a basic type. Within the records for a given piece of equipment, the records must appear in sequence-character order (for example, B3 followed by B3A, etc.).

The record type field must be filled out for every record. If an actual record type does not match one of the known types, an error message is issued and the content of the record is ignored.

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The record defaults to an update/insert. This means, records with a technological identifier already available in the database are updated, records with a new technological identifier are inserted into the database. But it can also be a deletion or just used as a foreign key reference for the succeeding records. Valid values for the record variation field are:

- D - This record and all subordinate records will be deleted from the database.
- X - This record is a “placeholder” and is used to provide identifying information for lower level records. No processing will occur for this record, but the hierarchical key information, which is needed to identify lower level records, will be collected by the import program and saved for future use. For example, the user must provide a placeholder B1 record and a placeholder B2 record in order to delete a B3 record, since the import program must know the B3's whole hierarchical identity before it can execute a delete.
- R - The previous key for this record is replaced by the actual one in the database. No other data than the affected key is processed for this record.

Example:

```
B1      XASH          * Set 'ASH' as key for SCADA B1
B2      X230 kV       * Set '230 kV' as key for SCADA B2
B3      XF1           * Set 'F1' as key for SCADA B3
B3      RT1           * Rename the last SCADA B3 ('F1') to 'T1'
```

The replace is possible for following IDDUG records:
'B1', 'B2', 'B3', 'TDEP', 'TCR', 'TCB', 'TCC', 'TLRU'

- Blank - This record will be imported into the database; new records will be inserted and existing records will be updated.

Technological Identifier

SINAUT **Spectrum** employs a 5-level technological address (TA) to identify all network equipment. Each part of the TA consists of a name of up to 8 characters. The 5 parts of the TA are:

- B1 (Block of hierarchical level 1)
B1 names are either the substation name or the literal value ‘Line’. Substation names are chosen by the user with each name being unique in the network.
- B2 (Block of hierarchical level 2)
B2 names are the voltage level name. Voltage level names are chosen by the user with each name requiring uniqueness only within its substation.
- B3 (Block of hierarchical level 3)
B3 names are the network equipment or component names. Equipment names are chosen by the user with each name requiring uniqueness only within its voltage level.
- Element

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Element names are selected from predefined lists. Different equipment types may have different predefined lists.

- Information (Info)

Info names are selected from predefined lists. Different combinations of equipment types and element types may have different predefined lists.

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 Note:

Detailed information on the technological address and other basic concepts of the power system data model can be obtained from the document U-SC20, Base Applications Data Analysis.

Data Ordering Rules

The power system data must be organized in hierarchical structures. One of these structures, SCADA, is based along geographical lines of station and voltage level. The SCADA hierarchy also shows the interrelationship between the pieces of data. The other structures are non-geographical and simply rely on their hierarchy to show the interrelationship of data. Other hierarchical structures are possible as well.

Several distinct hierarchical structures are available:

- B1/B2/B3/Element/Info for SCADA data, application data and Multisite data
- Connectivity data
- Application data characteristic group data
- Schedule data

SCADA Data (B1/B2/B3/Element/Info) Hierarchy

The data record order for SCADA data (see figure 118 on page 305) must observe the following rules:

1. A record for each B1 (e.g. substation) in the system.
2. Within a B1, a record for description of Multisite data.
3. Within a B1, a record for every element of that B1.
4. Within each element for that B1, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records
 - Digital records
 - Calc Operand records
 - Application data info records
 - Additional information records
 - Application data calculation information records

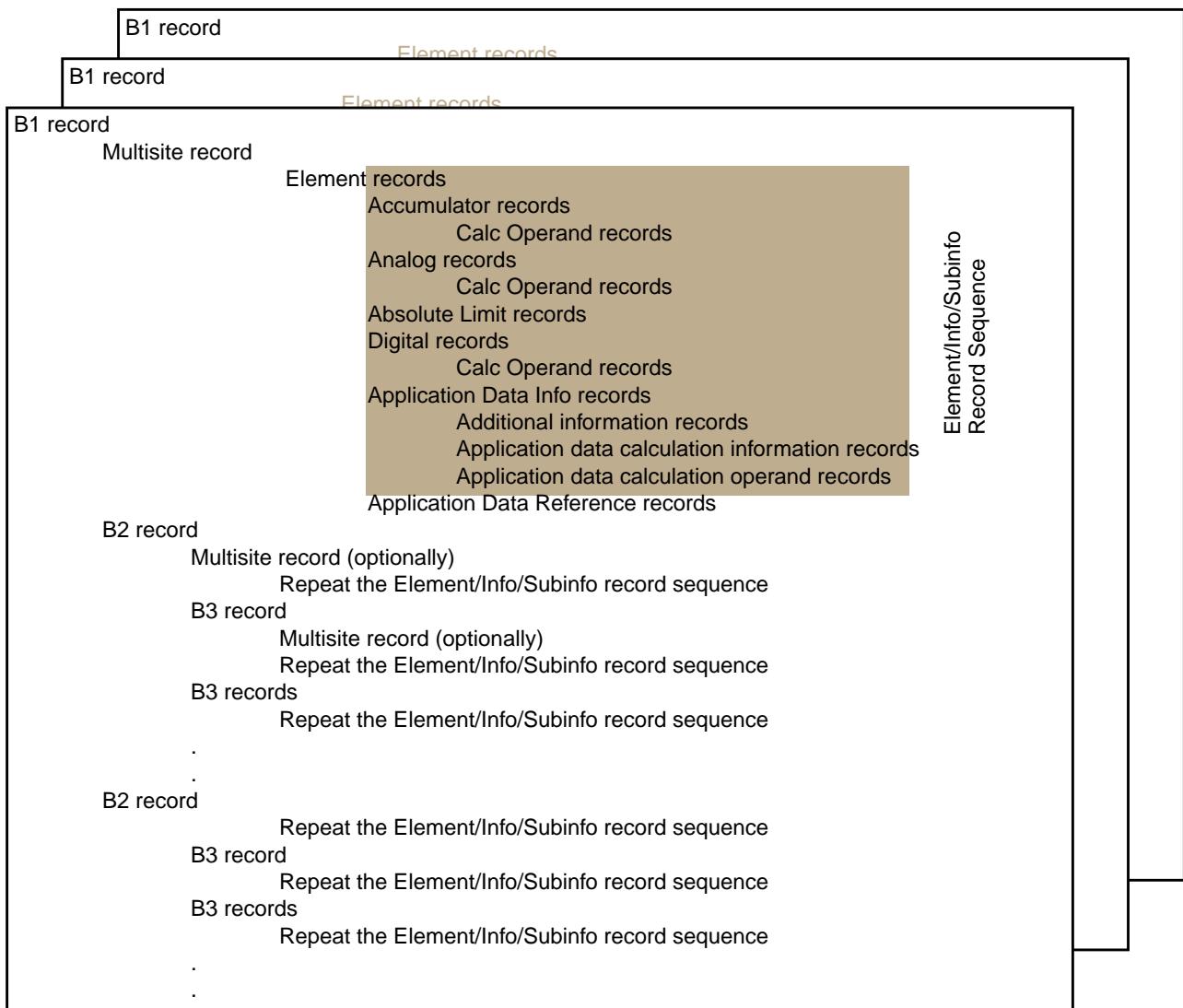
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- Application data calculation operand records
 - Application data reference records
5. A record for each B2 (e.g. voltage level) in a B1 must follow the B1 record group. B2 is the basic subdivision of a B1. For example, all equipment in a substation (B1), operating at a particular nominal voltage, belongs to one voltage level (B2). A substation may include equipment operating at one or more nominal voltages.
 6. Within a B2, a record for description of Multisite data (optionally).
 7. Within each B2 at a B1, a record for every element of that B2.
 8. Within each element for that B2, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records
 - Digital records
 - Calc Operand records
 - Application data info records
 - Additional information records
 - Application data calculation information records
 - Application data calculation operand records
 - Application data reference records
 9. A record for each B3 (e.g. switchbay) in a B2 must follow the B2 record group. B3 is the basic subdivision of a B2. For example, all switchbays and network components belonging to a voltage level of a station are described as B3.
 10. Within a B3, a record for description of Multisite data (optionally).
 11. Within a B3, a record for every element of that B3.
 12. Within an element, a record for every technological data unit (info) of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Accumulator records
 - Calc Operand records
 - Analog value records
 - Calc Operand records
 - Absolute Limit records

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- Digital records
 - Calc Operand records
- Application data info records
 - Additional information records
 - Application data calculation information records
 - Application data calculation operand records
- Application data reference records

FIGURE 118 B1/B2/B3/Element/Info Hierarchy



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DMS SCADA Data (B1/B2/B3/Element/Info) Hierarchy

The DMS definition data may be represented by using the SCADA records. The data record order for DMS SCADA data (see Figure 119) must observe the following rules:

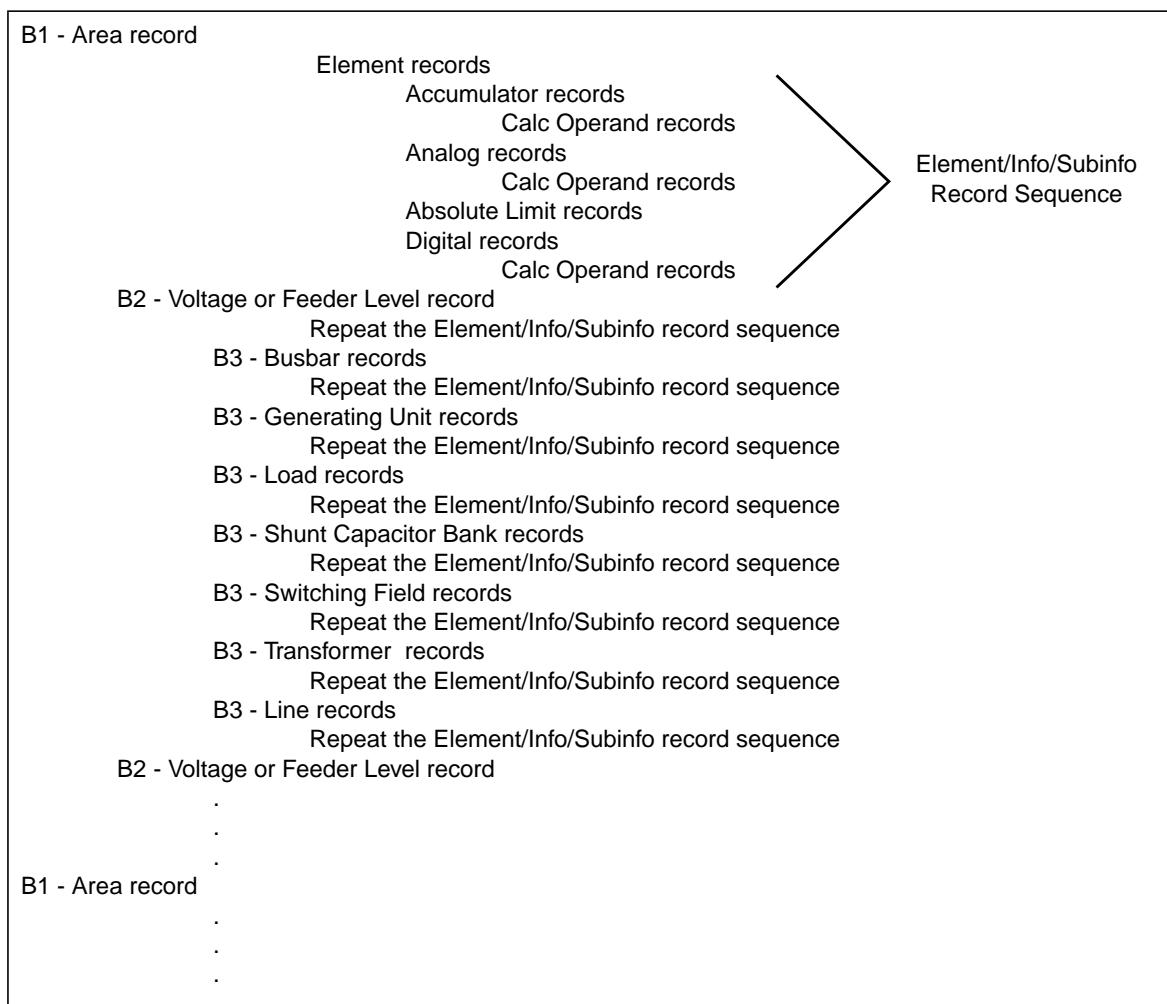
1. All DMS Block records must have the DMS-relevant flag set to True. The DMS applications only run with DMS-relevant data.
2. EMS/DMS boundary busbars would be delineated by having both the NA-relevant and DNA-relevant flags set.
3. A record for each DMS Area (B1) in the system.
4. Within a DMS Area, a record for every element of that area.
5. Within each element for that Area, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records
6. A record for each voltage or feeder level (B2) in a DMS area must follow the area record group. A voltage level is the basic subdivision of a station. All equipment in a station, operating at a particular nominal voltage, belongs to one voltage level. A station may include equipment operating at one or more nominal voltages.
7. Within each voltage or feeder level at in an area, a record for every element of that area.
8. Within each element for that area and voltage or feeder level, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records
9. Within a voltage or feeder level at an area, a record for each equipment (B3) may be described as follows:
 - Busbar records
 - Generating Unit records
 - Load records
 - Measurement Block records
 - Shunt Capacitor Bank records
 - Switching Field records
 - Transformer records
 - Line records
10. Within an equipment, a record for every element of that equipment

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11. Within an element, a record for every info of that element. The info records may or may not have sub-info records associated with them. Info records may be described as follows:
 - Digital records

FIGURE 119

DMS SCADA (B1/B2/B3/Element/Info) Hierarchy



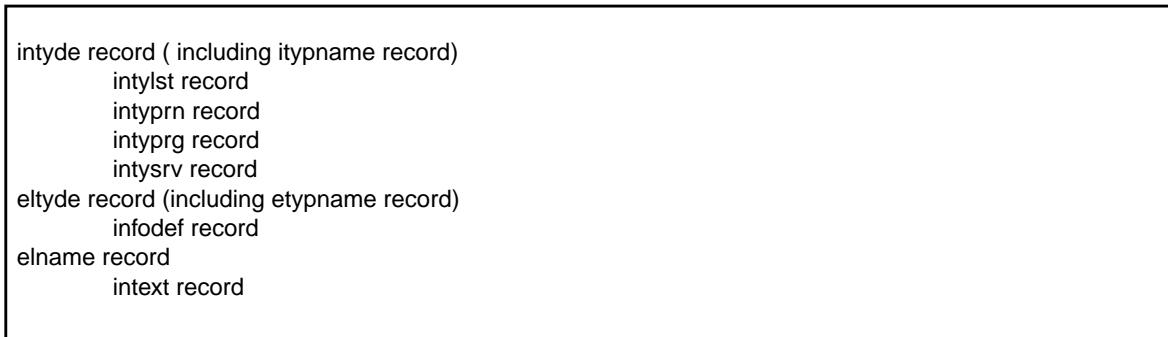
Typification Data Hierarchy

Typification records must be inserted before the B1 record.

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FIGURE 120

Typification Data Hierarchy

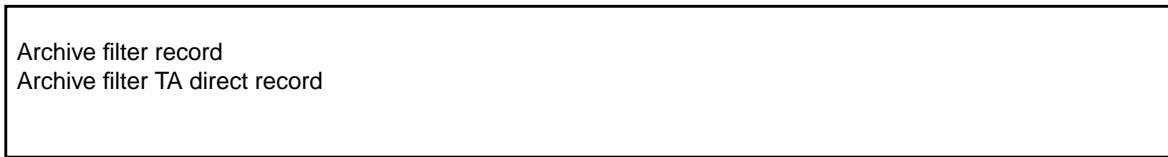


Archive Filter Hierarchy

The archive filter records must be inserted after the B1 records.

FIGURE 121

Archive Filter Hierarchy



Connectivity Hierarchy

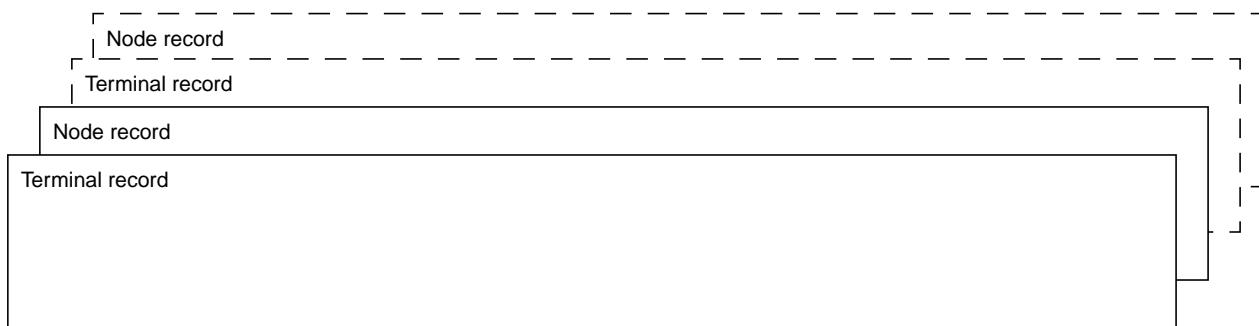
The data record ordering for connection records must observe the following data ordering rules (see figure 122 on page 309):

1. A record pair for each connected terminal in the system.
The record pair must consist of:
 - terminal record
 - accompanying node record.

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FIGURE 122

Connectivity Hierarchy



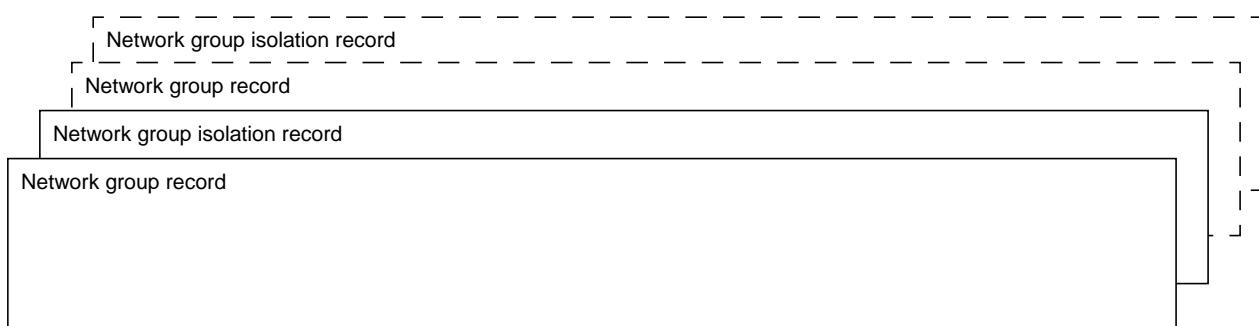
Network Group Hierarchy

The data record ordering for network group records must observe the following data ordering rules (see figure 123 on page 309):

1. A record for each network group in the system.
2. A record for each network group isolating element in the system.

FIGURE 123

Network Group Hierarchy



Decision Table Hierarchy

The data record order for DT hierarchy must observe the following rules:

1. A record DT_Head for each DT in the system will be described
DT_HeadA is the continuation of DT_Head.
2. The condition lines will be described in DT_CoLi. All conditionlines follow behind DT_Head.
3. The rules described in DT_Rule follow after the descriptions DT_CoLi.

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4. DT_Cond contains the description up to five single conditions (line,rule)

FIGURE 124

Decision Table Hierarchy

```
DT_Head - general informations about decision table
DT_HeadA - continuation general informations

    DT_CoLi - condition line description (condition line 1)
    ...
    DT_CoLi - condition line description (condition line m)

    DT_Rule - rule description (rule 1)
        __DT_Cond - Condition (rule 1, condition line 1)
        __DT_Cond - Condition (rule 1, condition line 2)
        ...
        __DT_Cond - Condition (rule 1, condition line m)

    DT_Rule - rule description (rule 2)
        __DT_Cond - Condition (rule 2, condition line 1)
        ...
        ....
    DT_Rule - rule description (rule n)

    DT_CoNa - description of codeword and its attributs
    DT_RuNa - list of possible rules and its name

    :
```

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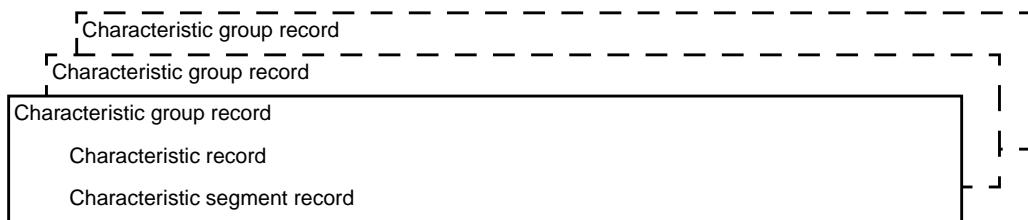
Application Data Characteristic Groups Hierarchy

The data record ordering for application data characteristic groups records must observe the following data ordering rules (see figure 125 on page 311):

1. A record for each application data characteristic group in the system.
2. Within an application data characteristic group record, a record for every application data characteristic of that application data characteristic group.
3. Within an application data characteristic record, a record for every segment of that application data characteristic.

FIGURE 125

Characteristic Groups Hierarchy



Schedule Hierarchy

The data record ordering for schedule records must observe the following data ordering rules:

1. A record for each schedule in the system.

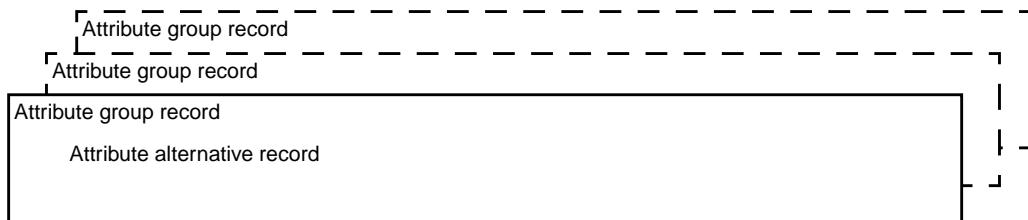
Attribute Groups Hierarchy

The data record ordering for attribute group records must observe the following data ordering rules (see figure 126 on page 311):

1. A record for each attribute group in the system.
2. Within an attribute group record, a record for each attribute alternative of that attribute group.

FIGURE 126

Attribute Groups Hierarchy



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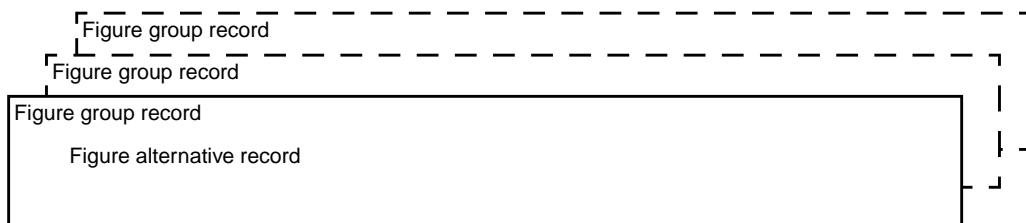
Figure Groups Hierarchy

The data record ordering for figure group records must observe the following data ordering rules (see figure 127 on page 312):

1. A record for each figure group in the system.
2. Within a figure group record, a record for each figure alternative of that figure group.

FIGURE 127

Figure Groups Hierarchy



Record Description Format

The elements of the subsequent data import record definitions (refer to section 'Data Import Record Attribute Definitions' on page 318 in this chapter) have a structure that aids the user in gathering the appropriate data for import purposes and/or interactive editing.

The format includes the following information:

- <Name of the Entity>
- <Name of the Record>
- <Attribute Name>
 - <Meta-Attributes>

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TABLE 3 Meta-Attributes

	Content
Meta-Attributes	Required
	Yes/No/Conditional
	Data Type/Size
	Example – character (8)
	Columns
	Example – 37-44
	Valid Values
	<optional>
Default Value	<optional>
	<optional>
Dependencies	<optional>
	<optional>
Description	Textual description of the attribute
	<optional>
Field for SDM entry	<optional>

Legend for Record Description Format

Data attributes are described in terms of the following meta-attributes:

Name of Entity: This names the data model entity described by the following record or record types. Text related to the entity may be inserted here. The text may describe the entity and various considerations related to it.

Name of Record: The record identifier followed by the data model entity name. Text related to this specific record may be inserted here. The text may describe the record and various considerations related to it. More than one record type may be used to describe an entity.

Attribute Name: The name of the attribute.

Meta-attributes:**■ Required**

Indicates whether the user is required to enter information for this attribute:

- “Yes” indicates an entry must be made in all cases.
- “No” indicates an entry is not required (i.e., optional). The field may be left blank since a default will be provided.
- “Conditional” indicates that an entry is conditionally required depending on circumstances described in one or more of the meta-attributes following, usually “Dependencies”.

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- **Data Type/Size**

Describes the type of data allowed, i.e., Character, Integer, Float, Hexadecimal, etc., and the maximum length of the entry. These data types are described in greater detail in the next section.

- **Columns**

Defines the starting and ending column positions of the field in the record.

- **Valid Values**

Specifies a range or list of valid values. A numeric range is always inclusive. Symbolic (name) references are to the actual values entered by the user in other fields of the same or another record. Range limits are defined for most numeric fields, but where impossible to define, the default value should be used as a guide.

- **Default Value**

Specifies the default value which will be used if the attribute is not required (optional) and the field is left blank. For more information refer to the section 'General Data Entry Rules' on page 314 in this document.

- **Dependencies**

Describes relationships between attributes.

- **Description**

A short textual description of the attribute.

- **Field for SDM entry**

If the respective attribute can be entered via SDM, this meta-attribute identifies the related SDM form and the location of the concerned input field.

General Data Entry Rules

The following general data entry rules apply for all data types:

1. If a non-blank value is entered in a field, then that entered value is imported into the relational database.
2. If no value is entered in a field (the field is left blank) and an entry is not required in the field (entry is optional), then the indicated default value is substituted into the field and consequently imported into the relational database. Default values are defined for each optional field.
3. If no value is entered in a field (the field is left blank) but an entry is required, then an error message is issued and the field is left blank resulting in a null value being imported into the relational database.

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Meta-Attribute “Data Type/Size”

This meta-attribute declares the data type of the field, i.e., Character, Integer, Float, etc. and the maximum length of the entry enclosed in parentheses. Integer and Float may be collectively referred to as Numeric.

Character (w)

This defines a character field which can contain any printing characters in any order unless otherwise stated. Lists of valid entries are defined for some character fields.

Embedded blank spaces are allowed and are included and counted in the data. For example, the names “ABC1”, “ABC 1”, and “A B C 1” are distinct from one another and are not equivalent. Although embedded blanks are preserved, data items distinguished by the number of consecutive embedded blanks is discouraged. The example of “ABC 1” versus “ABC 1” illustrates the case.

Leading and trailing blank spaces are discarded and the remaining entered data left registered when imported into the database. The use of character data items having leading blanks is strongly discouraged since such practice can lead to uncertainty and confusion.

Upper and lower case letters are also distinct from one another, i.e., “A” is different from “a”, “B” from “b”, etc. For example, the names “ABC”, “Abc”, and “abc” are treated as three different names which are not equivalent.

☞ **Note:**

Please check with Siemens before using lower case letters or special printing characters to make sure they won't cause system problems and can be properly displayed and printed.

The above distinctions are important when a name entered in a record is intended to refer to the same name in some other record.

The value of (w) indicates the total field width (maximum number of columns).

Integer (w)

This defines an integer field which may contain any digits 0 through 9 preceded by + or -. The plus sign is allowed but is not significant as values are assumed to be positive unless a minus sign is present. Entries should, but need not, be right aligned in the field. Integer data may not contain a decimal point. All blank spaces, whether leading, trailing, or embedded, are ignored. Range limits are defined for all fields.

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The value of (w) indicates the field width (maximum number of columns). Valid integer data is not subject to truncation or loss of accuracy. The operational range of integer values generally extends over a range of approximately -2,000,000,000 to +2,000,000,000 although either the size of the field or the allowed enterable range typically places a more restricted limit on enterable values.

Float (w.d)

This defines a floating point or fractional number field which may contain a numeric value consisting of a string of any digits 0 through 9 preceded by + or – and somewhere a decimal point. The plus sign is allowed but is not significant as values are assumed to be positive unless a minus sign is present. Entries using exponential or scientific notation (e.g., 12 • 3E + 4) are not supported. Entries should be right aligned in the field. All blank spaces, whether leading, trailing, or embedded, are ignored. Range limits are defined for most fields, but where impossible to define, the default value should be used as a guide.

The value of (w) indicates the field width (maximum number of columns). Floating point data is typically subject to an operational limit of approximately seven significant digits. The absolute internal range of floating point values typically extends from 1.2E-38 to 3.4E+38 although either the field size or valid range always places a more restricted limit on enterable values.

The value of (d) when present suggests the number of digits to the right of the decimal which are significant within the context of the related applications. It is a suggestion, not a requirement.

Individual floating point data items displayed to the user may be subject to round-off or truncation due to limited display space or to formatting decisions when building displays. Data entered without an explicit decimal point is read as a whole number. No decimal point position is assumed as would be the case were this interpreted as a FORTRAN Fw.d specification. To avoid uncertainty or confusion, an explicit decimal point in the data is expected. Example entries in a field defined as Float (8) or Float (8,3) would be interpreted as follows:

Entry	Interpreted as
1234.567	1234.567
1234567	1234567.
1.234567	1.234567
45.67	45.67
+0.00056	0.00056
(blank field)	0.0
-12.	-12.0
12	12.0

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12	12.0
00001200	1200.0
12.	12.0
-555	-555.0
.1	0.1

Data Import Record Attribute Definitions

This chapter presents the source data import record attribute definitions for Base Applications. The data is arranged hierarchically according to its function. For a complete description of the presentation format, see section 'Data Collection Guidelines' on page 297pp and section 'General Format Guidelines' on page 299pp.

B1/B2/B3/Element/Info Hierarchy

B1 Block Data Record

The B1 block name can be used to form the B1 part of the 5-level Technological Address. The B1 record can be used to supply B1 data that logically does not fit into one of the standard hierarchies.

Record Type B1 – B1 Block Data

B1 Block Name

Required:	Yes	
Data Type and Size:	Character (8)	
Columns:	9 - 16	
Dependencies:	Must be unique among all B1 block names within the system.	
Description:	Name of the B1 block.	
Field for SDM entry:	Form:	B1 Form
	Component:	List of B1-Blocks
	Field:	B1-Name

Record Type B1 – B1 Block Data (Continued)

Block Type

Required:	No
Data Type and Size:	Character (8)
Columns:	18 - 25
Valid Values:	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	The block type corresponding to this B1 block. NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.
Field for SDM entry:	Form: B1 Form Component: List of B1-Blocks Field: B1-Type

Logbook Text

Required:	No
Data Type and Size:	Character (7 = B1TextLen)
Columns:	27 - 33
Valid Values:	The number of characters used is based on how the system is configured. Refer to the <i>Base Applications Data Analysis</i> user guide for additional information about text line structures.
Default Value:	B1 Block Name.
Description:	In certain situations, B1 block name is used in textual messages and sometimes the Logbook Text (also called B1 block text) is used.
Field for SDM entry:	Form: B1 Form Component: List of B1-Blocks Field: B1-Text

Record Type B1 – B1 Block Data (Continued)

Technological Area For Signalling

Required:	No						
Data Type and Size:	Integer (2)						
Columns:	47 - 49						
Valid Values:	1 - 16 (=cMaxTear)						
Default Value:	1						
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>B1 Form</td></tr><tr><td>Component:</td><td>List of B1-Blocks</td></tr><tr><td>Field:</td><td>Tec-Area</td></tr></tbody></table>	Form:	B1 Form	Component:	List of B1-Blocks	Field:	Tec-Area
Form:	B1 Form						
Component:	List of B1-Blocks						
Field:	Tec-Area						

Global Decision Table

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	51 - 53						
Valid Values:	Decision table number, which must have been previously defined using SDM order NcGaData.						
Description:	Decision table number for global area interlocks which extend beyond the defined network element group.						
Field for SDM entry:	<table><tbody><tr><td>Form:</td><td>B1 Form</td></tr><tr><td>Component:</td><td>List of B1-Blocks</td></tr><tr><td>Field:</td><td>NC Decision Table Global</td></tr></tbody></table>	Form:	B1 Form	Component:	List of B1-Blocks	Field:	NC Decision Table Global
Form:	B1 Form						
Component:	List of B1-Blocks						
Field:	NC Decision Table Global						

Record Type B1 – B1 Block Data (Continued)

Local Decision Table

Required:	No	
Data Type and Size:	Integer (3)	
Columns:	55 - 57	
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.	
Description:	Decision table number for local area interlocks within a B1 block. Normally used for B3 blocks.	
Field for SDM entry:	Form: Component: Field:	B1 Form List of B1-Blocks NC Decision Table Local

DMS Relevant Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	70
Valid Values:	Y - Yes N - No
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	If block is to be recognized by the DMS applications, this field should be set to Y.

B2 Block Data Record

The B2 block name can be used to form the B2 part of the 5-level Technological Address. The B2 record can be used to supply B2 data that logically does not fit into one of the standard hierarchies.

Record Type B2 – B2 Block Data

B2 Block Name

Required:	Yes						
Data Type and Size:	Character (8)						
Columns:	9 - 16						
Dependencies:	Must be unique among all B2 block names within its B1 block.						
Description:	Name of the B2 block.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Name</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Name
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Name						

Block Type

Required:	Yes
Data Type and Size:	Character (8)
Columns:	18 - 25
Valid Values:	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
Description:	The block type corresponding to this B2 block.

NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Type</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Type
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Type						

Record Type B2 – B2 Block Data (Continued)

Logbook Text

Required:	No						
Data Type and Size:	Character (3 = B2TextLen)						
Columns:	27 - 29						
Valid Values:	The number of characters used is based on how the system is configured. Refer to the <i>Base Applications Data Analysis</i> user guide for additional information about text line structure.						
Default Value:	B2 Block Name.						
Description:	In certain situations, the B2 block name is used in textual messages and sometimes the Logbook Text (also called B2 block text) is used.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>B2-Text</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	B2-Text
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	B2-Text						

Technological Area For Signalling

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	47 - 49						
Valid Values:	1 - 16 (= cMaxTear)						
Dependencies:	Enter data in this field only if its value differs from the Technological Area For Signalling (TAS) on its parent (B1) record. Leaving this field blank (null) signifies that the value is actually inherited from its parent.						
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>Tec-Area</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	Tec-Area
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	Tec-Area						

Record Type B2 – B2 Block Data (Continued)

Global Decision Table

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	51 - 53						
Valid Values:	Decision table number, which must have been previously defined using SDM order NcGaData.						
Description:	Decision table number for global area interlocks which extend beyond the defined network element group.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>NC Decision Table Global</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	NC Decision Table Global
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	NC Decision Table Global						

Local Decision Table

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	55 - 57						
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.						
Description:	Decision table number for local area interlocks within a B2 block. Normally used for network element groups (B3 block).						
Field for SDM entry:	<table><tr><td>Form:</td><td>B2 Form</td></tr><tr><td>Component:</td><td>List of B2-Blocks</td></tr><tr><td>Field:</td><td>NC Decision Table Local</td></tr></table>	Form:	B2 Form	Component:	List of B2-Blocks	Field:	NC Decision Table Local
Form:	B2 Form						
Component:	List of B2-Blocks						
Field:	NC Decision Table Local						

DMS Relevant Flag

Required:	No
Data Type and Size:	Character (1)
Columns:	70
Valid Values:	Y - Yes N - No
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	If block is to be recognized by the DMS applications, this field should be set to Y.

B3 Block Data Record

The B3 block name can be used to form the B3 part of the 5-level Technological Address. The B3 record can be used to supply B3 data that logically does not fit into one of the standard hierarchies.

Record Type B3 – B3 Block Data

B3 Block Name

Required:	Yes						
Data Type and Size:	Character (8)						
Columns:	9 - 16						
Dependencies:	The name must be unique among all B3 names within its B2 block.						
Description:	Name of the B3 block.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>B3 Name</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	B3 Name
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	B3 Name						

Block Type

Required:	Yes						
Data Type and Size:	Character (8)						
Columns:	18 - 25						
	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.						
Description:	The block type corresponding to this B3 block.						
	NOTE: This field is not updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>B3 Type</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	B3 Type
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	B3 Type						

Record Type B3 – B3 Block Data (Continued)

Logbook Text

Required:	No						
Data Type and Size:	Character (9 = B3TextLen))						
Columns:	27 - 35						
Valid Values:	The number of characters used is based on how the system is parameterized. Refer to the <i>Base Applications Data Analysis</i> user guide for additional information about text line structure.						
Default Value:	B3 Block Name.						
Description:	In certain situations, the B3 block name is used in textual messages and sometimes the Logbook Text (also called B3 block text) is used.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>B3 Text</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	B3 Text
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	B3 Text						

Global Decision Table

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	48 - 50						
Valid Values:	Decision table number, which must have been previously defined using SDM order NcGaData.						
Description:	Decision table number for global area interlocks which extend beyond the defined block.						
Field for SDM entry:	<table><tr><td>Form:</td><td>B3 Form</td></tr><tr><td>Component:</td><td>List of B3-Blocks</td></tr><tr><td>Field:</td><td>NC Decision Table Global</td></tr></table>	Form:	B3 Form	Component:	List of B3-Blocks	Field:	NC Decision Table Global
Form:	B3 Form						
Component:	List of B3-Blocks						
Field:	NC Decision Table Global						

Record Type B3 – B3 Block Data (Continued)

Local Decision Table

Required:	No
Data Type and Size:	Integer (3)
Columns:	52 - 54
Valid Values:	Decision table number, which must have been previously defined using SDM order NcLaData.
Description:	Decision table number for local area interlocks within a B3 block.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: NC Decision Table Local

Technological Area For Signalling

Required:	Conditional
Data Type and Size:	Integer (2)
Columns:	73- 75
Valid Values:	1 - 16
Dependencies:	Enter data in this field only if its value differs from the Technological Area For Signalling (TAS) on its parent (B2) record. Leaving this field blank (null) signifies that the value is actually inherited from its parent.
Description:	Technological area number. The technological area and message class are used in combination to determine alarm and control authority on a per console basis.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: Tec Area

Topology Type

Required:	Required if B3 is Switchbay, else must be 0
Data Type and Size:	Integer
Columns:	65 - 72
Valid Values:	0 - 2147483647
Dependencies:	The number of the topology type must be identical to the block nimset number.
Description:	Number of the associated topology type. Only relevant for switchbays.
Field for SDM entry:	Cannot be entered - only internal used.

Record Type B3 – B3 Block Data (Continued)

NA - relevant Flag

Required:	Yes	
Data Type and Size:	Character	
Columns:	77 - 77	
Valid Values:	Y/N	
Dependencies:		
Description:	This flag decides whether the B3 block is used for network analysis calculations or not.	
Field for SDM entry:	Form:	B3 Form
	Component:	Y/N
	Field:	NA relevant

Record Type B3B – B3 Block Data

B3 Block Name

Required: No
Data Type and Size: Character (8)
Columns: 9 - 16
Valid Values: B3 Block Name on the parent *B3* record.
Default Value: B3 Block Name on the parent *B3* record.
Description: Name of the B3 Block.
Field for SDM entry:

DMS Relevant Flag

Required: No
Data Type and Size: Character(1)
Columns: 18
Valid Values: Y - Yes
N - No
Default Value: N
Dependencies: This field is only relevant when defining DMS data.
Description: If block is to be recognized by the DMS applications, this field should be set to Y.
Field for SDM entry: Form: B3 Form
Component: List of B3-Blocks
Field: DMS rel.

Record Type B3B – B3 Block Data (Continued)

DMS Boundary Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	20
Valid Values:	I = InSrBb F = FdHdBb B = InFdBb N = NormBb
Default Value:	N
Dependencies:	This field is only relevant when defining DMS data.
Description:	This value is used by the DMS applications to tell whether a boundary busbar is reached and which part of the busbar should be included in the calculations.
Field for SDM entry:	Form: B3 Form Component: List of B3-Blocks Field: Bnd Flg

Element Data Record

The Element Name is used to form the element part of the 5-level Technological Address

Record Type ELEM – Element Data

Element Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9 - 16
The following is an example of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.	
Examples: Block, B1 Spec, P, Q, Phi	
Description:	Name of the element.
Field for SDM entry:	Form: Element Form Component: List of Elements Field: Element Name

Record Type ELEM – Element Data (Continued)

Element Type

Required:	Yes												
Data Type and Size:	Character (8)												
Columns:	18 - 25												
	The following is an example of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.												
Description:	Examples: BlocTags, TopElem, BlocStat, mv I, mv U, mv P, CB, CB nrc, TapCh The element type.												
	NOTE: This field is updateable under certain, restricted conditions. Those conditions are:												
	(1) The standard element type for the new element type must be the same as the standard element type of the old element type,												
	(2) The values for the following element type attributes (see relation ELTYDE) must match between the new element type and the old element type:												
	<table><tr><td>- SwType</td><td>kind of switching element for Supervisory Control</td></tr><tr><td>- CalVal</td><td>element has calculated values</td></tr><tr><td>- ScVal</td><td>element is subject to short circuit calculation</td></tr><tr><td>- MvSort</td><td>kind of measured value</td></tr><tr><td>- CvSort</td><td>kind of accumulator value</td></tr><tr><td>- ScSort</td><td>kind of short circuit value</td></tr></table>	- SwType	kind of switching element for Supervisory Control	- CalVal	element has calculated values	- ScVal	element is subject to short circuit calculation	- MvSort	kind of measured value	- CvSort	kind of accumulator value	- ScSort	kind of short circuit value
- SwType	kind of switching element for Supervisory Control												
- CalVal	element has calculated values												
- ScVal	element is subject to short circuit calculation												
- MvSort	kind of measured value												
- CvSort	kind of accumulator value												
- ScSort	kind of short circuit value												

NOTE: The values CalVal, SCVal and ScSort are used for Network Applications purposes. Use them only if the Network Applications package is part of your scope of supply.

Under any other circumstance, the field is not considered to be updateable. The only way to change this value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value.

Field for SDM entry:	Form:	Element Form
	Component:	List of Elements
	Field:	Element Type

Record Type ELEM – Element Data (Continued)

Element Text

Required:	No	
Data Type and Size:	Character (20)	
Columns:	27 - 46	
Description:	Input of the element text is useful only if this text is displayed in message text lines (decided at the time of system parameterization).	
Field for SDM entry:	Form: Component: Field:	Element Form List of Elements Element Text

Accumulator Data Info Record

The Accumulator Data is used to form the info part of the 5-level Technological Address. The data on the ACCUM and ACCUMA records is used to form several accumulator infos; the Upper Limit value becomes info `cvUpLim`, the Lower Limit value becomes info `cvLoLim`, and so forth.

When setting up the data on the ACCUM and ACCUMA records, keep in mind that for each accumulator defined, there can be an authorized value, a main counter, a control counter, and an analog value integral. The main counter is the normal scanned value. The control counter could be a second scanned value or a data linked value. The control counter is not always used. The analog value integral is the integrated value associated with the main counter. The authorized value is obtained by taking the best value from the main counter, control counter, or analog value integral. The “best value” is determined by looking at the quality flags of the associated counters in priority order of main, control, and integral.

An ACINFO record is required if an info value is derived from a calculation or from a pre-defined function.

Record Type ACCUM – Accumulator Data

Conversion Constant

Required:	No		
Data Type and Size:	Float (10)		
Columns:	9 - 18		
Valid Values:	0.00 - 999.9999		
Description:	The conversion constant used to convert the raw accumulator counts to engineering units.		
Field for SDM entry:	Form:	Accumulator Form	
	Component:	Miscellaneous Block	
	Field:	Conversion Factor	

Rollover Limit

Required:	No		
Data Type and Size:	Integer (10)		
Columns:	20 - 29		
Valid Values:	0 - 99999999		
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.		
Description:	For relative accumulators this is the maximum raw value reachable by the accumulator + 1.		
Field for SDM entry:	Form:	Accumulator Form	
	Component:	Miscellaneous Block	
	Field:	Rollover	

Record Type ACCUM – Accumulator Data (Continued)

Upper Limit

Required:	No
Data Type and Size:	Float (10)
Columns:	31 - 40
Valid Values:	0.0 - 9999999.00
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.
Description:	The upper limit for this accumulator that will cause an alarm.
Field for SDM entry:	Form: Accumulator Form Component: Limits Block Field: Upper

Lower Limit

Required:	No
Data Type and Size:	Float (10)
Columns:	42 - 51
Valid Values:	0.0 - 9999999.00
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.
Description:	The lower limit for this accumulator that will cause an alarm.
Field for SDM entry:	Form: Accumulator Form Component: Limits Block Field: Lower

Record Type ACCUM – Accumulator Data (Continued)

Rate Group

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	53 - 54						
Valid Values:	1 - 20						
Dependencies:	Valid only when the authorized value for this accumulator has been configured.						
Description:	A value in this field is required only if processing involving peak periods is required for the accumulator. The Rate Group is the index pointing to parameters in \$SPEC PATH/src/param/baps/odb/fillrel/cv_rate.j that describes the pattern of peak periods.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Rate Group</td></tr></table>	Form:	Accumulator Form	Component:	Miscellaneous Block	Field:	Rate Group
Form:	Accumulator Form						
Component:	Miscellaneous Block						
Field:	Rate Group						

EACC Flag

Required:	No
Data Type and Size:	Character(1)
Columns:	56 - 56
Valid Values:	Y - Yes N - No
Default Value:	N
Description:	Accumulator is relevant for Energy Accounting.

NOTE: The EACC flag can be used only if the function Energy Accounting is part of your scope of supply.

Field for SDM entry:	<table><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Energy Accounting</td></tr></table>	Form:	Accumulator Form	Component:	Miscellaneous Block	Field:	Energy Accounting
Form:	Accumulator Form						
Component:	Miscellaneous Block						
Field:	Energy Accounting						

Record Type ACCUMA – Accumulator Data

Main/Integral Difference Limit

Required: No
Data Type and Size: Float (10)
Columns: 9 - 18
Valid Values: 0.0 - 9999999.00
Dependencies: Valid only when the element type for this accumulator has been configured for this limit.
Description: The difference between the main counter and the analog value integral for this accumulator that will cause an alarm.
Field for SDM entry:
Form: Accumulator Form
Component: Difference Limits Block
Field: Main -Integral

Main/Control Difference Limit

Required: No
Data Type and Size: Float (10)
Columns: 20 - 29
Valid Values: 0.0 - 9999999.00
Dependencies: Valid only when the element type for this accumulator has been configured for this limit.
Description: The difference between the main counter and control counter for this accumulator that will cause an alarm.
Field for SDM entry:
Form: Accumulator Form
Component: Difference Limits Block
Field: Main - Control

Record Type ACCUMA – Accumulator Data (Continued)

Control/Integral Difference Limit

Required:	No						
Data Type and Size:	Float (10)						
Columns:	31 - 40						
Valid Values:	0.0 - 9999999.00						
Dependencies:	Valid only when the element type for this accumulator has been configured for this limit.						
Description:	The difference between the control counter and the analog value integral for this accumulator that will cause an alarm.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Difference Limits Block</td></tr><tr><td>Field:</td><td>Control - Integral</td></tr></table>	Form:	Accumulator Form	Component:	Difference Limits Block	Field:	Control - Integral
Form:	Accumulator Form						
Component:	Difference Limits Block						
Field:	Control - Integral						

The ACINFO record is required only if an accumulator value is derived from a one-to-one calculation or a function. If the accumulator value is derived from a typified calculation (as defined using the SD order Calcul), an ACINFO record is NOT necessary.

Record Type ACINFO – Accumulator Data

Accumulator Info Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9 - 16
Valid Values:	The following are examples of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide. Examples: cv15mAc, cv15Aut, cv15mDCc, cv30sAc, cv30mAut, cv30mDCc
Description:	Name of the accumulator info being defined.
Field for SDM entry:	Form: Accumulator Form Component: Info Block Field: Name

Formula Number

Required:	Yes
Data Type and Size:	Integer (3)
Columns:	18 - 21
Valid Values:	If the value is derived from a calculation: enter the number of a formula that has already been defined by using the SDM order Formula. If the value is derived by using the predefined authorized accumulator function: enter a -2.
Dependencies:	If a formula is specified: One CALCOP record is required for each operand in the formula. If the authorization of accumulators is specified: Three CALCOP records are required (one each for operand A, B, and C).
Description:	If the accumulator value is the result of a one-to-one calculation or a function, this number describes the operation to be performed.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Number

Record Type ACINFO – Accumulator Data (Continued)

Calculation Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	23
Valid Values:	0 = Formula 1 = Authorization 2 = Increment
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	0
Description:	The type of calculation to be used.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Type

Calculation Execution Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	25
Valid Values:	0 = no processing type 1 = spontaneous 2 = cyclic 3 = external coordinate 4 = time controlled 5 = delayed 6 = archived
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	1
Description:	The type of calculation execution to be performed.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Execution Type

Record Type ACINFO – Accumulator Data (Continued)

Calculation Delay Time

Required:	Conditional
Data Type and Size:	Integer (4)
Columns:	27 - 30
Valid Values:	1 - 3600
Dependencies:	This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description:	The number of seconds to delay before performing the calculation.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Delay Time

Calculation Priority

Required:	Yes
Data Type and Size:	Integer (2)
Columns:	32- 33
Valid Values:	1 - 99
Default Value:	1
Description:	Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.
Field for SDM entry:	Form: Accumulator Form Component: Formula Block Field: Priority

Analog Data Info Record

The Analog Data is used to form the info part of the 5-level Technological Address. The data on the ANALOG record is used to form several analog infos. For example, Nominal Value becomes info MvNomina and Gradient Limit becomes MvLimGra.

An ANINFO record is required if an info value is derived from a calculation or from a pre-defined function and ABSLM records are required to set up the analog limit infos.

Record Type ANALOG – Analog Data

Nominal Value

Required:	No						
Data Type and Size:	Float (10.2)						
Columns:	9 - 18						
Valid Values:	0 - 7812.50						
Dependencies:	The Nominal Value can be entered only if the Nominal Value has been parameterized for the analog value.						
Description:	The normal value associated with the analog measurement. If percentage limits are used, changing the nominal value will affect the limits used to monitor the analog value.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Nominal Value</td></tr></table>	Form:	Analog Form	Component:	Miscellaneous Block	Field:	Nominal Value
Form:	Analog Form						
Component:	Miscellaneous Block						
Field:	Nominal Value						

Gradient Limit

Required:	No						
Data Type and Size:	Float (8)						
Columns:	20 - 27						
Valid Values:	0 - 2438.62						
Dependencies:	The Gradient Limit is valid only if the information Gradient Limit has been parameterized.						
Description:	Specifies the rate of change limit for the analog value.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Miscellaneous Block</td></tr><tr><td>Field:</td><td>Gradient Limit</td></tr></table>	Form:	Analog Form	Component:	Miscellaneous Block	Field:	Gradient Limit
Form:	Analog Form						
Component:	Miscellaneous Block						
Field:	Gradient Limit						

Record Type ANALOG – Analog Data (Continued)

State Estimator Metering Error

Required: No
Data Type and Size: Float (8)
Columns: 29 - 36
Description: The standard deviation in engineering units. This is the metering error introduced by the equipment used to measure the value.
Field for SDM entry: Form: Analog Form
Component: Miscellaneous Block
Field: SE Metering Error

EACC Flag

Required: No
Data Type and Size: Character(1)
Columns: 70
Valid Values: Y - Yes
N - No
Default Value: N
Description: Analog is relevant for Energy Accounting.

NOTE: The EACC flag can be used only if the function Energy Accounting is part of your scope of supply.

Field for SDM entry: Form: Analog Form
Component: Miscellaneous Block
Field: Energy Accounting

The ANINFO record is required only if an analog value is derived from a one-to-one calculation or a function. If the analog value is derived from a typified calculation (as defined using the CALCUL database editor), an ANINFO record is NOT necessary.

Record Type ANINFO – Analog Info Data

Analog Info Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9-16
Valid Values:	The following are examples of possible values. For the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide. Examples: MvMoment, MvNomina, MvGradie
Description:	Name of the analog info being defined.
Field for SDM entry:	Form: Analog Form Component: Info Block Field: Name

Formula Number

Required:	Yes
Data Type and Size:	Integer (3)
Columns:	18 - 21
Valid Values:	If the value is derived from a calculation: enter the number of a formula that has already been defined by using the SDM order Formula.
Dependencies:	If a formula is specified: one CALCOP record is required for each operand in the formula.
Description:	If the analog value is the result of a one-to-one calculation or a function, this number describes the operation to be performed.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Number

Record Type ANINFO – Analog Info Data (Continued)

Calculation Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	23
Valid Values:	0 = Formula 1 = Authorization 2 = Increment
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	0
Description:	The type of calculation to be used.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Type

Calculation Execution Type

Required:	Yes
Data Type and Size:	Integer (1)
Columns:	25
Valid Values:	0 = no processing type 1 = spontaneous 2 = cyclic 3 = external coordinate 4 = time controlled 5 = delayed 6 = archived
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	1
Description:	The type of calculation execution to be performed.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Execution Type

Record Type ANINFO – Analog Info Data (Continued)

Calculation Delay Time

Required:	Conditional
Data Type and Size:	Integer (4)
Columns:	27 - 30
Valid Values:	1 - 3600
Dependencies:	This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description:	The number of seconds to delay before performing the calculation.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Delay Time

Calculation Priority

Required:	Yes
Data Type and Size:	Integer (2)
Columns:	32- 33
Valid Values:	1 - 99
Default Value:	1
Description:	Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.
Field for SDM entry:	Form: Analog Form Component: Formula Block Field: Priority

Absolute Limit Data Subinfo Record

The Absolute Limit data is used to form absolute limit infos for an analog element. Each analog element may have up to 6 ABSLM records.

Record Type ABSLM – Absolute Limit Data

Limit Number

Required:	Yes						
Data Type and Size:	Integer (1)						
Columns:	11						
Valid Values:	1 – 3						
Description:	The numeric identifier for this limit. This number must be sequential. For example, 1 must be defined before 2, 2 must be defined before 3.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Absolute Limits Block</td></tr><tr><td>Field:</td><td>Number</td></tr></table>	Form:	Analog Form	Component:	Absolute Limits Block	Field:	Number
Form:	Analog Form						
Component:	Absolute Limits Block						
Field:	Number						

Upper Lower Flag

Required:	No						
Data Type and Size:	Character (1)						
Columns:	13						
Valid Values:	U = upper, L = lower.						
Default Value:	U.						
Description:	Specifies whether the limit being defined is an upper limit or a lower limit.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Absolute Limits Block</td></tr><tr><td>Field:</td><td>U / L</td></tr></table>	Form:	Analog Form	Component:	Absolute Limits Block	Field:	U / L
Form:	Analog Form						
Component:	Absolute Limits Block						
Field:	U / L						

Record Type ABSLM – Absolute Limit Data (Continued)

Limit Value

Required:	Yes
Data Type and Size:	Float (10)
Columns:	15 - 24
Valid Values:	-1999900 - 1999900
Dependencies:	The Limit Value of upper limit 1 must be greater than the Limit Value for lower limit 1, etc. Also, the Limit Value for upper limit 2 must be greater than the Limit Value for upper limit 1, etc.
Description:	The limit, in engineering units, that causes an alarm condition.
Field for SDM entry:	Form: Analog Form Component: Absolute Limits Block Field: Limit Value

Deadband

Required:	No
Data Type and Size:	Float (7)
Columns:	26 - 32
Valid Values:	0 - 9999.99
Description:	The deviation towards normal required to prevent excessive alarms for this limit.
Field for SDM entry:	Form: Analog Form Component: Absolute Limits Block Field: Deadband

Digital Data Info Record

The Digital Name can be used to form the info part of the 5-level Technological Address. Unlike the analog and accumulator records, each DIGITL record describes a single info and the processing options available.

Record Type DIGITL – Digital Data

Digital Name

Required:	Yes
Data Type and Size:	Character (8)
Columns:	9 - 16
Valid Values:	Valid digital info name. For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.
	Examples of infos: Status—Switching status, CtrlInhi—Control Inhibit, NormStat—Normal switching status, UseNorm—Use Normal State.
Default Value:	Status
Description:	Name of the digital info being defined. Refer to the Initial Value field.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Info

Unused Field

Columns:	18 - 20
Description:	Reserved for future use.

Single Message Text

Required:	No
Data Type and Size:	Character (20)
Columns:	22 - 41
Description:	Allows the info text to be freely definable. If nothing is specified in this field, the info text associated with the element for this info will be used.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Message Text

Record Type DIGITL – Digital Data (Continued)

Message Class

Required:	No
Data Type and Size:	Integer (2)
Columns:	43 - 44
Valid Values:	0 - 15 (= cMaxMeCl)
Default Value:	0
Description:	Zero indicates that the message class associated with the info type for this point will be used.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Message Class

Initial Value

Required:	No
Data Type and Size:	Integer (3)
Columns:	46 - 48
Valid Values:	0 - 1 = all infos except transformer tap position infos -32 - 32 = transformer tap position infos only
Description:	The initial value is allowed to be specified on the creation of data within a block.

NOTE: Under most circumstances, this field is not updateable. The only way to change its value, once the record has been created, is to delete the record and all subordinate records (cascade delete) and reinsert the record with the new value. The one exception to this rule is that the field may be updated at any time prior to its first transfer to the operational database. That is, the initial value is updateable from its initial entry into the database until it is transferred into the on-line copy of the operational database. Once the info is part of the on-line database, it can no longer be updated in the conventional manner.

Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Initial Value
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Record Type DIGITL – Digital Data (Continued)

Formula Number

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	50 - 53						
Valid Values:	A Formula Number that has already been defined by using the SDM order Formula.						
Dependencies:	If a formula is specified, n CALCOP records must be entered to provide the operand information, "n" being the number of operands required by the formula.						
Description:	If the digital value is a result of a one-to-one calculation, this formula number describes the calculation to be performed. If the digital value is derived from a typified calculation (as defined using the SDM order Calcul), the formula number is unnecessary and need not be entered.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Formula Block</td></tr><tr><td>Field:</td><td>Number</td></tr></table>	Form:	Digital Form	Component:	Formula Block	Field:	Number
Form:	Digital Form						
Component:	Formula Block						
Field:	Number						

Calculation Type

Required:	Conditional						
Data Type and Size:	Integer (1)						
Columns:	55						
Valid Values:	0 = Formula 1 = Authorization 2 = Increment						
Dependencies:	This field is required if the Formula Number is specified.						
Default Value:	0						
Description:	The type of calculation to be used.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Formula Block</td></tr><tr><td>Field:</td><td>Type</td></tr></table>	Form:	Digital Form	Component:	Formula Block	Field:	Type
Form:	Digital Form						
Component:	Formula Block						
Field:	Type						

Record Type DIGITL – Digital Data (Continued)

Calculation Execution Type

Required:	Conditional
Data Type and Size:	Integer (1)
Columns:	57
Valid Values:	0 = no processing type 1 = spontaneous 2 = cyclic 3 = external coordinate 4 = time controlled 5 = delayed 6 = archived
Dependencies:	This field is required if the Formula Number is specified.
Default Value:	1
Description:	The type of calculation execution to be performed.
Field for SDM entry:	Form: Digital Form Component: Formula Block Field: Execution Type

Calculation Delay Time

Required:	Conditional
Data Type and Size:	Integer (4)
Columns:	59 - 62
Valid Values:	1 - 3600
Dependencies:	This field is required if the Calculation Execution Type is set to 5 (delayed processing).
Description:	The number of seconds to delay before performing the calculation.
Field for SDM entry:	Form: Digital Form Component: Formula Block Field: Delay Time

Record Type DIGITL – Digital Data (Continued)

Calculation Priority

Required:	Conditional						
Data Type and Size:	Integer (2)						
Columns:	64 - 65						
Valid Values:	1 - 99						
Dependencies:	This field is required if the Formula Number is specified.						
Default Value:	1						
Description:	Lower values equate to higher priority. In a list of calculations, higher priority calculations are performed before lower priority calculations.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Formula Block</td></tr><tr><td>Field:</td><td>Priority</td></tr></table>	Form:	Digital Form	Component:	Formula Block	Field:	Priority
Form:	Digital Form						
Component:	Formula Block						
Field:	Priority						

Unused Field

Columns:	65- 70
Description:	Reserved for future use.

Value Name Index

Required:	No						
Data Type and Size:	Integer (3)						
Columns:	75 - 77						
Valid Values:	0 - 500						
Default Value:	0						
Description:	Zero indicates that the value name index associated with the info type will be used. Allows the value name index (into relation VANAME) to be freely defined (i.e. the value name index for the info type is overridden if the value name index is specified here).						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Detail Block</td></tr><tr><td>Field:</td><td>Value Name Index</td></tr></table>	Form:	Digital Form	Component:	Detail Block	Field:	Value Name Index
Form:	Digital Form						
Component:	Detail Block						
Field:	Value Name Index						

Record Type DIGITL – Digital Data (Continued)

Disturbance Type

Required:	No
Data Type and Size:	Integer (3)
Columns:	79 - 81
Valid Values:	0 - 127, 999
Default Value:	0 Zero indicates that the disturbance type associated with the info type will be used.
Description:	Allows the disturbance type designation to be freely defined (i.e., the disturbance type designation for the info type is overridden if the disturbance type is specified here). (A value of 999 indicates that the disturbance type will not be processed for this digital. This value deselects disturbance processing unconditionally for this info.)
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Disturbance Type

Record Type DIGITLA - Digital Data

Digital Name

Required: No
Data Type and Size: Character (8)
Columns: 9 - 16
Valid Values: The Digital Name on the parent DIGITL record.
Default Value: The Digital Name on the parent DIGITL record.
Description: Name of the digital info being defined.
Field for SDM entry:
 Form: Digital Form
 Component: Detail Block
 Field: Info

Acknowledge List Appearing

Required: Conditional
Data Type and Size: Character(1)
Columns: 18
Valid Values: Y - Yes
 N - No
Description: Acknowledgment in alarm summary for appearing state. Overrides attribute associated with the info type.
Field for SDM entry:
 Form: Digital Form
 Component: Detail Block
 Field: Insert Acknowledge Appearing

Record Type DIGITLA - Digital Data (Continued)

Acknowledge List Disappearing

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	20
Valid Values:	Y - Yes N - No
Description:	Acknowledgment in alarm summary for disappearing state. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Insert Acknowledge Disappearing

Signalling Status

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	22
Valid Values:	Y - Yes N - No
Description:	Selection guidance for persistent state in worldmaps. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Signalling Persistent State

Record Type DIGITLA - Digital Data (Continued)

Signalling Spontaneous Change

Required: Conditional
Data Type and Size: Character(1)
Columns: 24
Valid Values: Y - Yes
N - No
Description: Selection guidance in worldmaps for spontaneous status change. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: Signalling Spontaneous Change

List 1 Number

Required: Conditional
Data Type and Size: Integer(3)
Columns: 26 - 28
Valid Values: 0 - 40 (=cLiNuMax)
For information on the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 2 Number

Required: Conditional
Data Type and Size: Integer (3)
Columns: 30 - 32
Valid Values: 0 - 40 (=cLiNuMax)
For information on the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

List 3 Number

Required: Conditional
Data Type and Size: Integer (3)
Columns: 34 - 36
Valid Values: 0 - 40 (=cLiNuMax)
For information the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 4 Number

Required: Conditional
Data Type and Size: Integer (3)
Columns: 38 - 40
Valid Values: 0 - 40 (=cLiNuMax)
For information on the most up-to-date list of valid entries, refer to the *Base Applications Data Analysis* user guide.
Description: List number of general summary or alarm summary where the status change is reported. Overrides attribute associated with the info type.
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

List 1 Appearing

Required: Conditional
Data Type and Size: Character (1)
Columns: 42
Valid Values: Y - Yes
N - No
Description:
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

List 2 Appearing

Required: Conditional
Data Type and Size: Character (1)
Columns: 44
Valid Values: Y - Yes
N - No
Description:
Field for SDM entry:
Form: Digital Form
Component: Detail Block
Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 3 Appearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	46	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

List 4 Appearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	48	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

List 1 Disappearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	50	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 2 Disappearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	52	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

List 3 Disappearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	54	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

List 4 Disappearing

Required:	Conditional	
Data Type and Size:	Character (1)	
Columns:	56	
Valid Values:	Y - Yes N - No	
Description:		
Field for SDM entry:	Form: Component: Field:	Digital Form Detail Block List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 1 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	58 - 60
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 2 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	62 - 64
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

List 3 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	66 - 68
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Record Type DIGITLA - Digital Data (Continued)

List 4 Message Format

Required:	Conditional
Data Type and Size:	Integer (3)
Columns:	70 - 72
Valid Values:	0 - 50 (=C_MESSFMT_NUM_MAX)
Description:	Number of the text format of the message
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: List 1..4

Archive

Required:	Conditional
Data Type and Size:	Character(1)
Columns:	74
Valid Values:	Y = Yes N = No
Description:	Send status change to the archive. Overrides attribute associated with the info type.
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Historic Database

Value Name Command Index

Required:	No
Data Type and Size:	Integer (3)
Columns:	76 - 78
Valid Values:	0 - 500
Description:	Allows the value name index (into relation VANAME) for commands to be freely defined (i.e. the value name index for the info type is overridden if the value name index is specified here).
Field for SDM entry:	Form: Digital Form Component: Detail Block Field: Value Name Command Index

Record Type DIGITLA - Digital Data (Continued)

Info Type

Required:	Conditional						
Data Type and Size:	Character(8)						
Columns:	80 - 87						
Valid Values:	For information on the most up-to-date list of valid entries, refer to the <i>Base Applications Data Analysis</i> user guide.						
Dependencies:	This field is only valid when the Number of Sources is greater than two.						
Description:	This number indicates the priority of source4. The lower the number, the higher the priority.						
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Detail Block</td></tr><tr><td>Field:</td><td>Info Type</td></tr></table>	Form:	Digital Form	Component:	Detail Block	Field:	Info Type
Form:	Digital Form						
Component:	Detail Block						
Field:	Info Type						

Calc Operand Data Record

This record type is only applicable if the preceding info record defines a formula number. One CALCOP record is required for every operand in the formula.

Record Type CALCOP – Calc Operand Data

Operand Identifier

Required:	Yes																		
Data Type and Size:	Character (1)																		
Columns:	9 - 32																		
Valid Values:	A - Z																		
Description:	Name of the variable used in the formula.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Operand</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	Operand	Form:	Analog Form	Component:	Operands List	Field:	Operand	Form:	Accumulator Form	Component:	Operands List	Field:	Operand
Form:	Digital Form																		
Component:	Operands List																		
Field:	Operand																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	Operand																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	Operand																		

Type

Required:	Yes																		
Data Type and Size:	Character (3)																		
Columns:	34- 36																		
Valid Values:	TA, CON (TA = Technological Address, CON = Constant value)																		
Description:	Type of the operand, a variable or a constant.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Type</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	Type	Form:	Analog Form	Component:	Operands List	Field:	Type	Form:	Accumulator Form	Component:	Operands List	Field:	Type
Form:	Digital Form																		
Component:	Operands List																		
Field:	Type																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	Type																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	Type																		

Record Type CALCOP – Calc Operand Data (Continued)

Constant

Required:	Conditional																		
Data Type and Size:	Float (10)																		
Columns:	38 - 47																		
Valid Values:	-99999992 - 99999992																		
Dependencies:	The Constant value is only required if the Type is CON.																		
Description:	Constant value to be used in the calculation.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Constant</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Constant</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>Constant</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	Constant	Form:	Analog Form	Component:	Operands List	Field:	Constant	Form:	Accumulator Form	Component:	Operands List	Field:	Constant
Form:	Digital Form																		
Component:	Operands List																		
Field:	Constant																		
Form:	Analog Form																		
Component:	Operands List																		
Field:	Constant																		
Form:	Accumulator Form																		
Component:	Operands List																		
Field:	Constant																		

Operand B1 Name

Required:	Conditional																		
Data Type and Size:	Character (8)																		
Columns:	49 - 56																		
Valid Values:	A B1 Block Name																		
Dependencies:	The Operand B1 Name is only required if the Type is TA.																		
Description:	Name of the B1 block.																		
Field for SDM entry:	<table><tr><td>Form:</td><td>Digital Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B1-Name</td></tr><tr><td>Form:</td><td>Analog Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B1-Name</td></tr><tr><td>Form:</td><td>Accumulator Form</td></tr><tr><td>Component:</td><td>Operands List</td></tr><tr><td>Field:</td><td>B1-Name</td></tr></table>	Form:	Digital Form	Component:	Operands List	Field:	B1-Name	Form:	Analog Form	Component:	Operands List	Field:	B1-Name	Form:	Accumulator Form	Component:	Operands List	Field:	B1-Name
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