

SIEMENS

SIPROTEC

Line Differential Protection 7SD80

Communication Module

PROFIBUS DP

Bus Mapping

Preface

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NOTE

For your own safety, please observe the warnings and safety instructions contained in this document.

Disclaimer of Liability

We have checked the contents of this manual against the hardware and software described. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions contained in the information given

The information given in this document is reviewed regularly and any necessary corrections will be included in subsequent editions. We appreciate any suggested improvements.

We reserve the right to make technical improvements without notice.

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Preface

Purpose of this manual

This manual describes the data in the PROFIBUS-DP messages of the SIPROTEC devices 7SD80 and is divided into the following topics:

- Data of the PROFIBUS-DP messages → Chapter 1,
- Standard mapping 3-1 → Chapter 2,
- Standard mapping 3-2 → Chapter 3.

General details about the function, operation, assembly and commissioning of the SIPROTEC devices you find in the

- SIPROTEC4 System Manual, order no. E50417–H1176–C151.

Target audience

Protection engineers, commissioning engineers, personnel concerned with adjustment, checking and service of selective protective equipment, automatic and control facilities and personnel of electrical facilities and power plants.

PROFIBUS-DP communication profile documentation

The following additional manual informs you about the data types, bus specific parameters and hardware interface of the PROFIBUS-DP slave modul of the SIPROTEC devices:

Manual	Order number
SIPROTEC Communication module, PROFIBUS-DP - Communication profile	C53000-L1840-B001-03

PROFIBUS-DP specification

The PROFIBUS-DP specification and the structure of the PROFIBUS-DP messages are defined in the European Standard EN 50170:

- PROFIBUS Specification
Normative Parts of PROFIBUS-FMS, -DP, -PA
According to the European Standard
EN 50170, Volume 2
PROFIBUS Nutzerorganisation e.V.

Validity

This manual is valid for the SIPROTEC devices:

- 7SD80 (firmware version 4.60 or higher)

with

- PROFIBUS-DP communication module version 03.01.03 or higher.

For device parameterization have to be used:

- DIGSI 4.30 or higher,
- DIGSI 4.21 considering the preconditions explained in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile" (ref. to page 3),
- PROFIBUS-DP standard mappings 3-1 to 3-n
(n = device type dependent number of standard mappings).

Additional Support

Should further information on the System SIPROTEC 4 be desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, he matter should be referred to the local Siemens representative.

Our Customer Support Center provides a 24-hour service.

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Enquiries regarding individual training courses should be addressed to our

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Warning!

Hazardous voltages are present in this electrical equipment during operation. Non-observance of the safety rules can result in severe personal injury or property damage.

Only qualified personnel shall work on and around this equipment after becoming thoroughly familiar with all warnings and safety notices of this and the associated manuals as well as with the applicable safety regulations.

The successful and safe operation of this device is dependent on proper transport and storage, proper handling, installation, operation, and maintenance by qualified personnel under observance of all warnings and hints contained in this and the associated manuals.

In particular the general erection and safety regulations (e.g. IEC, EN, DIN, VDE, or other national and international standards) regarding the correct use of high-voltage installations must be observed. Non-observance can result in death, personal injury or substantial property damage.

QUALIFIED PERSONNEL

For the purpose of this manual and product labels, a qualified person is one who is familiar with the installation, construction and operation of the equipment and the hazards involved. In addition, he has the following qualifications:

- Is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.
- Is trained in the proper care and use of protective equipment in accordance with established safety practices.
- Is trained in rendering first aid.

Typographic and graphical conventions

The following text formats are used to identify concepts giving device information described by the text flow:

Parameter names, or identifiers for configuration or function parameters that appear in the device display or on the screen of a PC (with DIGSI) are shown in mono-script (same point size) bold text. This also applies to header bars for selection menus.

Parameter conditions, or possible settings of parameters that appear in the device display or on the screen of a PC (with DIGSI), are additionally shown in italic style. This also applies to selection items for selection menus.

„Annunciations“, or identifiers for information produced by the device or required by other devices or from the switchgear is shown in mono-script (same point size) and placed into quotation marks.

For diagrams in which the identifier type results from the representation itself, text conventions may differ from the above-mentioned.



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1 Data of the PROFIBUS-DP messages

This chapter delivers explanations to the data descriptions of the standard mappings as well as notes for evaluation of selected SIPROTEC objects and for the configuration of the standard mapping in the PROFIBUS-DP master.

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1.1 Explanations



Note

The examples shown in this chapter 1.1 do not necessarily correspond to the real allocation of the objects in the bus mapping.

Chapter 3 defines the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC devices 7SD80 and the PROFIBUS-DP master.

The columns "Designation of the SIPROTEC objects" contain the names of the SIPROTEC objects for "US English" device language.

The listed SIPROTEC objects in the PROFIBUS-DP messages' data area are sorted after byte offset, beginning with 0.

Variables with data type greater than or equal to 1 byte

The offset defines the start of the most significant byte in the message, e.g.:

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to...)	Internal object no.
8	Ia =	Current in phase A	3276.7 A	601

The measured value "Ia" is assigned to data byte 8 (most significant byte of the measured value) and data byte 9 (least significant byte of the measured value) in the PROFIBUS-DP message

Bit variables (SP/SC, DP/DC)

The offset indicates the byte which contains the bit value and the position of bit 0 of the bit variable, e.g. (input message):

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 7	Relay TRIP	1 = Relay GENERAL TRIP command	511

The single-point indication "Relay TRIP" is located in byte 5, bit position 2^7 .



Note

The definition of the data types (single-point indication, double-point indication, measured value etc.) are contained in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile".

1.2 Messages in output direction

The messages in PROFIBUS-DP output direction: PROFIBUS-DP master to the SIPROTEC device (refer to chapter 2.1 and 3.1) allow:

- command outputs through the output relays of the SIPROTEC devices (external commands),
- manipulation of taggings (internal commands).



Note

- The allocation of the output relays to the switching devices and to the output channels is defined during parameterization of the SIPROTEC devices.
 - Depending on the device composition there may be less than indicated output relays (and corresponding PROFIBUS-DP message positions) available in the SIPROTEC device.
-

References

Standard mapping 3-1: refer to chapter 2.1

Standard mapping 3-2: refer to chapter 3.1

1.3 Messages in input direction

The messages in PROFIBUS-DP input direction: SIPROTEC device to the PROFIBUS-DP master (refer to chapter 2.2 and 3.2) allow:

- polling of switching devices' status and binary inputs,
- transmission of annunciations, measurands and meter values to the PROFIBUS-DP master.

1.3.1 Annunciations



Note

- The allocation of the input channels to the binary inputs is defined during parameterization of the devices.
 - Depending on the device composition and the existing protection packages not all of the indicated binary inputs or protection annunciations (and corresponding PROFIBUS-DP message positions) may be available in the SIPROTEC device.
-

References

Standard mapping 3-1: refer to chapter 2.2.1

Standard mapping 3-2: refer to chapter 3.2.1

1.3.2 Measured values



Note

Depending on the device composition not all of the indicated analog inputs (and corresponding PROFIBUS-DP message positions) may be available in the SIPROTEC device.

The given default scaling values for the measured values in the standard mappings apply to installations with the following nominal operating values:

Full Scale Voltage (parameter address 1103):

→ 100.01 ... 1000 kV

Full Scale Current (parameter address 1104):

→ 10.01 ... 1000 A

Product of:

- Rated Primary Voltage (parameter address 0203):

→ 100.01 ... 1000 kV

Product of:

- CT Rated Primary Current (parameter address 0205) and
- Matching ration I_e/I_{ph} for CT's (parameter address 0221):
→ 100.01 ... 1000 kV

Power values:

- Product of Full Scale Voltage and Full Scale Current multiplies by $\sqrt{3}$
→ 10.01 ... 1000.00 MW (MVAR)



Note

Changes of the scaling of the measured values are possible in adaption of the concrete installation environment.

You find information about this in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile".

References

Standard mapping 3-1: refer to chapter 2.2.2

Standard mapping 3-1: refer to chapter 3.2.2

1.4 Configuration data of the standard mappings

There are two standard mapping (standard mapping 3-1) available for the SIPROTEC devices 7SD80 which differ in the available data size in the PROFIBUS-DP messages.

Standard mapping 3-1

The standard mapping 3-1 contains:

Output direction:

- 2 Double commands
- 14 Single commands

Input direction:

- 2 Double-point indications
- 60 Single-point indications
- 20 Measured values (Integer)

Standard mapping 3-2

The standard mapping 3-2 contains:

Output direction:

- Handshake byte for event list via PROFIBUS-DP
- 2 Double commands
- 14 Single commands

Input direction:

- 2 Double-point indications
- 76 Single-point indications
- 20 Measured values (Integer)
- Handshake byte and three message blocks for event list via PROFIBUS-DP

Configuration data

Standard mapping 3-1: **1FH 1FH 1FH 23H**
(48 bytes input-, 4 bytes output direction)

Standard mapping 3-2: **1FH 1FH 1FH 11H DFH 25H**
(82 bytes input-, 6 bytes output direction)

PROFIBUS-DP master

At the configuration of a PROFIBUS-DP slave of the SIPROTEC devices in the parameterization system of the PROFIBUS-DP masters are to select the following modules for the 7SD80 standard mappings and to allocate associated addresses in the I/O addressing range of the PROFIBUS-DP master:

Standard mapping 3-1:

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_Ix	
1	Input - 16 Bytes	Adr_Ix + 16	
2	Input - 16 Bytes	Adr_Ix + 32	
3	Output - 4 Bytes		Adr_Ox

Standard mapping 3-2:

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_Ix	
1	Input - 16 Bytes	Adr_Ix + 16	
2	Input - 16 Bytes	Adr_Ix + 32	
3	Input - 2 Bytes	Adr_Ix + 48	
4	Input - 16 Words, consistent	Adr_Ix + 50	
5	Output - 6 Bytes		Adr_Ox

Adr_Ix and Adr_Ox indicate arbitrary (as a rule even) addresses in the I/O addressing range of the PROFIBUS-DP master.

Adr_Ix (base address of the inputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in input direction (refer to chapter 2.2 and 3.2).

Adr_Ox (base address of the outputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in output direction (refer to chapter 2.1 and 3.1).

1.5 Notes to SIPROTEC objects

This chapter contains notes for the use and evaluation of certain SIPROTEC objects.



Note

- The descriptions of the standard mappings (refer to chapter 2 and 3) contain the pre-allocation of the mapping files *at delivery or at first assignment* of a mapping in DIGSI to the SIPROTEC device.
- Changes of the allocation and the scaling of the measured values are possible in adaptation to the concrete installation environment.
You find information about this in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile" (ref. to page page 3).
- If a mapping file is assigned to a SIPROTEC device and if the data size of the PROFIBUS-DP message of this SIPROTEC device is changed by choice of a new mapping file then assignments which are not available in the existing mapping file remain unassigned furthermore.

1.5.1 Control mode REMOTE

Control mode with control authority is REMOTE, option of unlocked control with PROFIBUS-DP

- Changing the "Control mode REMOTE" to UNLOCKED permits one unlocked control operation via PROFIBUS-DP.
After execution of the command, the "Control mode REMOTE" in the SIPROTEC device will automatically be reset to LOCKED.
- A programmed test "Switch in position" for unlocked control operations is always be executed.
- If, after changing the "Control mode REMOTE" to UNLOCKED, no command is received via PROFIBUS-DP for a period of 5 minutes, then the "Control mode REMOTE" is automatically reset to LOCKED.
- If the "Control mode REMOTE" was automatically reset to LOCKED by the SIPROTEC device then this status can be recognized by the corresponding bit in the PROFIBUS-DP input message.
In this case the status of "Control mode REMOTE" in output direction has to be updated by the PROFIBUS-DP master.

References

Standard mapping 3-1: refer to chapter 2.1.2

Standard mapping 3-2: not pre-allocated

1.5.2 Changing the setting group

In order to change the setting group, the value "10" = ON must be transmitted for the corresponding pair of bits and afterwards be reset to "00" = "Quiescent status" (controlled by an impulse from the PROFIBUS-DP master).

- Switching ON one setting group automatically switches OFF the current active setting group.
- Transmission of the value "01" = OFF is insignificant for the change of the setting group and is refused by the device.
- A change of the setting group is only possible via PROFIBUS-DP if the parameter **Change to Another Setting Group** (parameter address = 302) has the value **Protocol**.

References

Standard mapping 3-1: refer to chapter 2.1.2

Standard mapping 3-2: refer to chapter 3.1.3

1.5.3 Stop data transmission

The functionality "Stop data transmission" is not supported via PROFIBUS-DP communication.

If "Stop data transmission" is active nevertheless data via PROFIBUS-DP will be transferred furthermore.

The annunciation "DataStop" signals the activation of "Stop data transmission" however and can be evaluated correspondingly in the PROFIBUS-DP master.

References

Standard mapping 3-1: refer to chapter 2.2.1.3

Standard mapping 3-2: refer to chapter 3.2.1.5

2 Standard mapping 3-1

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7SD80 if standard mapping 3-1 is selected.

2.1	Message in output direction	20
2.2	Message in input direction	22

2.1 Message in output direction

2.1.1 Double commands

- User-defined double commands (with double-point indication as checkback indication) can be routed on these positions as "Source system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 0	<user-defined> OFF	not pre-allocated	-
0 / 1	<user-defined> ON		
0 / 2	<user-defined> OFF	not pre-allocated	-
0 / 3	<user-defined> ON		

2.1.2 Internal commands

- Refer to chapter 1.5.1 and 1.5.2 for notes regarding "Control mode REMOTE" and Changing the setting group.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 4	79 OFF	Deactivation of "Autoreclosing"	2782
0 / 5	79 ON	Activation of "Autoreclosing"	
0 / 6	Protection OFF	Deactivation of protection functions	52
0 / 7	Protection ON	Activation of protection functions	
1 / 0	Test mode OFF	Deactivation of test mode device	
1 / 1	Test mode ON	Activation of test mode device	
1 / 2	Commiss.87OFF	Deactivation of Commissioning state of 87	3191
1 / 3	Commiss.87 ON	Activation of Commissioning state of 87	
1 / 6	Mode REMOTE	Control mode REMOTE = LOCKED	-
1 / 7	Mode REMOTE	Control mode REMOTE = UNLOCKED	
2 / 0	Setting group A		-
2 / 1	Setting group A	Activation of setting group A	
2 / 2	Setting group B		-
2 / 3	Setting group B	Activation of setting group B	
2 / 4	Setting group C		-
2 / 5	Setting group C	Activation of setting group C	

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 6	Setting group D		-
2 / 7	Setting group D	Activation of setting group D	

2.1.3 Single commands

- User-defined commands and taggings (single-point) can be routed on these position as "Source system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 0	<user-defined> OFF	not pre-allocated	-
3 / 1	<user-defined> ON		
3 / 2	<user-defined> OFF	not pre-allocated	-
3 / 3	<user-defined> ON		
3 / 4	<user-defined> OFF	not pre-allocated	-
3 / 5	<user-defined> ON		
3 / 6	<user-defined> OFF	not pre-allocated	-
3 / 7	<user-defined> ON		

2.2 Message in input direction

2.2.1 Annunciations

2.2.1.1 Double-point indications

- User-defined double-point indications (e.g. checkback indications of double commands) can be routed on these positions as “Source system interface” using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 0	<user-defined> OFF	not pre-allocated	-
0 / 1	<user-defined> ON		
0 / 2	<user-defined> OFF	not pre-allocated	-
0 / 3	<user-defined> ON		

2.2.1.2 Single-point indications

- User-defined protection annunciations, single-point indications and taggings (single-point) can be routed on these position as “Destination system interface” using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 4	<user-defined>	not pre-allocated	-
0 / 5	<user-defined>	not pre-allocated	-
0 / 6	<user-defined>	not pre-allocated	-
0 / 7	<user-defined>	not pre-allocated	-
1 / 0	<user-defined>	not pre-allocated	-
1 / 1	<user-defined>	not pre-allocated	-
1 / 2	<user-defined>	not pre-allocated	-
1 / 3	<user-defined>	not pre-allocated	-
1 / 4	<user-defined>	not pre-allocated	-
1 / 5	<user-defined>	not pre-allocated	-
1 / 6	<user-defined>	not pre-allocated	-
1 / 7	<user-defined>	not pre-allocated	-
2 / 0	<user-defined>	not pre-allocated	-
2 / 1	<user-defined>	not pre-allocated	-
2 / 2	<user-defined>	not pre-allocated	-
2 / 3	<user-defined>	not pre-allocated	-

2.2.1.3 Status indications

- Refer to chapter 1.5.3 for notes regarding “Stop data transmission”.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 4	ProtActive	1 = At least one protection function is active	52
2 / 5	Settings Calc.	1 = Setting calculation is running	70
2 / 6	79 ON	1 = 79 Auto recloser is switched ON	2782
2 / 7	Test mode	1 = Test mode is active	-
3 / 0	DataStop	1 = Stop data transmission is active	-
3 / 1	Group A	1 = Setting group A is active	-
3 / 2	Group B	1 = Setting group Bis active	-
3 / 3	Group C	1 = Setting group Cis active	-
3 / 4	Group D	1 = Setting group D is active	-
3 / 5	Control Auth.	Control Authority (0 = REMOTE, 1 = LOCAL)	-
3 / 6	ModeLOCAL	Controlmode LOCAL (0 = LOCKED, 1 = UNLOCKED)	-
3 / 7	ModeREMOTE	Controlmode REMOTE (0 = LOCKED , 1 = UNLOCKED)	-
4 / 0	Daten gültig	1 = Data in the PROFIBUS-DP message are valid (This indication is created by the PROFIBUS-DP slave; not available in DIGSI and not relocatable).	-

2.2.1.4 Monitoring information

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 1	Error Sum Alarm	1 = Error with a summary alarm	140
4 / 2	Alarm Sum Event	1 = Alarm Summary Event	160
4 / 3	Fail I Superv.	1 = Failure: General Current Supervision	161
4 / 4	Fail V Superv.	1 = Failure: General Voltage Supervision	164
4 / 5	>FAIL:Feeder VT	1 = Binary input "Failure: Feeder VT (MCB tripped)" is active	361
4 / 6	Emer. mode	1 = Emergency mode	2054

2.2.1.5 Fault indications

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 7	Relay PICKUP	1 = Relay PICKUP	501
5 / 0	Relay PICKUP Ph A	1 = Relay PICKUP Phase A	503
5 / 1	Relay PICKUP Ph B	1 = Relay PICKUP Phase B	504
5 / 2	Relay PICKUP Ph C	1 = Relay PICKUP Phase C	505
5 / 3	Relay PICKUP G	1 = Relay PICKUP GROUND	506
5 / 7	Relay TRIP	1 = Relay GENERAL TRIP command	511
6 / 0	50(N)-B1 TRIP	1 = 50(N)-B1 TRIP	7221
6 / 1	50(N)-B2 TRIP	1 = 50(N)-B2 TRIP	7222

2.2.1.6 Auto reclose function

- Offset 7 / 7 is available with 7SD80 V4.33 or higher.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
7 / 3	79 Close	1 = 79 - Close command	2851
7 / 4	79 Close 2.Cyc	1 = 79: Close command 2nd cycle (and higher)	2854
7 / 5	79 not ready	1 = 79: Auto recloser is not ready	2784
7 / 6	79 Successful	1 = 79 - cycle successful	2862

2.2.2 Measured values

- Refer to chapter 1.3.2 for notes regarding scaling of measured values.

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to...)	Internal object no.
8	Ia =	Ia	3276.7 A	601
10	Ib =	Ib	3276.7 A	602
12	Ic =	Ic	3276.7 A	603
14	3I0 =	3I0 (zero sequence)	3276.7 A	610
16	Freq =	Frequency	327.67 Hz	644
18	IStab3I0 =	IStab 3I0 (in I/InO)	327.67 %	32226
40	PI FO A/m	Prot. Interface FO: Availability per min.	327.67 %	7753
42	PI FO A/h	Prot. Interface FO: Availability per hour	327.67 %	7754
44	PI Cu A/m	Prot. Interface Cu: Availability per min.	327.67 %	7755
46	PI Cu A/h	Prot. Interface Cu: Availability per hour	327.67 %	7756

3 Standard mapping 3-2

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7SD80 if standard mapping 3-2 is selected.

3.1	Message in output direction	28
3.2	Message in input direction	30

3.1 Message in output direction

3.1.1 Event list

- Information regarding the handshake bytes as well as the retrieval methods of the event list via PROFIBUS-DP can be found in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile".

Offset	Designation	Comments	Internal object no.
0	Control_O	Handshake byte for event list via PROFIBUS-DP	-
1	SPARE	reserved for future use (the value at this position is ignored)	-

3.1.2 Double commands

- User-defined double commands (with double-point indication as checkback indication) can be routed on these positions as "Source system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 0	<user-defined> OFF	not pre-allocated	-
2 / 1	<user-defined> ON		
2 / 2	<user-defined> OFF	not pre-allocated	-
2 / 3	<user-defined> ON		

3.1.3 Internal commands

- Refer to chapter 1.5.2 for notes regarding Changing the setting group.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 4	<user-defined> OFF	not pre-allocated	-
2 / 5	<user-defined> ON		
2 / 6	<user-defined> OFF	not pre-allocated	-
2 / 7	<user-defined> ON		
3 / 0	<user-defined> OFF	not pre-allocated	-
3 / 1	<user-defined> ON		
3 / 2	<user-defined> OFF	not pre-allocated	-
3 / 3	<user-defined> ON		
3 / 4	<user-defined> OFF	not pre-allocated	-
3 / 5	<user-defined> ON		
3 / 6	<user-defined> OFF	not pre-allocated	-
3 / 7	<user-defined> ON		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 0	Setting group A		-
4 / 1	Setting group A	Activation of setting group A	
4 / 2	Setting group B		-
4 / 3	Setting group B	Activation of setting group B	
4 / 4	Setting group C		-
4 / 5	Setting group C	Activation of setting group C	
4 / 6	Setting group D		-
4 / 7	Setting group D	Activation of setting group D	

3.1.4 Single commands

- User-defined commands and taggings (single-point) can be routed on these position as “Source system interface” using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 0	<user-defined> OFF	not pre-allocated	-
5 / 1	<user-defined> ON		
5 / 2	<user-defined> OFF	not pre-allocated	-
5 / 3	<user-defined> ON		
5 / 4	<user-defined> OFF	not pre-allocated	-
5 / 5	<user-defined> ON		
5 / 6	<user-defined> OFF	not pre-allocated	-
5 / 7	<user-defined> ON		

3.2 Message in input direction

3.2.1 Annunciations

3.2.1.1 Double-point indications

- User-defined double-point indications (e.g. checkback indications of double commands) can be routed on these positions as "Source system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 0	<user-defined> OFF	not pre-allocated	-
0 / 1	<user-defined> ON		
0 / 2	<user-defined> OFF	not pre-allocated	-
0 / 3	<user-defined> ON		

3.2.1.2 Single-point indications

- User-defined protection annunciations, single-point indications (e.g. checkback indications of single commands) and taggings (single-point) can be routed on these position as "Destination system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 4	79 ON	1 = 79 Auto recloser is switched ON	2782
0 / 5	<user-defined>	not pre-allocated	-
0 / 6	<user-defined>	not pre-allocated	-
0 / 7	<user-defined>	not pre-allocated	-
1 / 0	<user-defined>	not pre-allocated	-
1 / 1	<user-defined>	not pre-allocated	-
1 / 2	<user-defined>	not pre-allocated	-
1 / 3	<user-defined>	not pre-allocated	-

3.2.1.3 Setting group

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
1 / 4	Group A	1 = Group A is active	-
1 / 5	Group B	1 = Group B is active	-
1 / 6	Group C	1 = Group C is active	-
1 / 7	Group D	1 = Group D is active	-

3.2.1.4 Diagnosis

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 0	<user-defined>	not pre-allocated	-
2 / 1	ProtActive	1 = At least one protection function is active	52
2 / 2	Settings Calc.	1 = Settings calculation is running	70
2 / 3	Error Sum Alarm	1 = Error with a summary alarm ON	140
2 / 4	Alarm Sum Event	1 = Alarm summary event ON	160
2 / 5	Relay PICKUP	1 = Relay PICKUP (group signal)	501
2 / 6	Relay TRIP	1 = Relay GENERAL TRIP command	511
2 / 7	Data valid	1 = Data in the PROFIBUS-DP message are valid. (This indication is created by the PROFIBUS-DP slave; not available in DIGSI and not relocatable.)	-

3.2.1.5 Device status

- Refer to chapter 1.5.3 for notes regarding “Stop data transmission”.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 0	Test mode	1 = Test mode is active	-
3 / 1	DataStop	1 = Stop data transmission is active	-
3 / 2	<user-defined>	not pre-allocated	-
3 / 3	<user-defined>	not pre-allocated	-
3 / 4	ModeREMOTE	Controlmode REMOTE (0 = LOCKED , 1 = UNLOCKED)	-
3 / 5	<user-defined>	not pre-allocated	-
3 / 6	<user-defined>	not pre-allocated	-
3 / 7	<user-defined>	not pre-allocated	-
4 / 0	>FAIL:Feeder VT	1 = Binary input “Failure: Feeder VT (MCB tripped)” is active	361
4 / 1	<user-defined>	not pre-allocated	-
4 / 2	<user-defined>	not pre-allocated	-
4 / 3	<user-defined>	not pre-allocated	-

3.2.1.6 Measurement supervision

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 5	Fail I balance	1 = Failure: Current balance	163
4 / 6	Fail V balance	1 = Failure: Voltage balance	167
4 / 7	<user-defined>	not pre-allocated	-

3.2.1.7 Auto reclosing indications

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 0	79 not ready	1 = 79: Auto recloser is not ready	2784
5 / 1	79 Successful	1 = 79 - cycle successful	2862
5 / 2	79 Close	1 = 79 - Close command	2851
5 / 3	79 Close 2.Cyc	1 = 79: Close command 2nd cycle (and higher)	2854

3.2.1.8 Protection pickup indications

- User-defined protection annunciations, single-point indications and taggings can be routed on the positions "<user-defined>" as "Destination system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 0	Relay PICKUP Ph A	1 = Relay PICKUP Phase A	503
6 / 1	Relay PICKUP Ph B	1 = Relay PICKUP Phase B	504
6 / 2	Relay PICKUP Ph C	1 = Relay PICKUP Phase C	505
6 / 3	Relay PICKUP G	1 = Relay PICKUP GROUND	506
7 / 1	<user-defined>	not pre-allocated	-
7 / 2	<user-defined>	not pre-allocated	-
7 / 3	<user-defined>	not pre-allocated	-

3.2.1.9 Protection trip indications

- User-defined protection annunciations, single-point indications and taggings can be routed on the positions "<user-defined>" as "Destination system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
7 / 7	50(N)-B1 TRIP	1 = 50(N)-B1 TRIP	7221
8 / 0	50(N)-B2 TRIP	1 = 50(N)-B2 TRIP	7222
8 / 2	Definitive TRIP	1 = Relay Definitive TRIP	536
8 / 3	<user-defined>	not pre-allocated	-
8 / 4	<user-defined>	not pre-allocated	-
8 / 5	<user-defined>	not pre-allocated	-
8 / 6	<user-defined>	not pre-allocated	-
8 / 7	<user-defined>	not pre-allocated	-

3.2.1.10 User-defined annunciations

- User-defined protection annunciations, single-point indications and taggings can be routed on these positions as "Destination system interface" using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 0	<user-defined>	not pre-allocated	-
9 / 1	<user-defined>	not pre-allocated	-
9 / 2	<user-defined>	not pre-allocated	-
9 / 3	<user-defined>	not pre-allocated	-
9 / 4	<user-defined>	not pre-allocated	-
9 / 5	<user-defined>	not pre-allocated	-
9 / 6	<user-defined>	not pre-allocated	-
9 / 7	<user-defined>	not pre-allocated	-

3.2.2 Measured values

- Refer to chapter 1.3.2 for notes regarding scaling of measured values.

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to...)	Internal object no.
10	Ia =	Ia	3276.7 A	601
12	Ib =	Ib	3276.7 A	602
14	Ic =	Ic	3276.7 A	603
16	I3I0 =	I3I0 (zero sequence)	3276.7 A	610
18	Freq =	Frequency	327.67 Hz	644
20	IStab3I0 =	IStab 3I0 (in I/InO)	327,67 %	32226
32	PI FO A/m	Prot. Interface FO: Availability per min.	327.67 %	7753
34	PI FO A/h	Prot. Interface FO: Availability per hour	327.67 %	7754
36	PI Cu A/m	Prot. Interface Cu: Availability per min.	327.67 %	7755
38	PI Cu A/h	Prot. Interface Cu: Availability per hour	327.67 %	7756
40	<user-defined>	not pre-allocated	-	-
42	<user-defined>	not pre-allocated	-	-
44	<user-defined>	not pre-allocated	-	-
46	<user-defined>	not pre-allocated	-	-
48	<user-defined>	not pre-allocated	-	-

3.2.3 Event list

- Information regarding the handshake bytes as well as the retrieval methods of the event list via PROFIBUS-DP can be found in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile".

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
50	Control_I	Handshake byte for event list via PROFIBUS-DP	-
51	SPARE	reserved for future use (the value 0 is transmitted at this position)	-
52	Message block #1	Identification #1	-
53		Value #1	
54		Time stamp #1	
61			
62	Message block #2	Identification #2	-
63		Value #2	
64		Time stamp #2	
71			
72	Message block #3	Identification #3	-
73		Value #3	
74		Time stamp #3	
81			

Glossary

CFC

Continuous Function Chart

DC

Double command

DDB file / GSD file

The DDB file contains the Device Data Base (technical characteristics) of the PROFIBUS-DP communication module (PROFIBUS-DP slave).

This file is required for configuration of the PROFIBUS-DP master and is supplied together with DIGSI.

DIGSI

Parameterization system / parameterization software for SIPROTEC devices

DP

Double-point indication

Input data/Input direction

Data from the PROFIBUS-DP slave to the PROFIBUS-DP master.

Octet

Term from EN 50170, one octet corresponds to 8 bits.

OLM

Optical Link Module

Output data/Output direction

Data from the PROFIBUS-DP master to the PROFIBUS-DP slave.

PNO

PROFIBUS Nutzerorganisation

PROFIBUS-DP

PROFIBUS - Decentralized Peripherals

PSE

PROFIBUS interface module with (electrical) isolated RS485 interface for the SIPROTEC devices from Siemens.

PSO

PROFIBUS interface module with fibre-optical interface for the SIPROTEC devices from Siemens.

SC

Single command

SP

Single-point indication

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