

# SIPROTEC

## Breaker management relay 7VK61

Communication module

PROFIBUS-DP  
Bus mapping

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Preface

Table of contents

---

Data in the PROFIBUS-DP messages

1

---

Standard mapping 3-1

2

---

Index

---

Revision 1.0

Edition: January 2003

C53000-L1840-B013-03

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We have checked the contents of this manual against the hardware and software described. Exclusions and deviations cannot be ruled out; we accept no liability for lack of total agreement.

The information in this manual is checked periodically, and necessary corrections will be included in future editions.

We appreciate any suggested improvements.

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# Preface

## Purpose of this manual

This manual describes the data in the PROFIBUS-DP messages of the SIPROTEC devices 7VK61 and is divided into the following topics:

- Data in the PROFIBUS-DP messages → Chapter 1;
- Standard mapping 3-1 → Chapter 2.

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.

## 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.  
Order-No. 0.032 or 0.042 on CD ROM

**Validity**

This manual is valid for the SIPROTEC devices:

- 7VK61 (firmware version 4.0 or higher)

with

- PROFIBUS-DP communication module version 03.00.03 or higher.

For device parameterization have to be used:

- DIGSI 4.3 or higher,
- DIGSI 4.21 considering the preconditions explained in the manual “SIPROTEC Communication module, PROFIBUS-DP - Communication profile” (ref. to page i),
- PROFIBUS-DP standard mappings 3-1 to 3-n (n = device type dependent number of standard mappings).

**Additional Support**

For questions regarding SIPROTEC4 devices, please contact your Siemens representative.

**Training courses**

Individual course offerings may be found in our Training Catalog and questions can be directed to our Training Centre. Please contact your Siemens representative.

**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.



## Warning!

During operation of electrical equipment, certain parts of these devices are under high voltage. Severe personal injury or significant equipment damage could result from improper behaviour.

Only qualified personnel should work on this equipment or in the vicinity of this equipment. These personnel must be familiar with all warnings and service procedures described in this manual, as well as with safety regulations.

Prerequisites to proper and safe operation of this product are proper transport, proper storage, setup, installation, operation, and maintenance of the product, as well as careful operation and servicing of the device within the scope of the warnings and instructions of this manual.

In particular, the general facility and safety regulations for work with high-voltage equipment (e.g. ANSI, IEC, EN, or other national or international regulations) must be observed. Noncompliance may result in death, injury or significant equipment damage.

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### QUALIFIED PERSONNEL

Within the meaning of safety precautions of this manual and the instructions, qualified personnel are those persons who are qualified to set up, install, place into service, and operate this device, and who possess the following qualifications:

- Training and instruction (or other qualification) for switching, grounding, and designating devices and systems.
- Training or instruction in accordance with safety standards for care and use of certain safety equipment.
- First aid training.

### 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.



# Revision index

Listing of the changes between the editions of this manual:

Modified chapters / pages	Edition	Reasons of modification
	1.0	First edition, Doc.-No.: C53000-L1840-B013-03 Jan 21 <sup>st</sup> , 2003





# Table of contents

- Preface ..... i**
  
- Revision index ..... v**
  
- 1 Data in the PROFIBUS-DP messages ..... 1-1**
  - 1.1 Explanations ..... 1-2
  - 1.2 Messages in output direction:  
PROFIBUS-DP master to the SIPROTEC device ..... 1-4
  - 1.3 Messages in input direction:  
SIPROTEC device to the PROFIBUS-DP master ..... 1-5
    - 1.3.1 Annunciations ..... 1-5
    - 1.3.2 Measured values ..... 1-5
    - 1.3.3 Metered measurands ..... 1-6
  - 1.4 Configuration data of the standard mappings ..... 1-7
  - 1.5 Notes to SIPROTEC objects ..... 1-9
    - 1.5.1 Control mode REMOTE ..... 1-9
    - 1.5.2 Changing the setting group ..... 1-10
    - 1.5.3 Stop data transmission ..... 1-10
  
- 2 Standard mapping 3-1 ..... 2-1**
  - 2.1 Message in output direction ..... 2-2
    - 2.1.1 Double commands (with checkback indication) ..... 2-2
    - 2.1.2 Internal commands ..... 2-2
    - 2.1.3 Single commands and taggings ..... 2-3
  - 2.2 Message in input direction ..... 2-4
    - 2.2.1 Annunciations ..... 2-4
      - 2.2.1.1 Double-point indications ..... 2-4
      - 2.2.1.2 Single-point indications and taggings ..... 2-4
      - 2.2.1.3 Status indications ..... 2-5
      - 2.2.1.4 Monitoring information ..... 2-6
      - 2.2.1.5 Fault indications ..... 2-6
      - 2.2.1.6 Auto reclose function ..... 2-7
    - 2.2.2 Measured values ..... 2-8
    - 2.2.3 Fault currents and statistic values ..... 2-8
    - 2.2.4 Metered measurands ..... 2-9

<b>Glossary.....</b>	<b>3-1</b>
<b>Index.....</b>	<b>4-1</b>

## Data in 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.

1.1	Explanations	1-2
1.2	Messages in output direction: PROFIBUS-DP master to the SIPROTEC device	1-4
1.3	Messages in input direction: SIPROTEC device to the PROFIBUS-DP master	1-5
1.4	Configuration data of the standard mappings	1-7
1.5	Notes to SIPROTEC objects	1-9

## 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 2 defines the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC devices 7VK61 and the PROFIBUS-DP master.

The columns "Designation of the SIPROTEC objects" contain the texts 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.
10	Ia =	Current in phase A	3276.7 A	601

The measured value "Ia" is assigned to data byte 10 (most significant byte of the measured value) and data byte 11 (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.
0 / 0	Q0 OFF	Circuit breaker	-
0 / 1	Q0 ON		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 0	Fail Ph. Seq.	1 = Failure: Phase Sequence	171

The checkback signal from the circuit breaker (as double-point indication) is located in data byte 0, bit positions  $2^0$  (bit 0) and  $2^1$  (bit 1).

The single-point indication "Fail Ph. Seq." is located in byte 5, bit position  $2^0$ .



*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" (ref. to page i).

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## 1.2 Messages in output direction: PROFIBUS-DP master to the SIPROTEC device

The messages in PROFIBUS-DP output direction (ref. to chap. 2.1) 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.
-

## 1.3 Messages in input direction: SIPROTEC device to the PROFIBUS-DP master

The messages in PROFIBUS-DP input direction (ref. to chap. 2.2) 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.

### 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:

Nominal operating voltage of primary equipment (parameter address 1103):

→ 100.01 ... 1000 kV

Nominal operating current of primary equipment (parameter address 1104):

→ 10.01 ... 1000 A

Product of:

- Voltage transducer - Primary voltage (parameter address 0203) and
- Ratio factor  $V_{ph}/V_{delta}$  (parameter address 0211):  
→ 100.01 ... 1000 kV



*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" (ref. to page i).

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### 1.3.3 Metered measurands

#### Scaling

The scaling of the metered measurands which are derived from measured values ("Wp+", "Wq+", "Wp-", "Wq-") refers to:

**60000 Impulses per hour for  $V = V_{nom}$  and  $I = I_{nom}$**

$V_{nom}$  = Nominal operating voltage of primary equipment (parameter address = 1103)

$I_{nom}$  = Nominal operating current of primary equipment (parameter address = 1104)

#### Example

In the parameter set is configured:

$I_{nom} = 1000 \text{ A}$  and  $U_{nom} = 400 \text{ kV}$ ,

60000 impulse corresponds so that:

$$1 \text{ h} * 1000 \text{ A} * 400 \text{ kV} * \sqrt{3} = 692.82 \text{ MWh}$$



*Note:*

- The type of the update (cyclic, with or without deletion) and the update interval must be programmed for the metered measurands with the parameterization software DIGSI.
  - The scaling of the metered measurands at binary inputs (pulse counters) depends on the externally connected pulse generator.
-



## 1.4 Configuration data of the standard mappings

There is one standard mapping (standard mapping 3-1) available for the SIPROTEC devices 7VK61.

### Standard mapping 3-1

*The standard mapping 3-1 contains:*

Output direction:

- 5 Double commands
- 19 Single commands

Input direction:

- 5 Double-point indications
- 70 Single-point indications
- 17 Measured values (Integer)
- 4 Metered measurands (Unsigned Long)
- 4 Integer values for fault currents and statistics

### Configuration data

*Standard mapping 3-1: 1FH 1FH 1FH 1FH 13H 25H*  
(68 byte 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 7VK61 standard mappings and to allocate associated addresses in the I/O addressing range of the PROFIBUS-DP master:

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_lx	
1	Input - 16 Bytes	Adr_lx + 16	
2	Input - 16 Bytes	Adr_lx + 32	
3	Input - 16 Bytes	Adr_lx + 48	
4	Input - 4 Bytes	Adr_lx + 64	
5	Output - 6 Bytes		Adr_Ox

Adr\_lx and Addr\_Ox indicate arbitrary (as a rule even) addresses in the I/O addressing range of the PROFIBUS-DP master.

Adr\_lx (base address of the inputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in input direction (ref. to chap. 2.2).

Addr\_Ox (base address of the outputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in output direction (ref. to chap. 2.1).



*Note:*

There is dependently on the PROFIBUS-DP master in addition possibly the demand to put the base address of the inputs on a value divisible by four so that accesses on the metered measurands (unsigned long values, ref. to chap. 2.2.3) can be correctly carried out in the PROFIBUS-DP master.

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## 1.5 Notes to SIPROTEC objects

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



*Note:*

- The description of the standard mappings (ref. to chap. 2) contains 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 i).
- 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:* ref. to chap. 2.1.2

## 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: ref. to chap. 2.1.2*

## 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: ref. to chap. 2.2.1.3*

## Standard mapping 3-1

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7VK61.

2.1	Message in output direction	2-2
2.2	Message in input direction	2-4

## 2.1 Message in output direction

### 2.1.1 Double commands (with checkback indication)

- 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		
0 / 4	<user-defined> OFF	not pre-allocated	-
0 / 5	<user-defined> ON		
0 / 6	<user-defined> OFF	not pre-allocated	-
0 / 7	<user-defined> ON		
1 / 0	<user-defined> OFF	not pre-allocated	-
1 / 1	<user-defined> ON		

### 2.1.2 Internal commands

- Ref. to chap. 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.
1 / 2	79 OFF	Deactivation of “Autoreclosing”	2782
1 / 3	79 ON	Activation of “Autoreclosing”	
1 / 4	Protection OFF	Deactivation of protection functions	52
1 / 5	Protection ON	Activation of protection functions	
1 / 6	<user-defined> OFF	not pre-allocated	-
1 / 7	<user-defined> ON		
2 / 0	Mode REMOTE	Control mode REMOTE = LOCKED	-
2 / 1	Mode REMOTE	Control mode REMOTE = UNLOCKED	
2 / 2	Setting group A		-
2 / 3	Setting group A	Activation of setting group A	
2 / 4	Setting group B		-
2 / 5	Setting group B	Activation of setting group B	

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

### 2.1.3 Single commands and taggings

- Single commands and taggings 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.
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		
4 / 0	<user-defined> OFF	not pre-allocated	-
4 / 1	<user-defined> ON		
4 / 2	<user-defined> OFF	not pre-allocated	-
4 / 3	<user-defined> ON		
4 / 4	<user-defined> OFF	not pre-allocated	-
4 / 5	<user-defined> ON		
4 / 6	<user-defined> OFF	not pre-allocated	-
4 / 7	<user-defined> ON		
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		

## 2.2 Message in input direction

### 2.2.1 Annunciations

#### 2.2.1.1 Double-point indications

- Double-point indications (e.g. checkback indications of double commands) 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.
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		
0 / 4	<user-defined> OFF	not pre-allocated	-
0 / 5	<user-defined> ON		
0 / 6	<user-defined> OFF	not pre-allocated	-
0 / 7	<user-defined> ON		
1 / 0	<user-defined> OFF	not pre-allocated	-
1 / 1	<user-defined> ON		

#### 2.2.1.2 Single-point indications and taggings

- Single-point indications, protection annunciations and taggings 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.
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 / 4	<user-defined>	not pre-allocated	-



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

### 2.2.1.3 Status indications

- Ref. to chap. 1.5.3 for notes regarding "Stop data transmission".

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 0	79 ON	1 = 79 Auto recloser is switched ON	2782
3 / 1	<user-defined>	not pre-allocated	-
3 / 2	ProtActive	1 = At least 1 protection function is active	52
3 / 3	DataStop	1 = Stop data transmission is active	-
3 / 4	Test mode	1 = Test mode is active	-
3 / 5	Settings Calc.	1 = Setting calculation is running	70
3 / 6	Group A	1 = Setting group A is active	-
3 / 7	Group B	1 = Setting group Bis active	-
4 / 0	Group C	1 = Setting group Cis active	-
4 / 1	Group D	1 = Setting group D is active	-
4 / 2	Control Auth.	Control Authority (0 = REMOTE, 1 = LOCAL)	-
4 / 3	ModeLOCAL	Controlmode LOCAL (0 = LOCKED, 1 = UNLOCKED)	-
4 / 4	ModeREMOTE	Controlmode REMOTE (0 = LOCKED , 1 = UNLOCKED)	-
4 / 5	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.)	-

**2.2.1.4 Monitoring information**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 6	Fail I Superv.	1 = Failure: General Current Supervision	161
4 / 7	Fail V Superv.	1 = Failure: General Voltage Supervision	164
5 / 0	Fail Ph. Seq.	1 = Failure: Phase Sequence	171
5 / 1	<user-defined>	not pre-allocated	-
5 / 2	<user-defined>	not pre-allocated	-
5 / 3	>FAIL:Feeder VT	1 = >Failure: Feeder VT (MCB tripped)	361
5 / 4	<user-defined>	not pre-allocated	-
5 / 5	Alarm Sum Event	1 = Alarm Summary Event	160
5 / 6	Error Sum Alarm	1 = Error with a summary alarm	140
5 / 7	<user-defined>	not pre-allocated	-
6 / 0	<user-defined>	not pre-allocated	-
6 / 1	<user-defined>	not pre-allocated	-
6 / 2	<user-defined>	not pre-allocated	-
6 / 3	<user-defined>	not pre-allocated	-

**2.2.1.5 Fault indications**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 4	Relay PICKUP Ph A	1 = Relay PICKUP Phase A	503
6 / 5	Relay PICKUP Ph B	1 = Relay PICKUP Phase B	504
6 / 6	Relay PICKUP Ph C	1 = Relay PICKUP Phase C	505
6 / 7	Relay PICKUP G	1 = Relay PICKUP GROUND	506
7 / 0	Relay TRIP	1 = Relay GENERAL TRIP command	511
7 / 1	Relay TRIP Ph A	1 = Relay TRIP command Phase A	507
7 / 2	Relay TRIP Ph B	1 = Relay TRIP command Phase B	508
7 / 3	Relay TRIP Ph C	1 = Relay TRIP command Phase C	509
7 / 4	<user-defined>	not pre-allocated	-
7 / 5	<user-defined>	not pre-allocated	-
7 / 6	<user-defined>	not pre-allocated	-
7 / 7	<user-defined>	not pre-allocated	-
8 / 0	<user-defined>	not pre-allocated	-
8 / 1	<user-defined>	not pre-allocated	-
8 / 2	<user-defined>	not pre-allocated	-
8 / 3	<user-defined>	not pre-allocated	-
8 / 4	<user-defined>	not pre-allocated	-

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 5	Relay PICKUP	1 = Relay PICKUP	501
8 / 6	50BF BusTrip	1 = 50BF Busbar trip	1494
8 / 7	<user-defined>	not pre-allocated	-
9 / 0	<user-defined>	not pre-allocated	-
9 / 1	<user-defined>	not pre-allocated	-
9 / 2	<user-defined>	not pre-allocated	-

### 2.2.1.6 Auto reclose function

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 3	79 Close	1 = 79 - Close command	2851
9 / 4	79 Close 2.Cyc	1 = 79: Close command 2nd cycle (and higher)	2854
9 / 5	79 not ready	1 = 79: Auto recloser is not ready	2784
9 / 6	79 Successful	1 = 79 - cycle successful	2862
9 / 7	Definitive Trip	1 = Definitive Trip	2863

## 2.2.2 Measured values

- Ref to chap. 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	Va =	Va	3276.7 kV	621
18	Vb =	Vb	3276.7 kV	622
20	Vc =	Vc	3276.7 kV	623
22	P =	P (active power)	3276.7 MW	641
24	Q =	Q (reactive power)	3276.7 MVAR	642
26	S =	S (apparent power)	3276.7 MVA	645
28	Freq=	Frequency	327.67 Hz	644
30	Va-b=	Va-b	3276.7 kV	624
32	Vb-c=	Vb-c	3276.7 kV	625
34	Vc-a=	Vc-a	3276.7 kV	626
36	PF =	Power Factor	3.2767	643
38	3I0 =	3I0 (zero sequence)	3276.7 A	610
40	<user-defined>	not pre-allocated	-	-
42	<user-defined>	not pre-allocated	-	-

## 2.2.3 Fault currents and statistic values

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to...)	Internal object no.
44	Ia =	Primary fault current Ia	327.67 kA	533
46	Ib =	Primary fault current Ib	327.67 kA	534
48	Ic =	Primary fault current Ic	327.67 kA	535
50	<user-defined>	not pre-allocated	-	-

## 2.2.4 Metered measurands

- Ref. to chap. 1.3.3 for notes regarding scaling of metered measurands.

Offset	Designation of the SIPROTEC objects	Comments	Scaling ( $2^{31}-1$ corresponds to ...)	Internal object no
52	Wp+	Wp forward (Metered measurand derived from measured values)	$2^{31}-1$ impulses	924
56	Wq+	Wq forward (Metered measurand derived from measured values)	$2^{31}-1$ impulses	925
60	Wp-	Wp reverse (Metered measurand derived from measured values)	$2^{31}-1$ impulses	928
64	Wq-	Wq reverse (Metered measurand derived from measured values)	$2^{31}-1$ impulses	929



# Glossary

<b>CFC</b>	Continuous Function Chart
<b>DC</b>	Double command
<b>DDB file / GSD file</b>	<p>The DDB file contains the Device Data Base (technical characteristics) of the PROFIBUS-DP communication module (PROFIBUS-DP slave).</p> <p>This file is required for configuration of the PROFIBUS-DP master and is supplied together with DIGSI.</p>
<b>DIGSI</b>	Parameterization system / parameterization software for SIPROTEC devices
<b>DP</b>	Double-point indication
<b>Input data / Input direction</b>	Data from the PROFIBUS-DP slave to the PROFIBUS-DP master.
<b>Octet</b>	Term from EN 50170, one octet corresponds to 8 bits.
<b>OLM</b>	Optical Link Module
<b>Output data / Output direction</b>	Data from the PROFIBUS-DP master to the PROFIBUS-DP slave.
<b>PNO</b>	PROFIBUS Nutzerorganisation (PROFIBUS International Organization)
<b>PROFIBUS-DP</b>	PROFIBUS - Decentralized Peripherals
<b>PSE</b>	PROFIBUS interface module with (electrical) isolated RS485 interface for the SIPROTEC devices from Siemens.
<b>PSO</b>	PROFIBUS interface module with fibre-optical interface for the SIPROTEC devices from Siemens.
<b>SC</b>	Single command
<b>SP</b>	Single-point indication





# Index

## Numerics

50BF .....2-7  
79 ..... 2-2, 2-5, 2-7

## A

Annunciations ..... 1-5, 2-4

## C

Changing the setting group .....1-10  
Commands .....2-3  
Configuration data ..... 1-7

## D

Double commands .....2-2  
Double-point indications .....2-4

## F

Fault currents .....2-8  
Fault indications .....2-6

## M

Measured values ..... 1-5, 2-8  
Metered measurands ..... 1-6, 2-9  
Monitoring information .....2-6

## P

PROFIBUS-DP  
    Configuration data ..... 1-7  
    Configuration in the master system ..... 1-7  
    Message in input direction .....2-4  
    Message in output direction .....2-2

## Q

Qualified personnel (definition) .....P-iii

## S

Single commands ..... 2-3  
Single-point indications ..... 2-4  
Status indications ..... 2-5

## T

Taggings .....2-3, 2-4  
Target audience .....P-ii  
Typographic conventions .....P-iii

## V

Validity of the manual .....P-ii



**To**

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