

SIPROTEC

Multifunction Paralleling  
Devices  
7VE61 and 7VE63

Communication module

PROFIBUS-DP  
Bus mapping

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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 7VE61 and 7VE63 and is divided into the following topics:

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

## 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 module 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.

|                           |  |
|---------------------------|--|
| <b>Validity</b>           | <p>This manual is valid for the SIPROTEC devices:</p> <ul style="list-style-type: none"><li>• 7VE61 and 7VE63 (firmware version 4.00 or higher)</li></ul> <p>with</p> <ul style="list-style-type: none"><li>• PROFIBUS-DP communication module version 03.01.03 or higher.</li></ul> <p>For device parameterization have to be used:</p> <ul style="list-style-type: none"><li>• DIGSI 4.30 or higher,</li><li>• PROFIBUS-DP standard mappings 3-1 to 3-n<br/>(n = device type dependent number of standard mappings).</li></ul> |
| <b>Additional Support</b> | <p>For questions regarding SIPROTEC4 devices, please contact your Siemens representative.</p>  |
| <b>Training courses</b>   | <p>Individual course offerings may be found in our Training Catalog and questions can be directed to our Training Centre. Please contact your Siemens representative.</p>  |
| <b>Target audience</b>    | <p>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.</p>   |



## 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.



# 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-B017-03<br>Aug 6 <sup>th</sup> , 2003   |
| general<br>Chap. 1.4, 3   | 2.0     | <ul style="list-style-type: none"><li>• Page numbering in the manual now continuous, not chapter-related any more</li><li>• New: description of Standard mapping 3-3 with event list<br/>Dec. 20<sup>th</sup>, 2004</li></ul> |
|                           |         |   |





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## 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 mappings 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.

Chapters 2 and 3 define the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC devices 7VE61 and 7VE63 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. |
|--------|-------------------------------------|-------------------|-----------------------------------|---------------------|
| 18     | V1 =                                | Measured value V1 | 3276.7 V                          | 25044               |

The measured value "V1" is assigned to data byte 18 (most significant byte of the measured value) and data byte 19 (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. |
|--------|-------------------------------------|-----------------|---------------------|
| 17 / 4 | Q0 OFF                              | Circuit breaker | -                   |
| 17 / 5 | Q0 ON                               |                 |                     |

| Offset | Designation of the SIPROTEC objects | Comments                       | Internal object no. |
|--------|-------------------------------------|--------------------------------|---------------------|
| 0 / 5  | Relay TRIP                          | 1 = Relay GENERAL TRIP command | 511                 |

The checkback signal from the circuit breaker (as double-point indication) is located in data byte 17, bit positions  $2^4$  (bit 0) and  $2^5$  (bit 1).

The single-point indication "Relay TRIP" is located in byte 0, bit position  $2^5$ .



*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 3).

---

## 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 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 mappings 3-1 and 3-2:* ref. to chap. 2.1

*Standard mapping 3-3:* ref. to chap. 3.1

## 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 and 3.2) allow:

- polling of switching devices' status and binary inputs,
- transmission of annunciations and measurand 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 mappings 3-1 and 3-2:* ref. to chap. 2.2.1

*Standard mapping 3-3:* ref. to chap. 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 pre-allocated measured values are transferred as secondary values per default.
  - 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 3).
- 

#### References

*Standard mapping 3-1:* ref. to chap. 2.2.2

*Standard mapping 3-2:* not included

*Standard mapping 3-3:* ref. to chap. 3.2.2

## 1.4 Configuration data of the standard mappings

There are three standard mapping (standard mapping 3-1 to standard mapping 3-3) available for the SIPROTEC devices 7VE61 and 7VE63 which differ in the data size of the PROFIBUS-DP messages.

**Standard mapping 3-1**      *The standard mapping 3-1 contains:*

Output direction:

- 2 Double commands
- 54 Single commands

Input direction:

- 2 Double-point indications
- 140 Single-point indications
- 13 Measured values (Integer)

**Standard mapping 3-2**      *The standard mapping 3-2 contains:*

Output direction:

- 2 Double commands
- 54 Single commands

Input direction:

- 2 Double-point indications
- 140 Single-point indications

Unlike the standard mapping 3-1 there are no measured values contained in the standard mapping 3-2.

**Standard mapping 3-3**      *The standard mapping 3-3 contains:*

Output direction:

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

Input direction:

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



- Configuration data**
- Standard mapping 3-1:* **1FH 1FH 1BH 2DH**  
(44 byte input-, 14 bytes output direction)
- Standard mapping 3-2:* **1FH 11H 2DH**  
(18 byte input-, 14 bytes output direction)
- Standard mapping 3-3:* **1FH 1FH 1BH DFH 2FH**  
(76 byte input-, 16 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 7VE61 and 7VE63 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  | Addr_lx       |                |
| 1      | Input - 16 Bytes  | Addr_lx + 16  |                |
| 2      | Input - 12 Bytes  | Addr_lx + 32  |                |
| 3      | Output - 14 Bytes |               | Addr_Ox        |

*Standard mapping 3-2:*

| Module | Order number      | Input address | Output address |
|--------|-------------------|---------------|----------------|
| 0      | Input - 16 Bytes  | Addr_lx       |                |
| 1      | Input - 2 Bytes   | Addr_lx + 16  |                |
| 2      | Output - 14 Bytes |               | Addr_Ox        |

*Standard mapping 3-3:*

| Module | Order number                 | Input address | Output address |
|--------|------------------------------|---------------|----------------|
| 0      | Input - 16 Bytes             | Addr_lx       |                |
| 1      | Input - 16 Bytes             | Addr_lx + 16  |                |
| 2      | Input - 12 Bytes             | Addr_lx + 32  |                |
| 3      | Input - 16 Words, consistent | Adr_Ex + 44   |                |
| 4      | Output - 16 Bytes            |               | Addr_Ox        |

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

Addr\_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 and 3.2).

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 and 3.1).

## 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 and 3) 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 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 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 mappings 3-1 and 3-2:* ref. to chap. 2.1.2

*Standard mapping 3-3:* ref. to chap. 3.1.3

## Standard mapping 3-1 and 3-2

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7VE61 and 7VE63 if standard mapping 3-1 or 3-2 is selected.

|     |                             |    |
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## 2.1 Message in output direction

### 2.1.1 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 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                   |                   |                     |
| 1 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 1 / 3  | <user-defined> ON                   |                   |                     |
| 1 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 1 / 5  | <user-defined> ON                   |                   |                     |
| 1 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 1 / 7  | <user-defined> ON                   |                   |                     |
| 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                   |                   |                     |
| 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                   |                   |                     |

| Offset | Designation of the SIPROTEC objects | Comments          | Internal object no. |
|--------|-------------------------------------|-------------------|---------------------|
| 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                   |                   |                     |
| 6 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 1  | <user-defined> ON                   |                   |                     |
| 6 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 3  | <user-defined> ON                   |                   |                     |
| 6 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 5  | <user-defined> ON                   |                   |                     |
| 6 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 7  | <user-defined> ON                   |                   |                     |
| 7 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 1  | <user-defined> ON                   |                   |                     |
| 7 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 3  | <user-defined> ON                   |                   |                     |
| 7 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 5  | <user-defined> ON                   |                   |                     |
| 7 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 7  | <user-defined> ON                   |                   |                     |
| 8 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 1  | <user-defined> ON                   |                   |                     |
| 8 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 3  | <user-defined> ON                   |                   |                     |

| Offset | Designation of the SIPROTEC objects | Comments          | Internal object no. |
|--------|-------------------------------------|-------------------|---------------------|
| 8 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 5  | <user-defined> ON                   |                   |                     |
| 8 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 7  | <user-defined> ON                   |                   |                     |
| 9 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 1  | <user-defined> ON                   |                   |                     |
| 9 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 3  | <user-defined> ON                   |                   |                     |
| 9 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 5  | <user-defined> ON                   |                   |                     |
| 9 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 7  | <user-defined> ON                   |                   |                     |
| 10 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 1 | <user-defined> ON                   |                   |                     |
| 10 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 3 | <user-defined> ON                   |                   |                     |
| 10 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 5 | <user-defined> ON                   |                   |                     |
| 10 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 7 | <user-defined> ON                   |                   |                     |
| 11 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 1 | <user-defined> ON                   |                   |                     |
| 11 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 3 | <user-defined> ON                   |                   |                     |
| 11 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 5 | <user-defined> ON                   |                   |                     |
| 11 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 7 | <user-defined> ON                   |                   |                     |

## 2.1.2 Internal commands

- Ref. to chap. 1.5.1 for notes regarding Changing the setting group.

| Offset | Designation of the SIPROTEC objects | Comments                      | Internal object no. |
|--------|-------------------------------------|-------------------------------|---------------------|
| 12 / 0 | Setting group A                     |                               | -                   |
| 12 / 1 | Setting group A                     | Activation of setting group A |                     |
| 12 / 2 | Setting group B                     |                               | -                   |
| 12 / 3 | Setting group B                     | Activation of setting group B |                     |
| 12 / 4 | Setting group C                     |                               | -                   |
| 12 / 5 | Setting group C                     | Activation of setting group C |                     |
| 12 / 6 | Setting group D                     |                               | -                   |
| 12 / 7 | Setting group D                     | Activation of setting group D |                     |
| 13 / 0 | <user-defined> OFF                  | not pre-allocated             | -                   |
| 13 / 1 | <user-defined> ON                   |                               |                     |
| 13 / 2 | <user-defined> OFF                  | not pre-allocated             | -                   |
| 13 / 3 | <user-defined> ON                   |                               |                     |

## 2.1.3 Double commands

- 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 13 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 5 | <user-defined> ON                   |                   |                     |
| 13 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 7 | <user-defined> ON                   |                   |                     |

## 2.2 Message in input direction

### 2.2.1 Annunciations

#### 2.2.1.1 Diagnosis

| Offset | Designation of the SIPROTEC objects | Comments  | Internal object no. |
|--------|-------------------------------------|---|---------------------|
| 0 / 0  | Device OK                           | 1 = Update of the device replica in the SIPROTEC device completed after initial start or restart  | 51                  |
| 0 / 1  | ProtActive                          | 1 = At least one protection function is active  | 52                  |
| 0 / 2  | Error Sum Alarm                     | 1 = Error with a summary alarm  | 140                 |
| 0 / 3  | Alarm Sum Event                     | 1 = Alarm Summary Event   | 160                 |
| 0 / 4  | Relay PICKUP                        | 1 = Relay PICKUP  | 501                 |
| 0 / 5  | Relay TRIP                          | 1 = Relay GENERAL TRIP command  | 511                 |
| 0 / 6  | <user-defined>                      | not pre-allocated   | -                   |
| 0 / 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.) | -                   |

#### 2.2.1.2 Error messages synchronization

| Offset | Designation of the SIPROTEC objects | Comments                                   | Internal object no. |
|--------|-------------------------------------|--|---------------------|
| 1 / 0  | 25 MonTimeExc                       | 1 = 25-group 1: Monitoring time exceeded   | 222.2025.01         |
| 1 / 1  | 25 FG-Error                         | 1 = 25 Multiple selection of funct.-groups | 222.2096.01         |
| 1 / 2  | 25 Fail.Conf.                       | 1 = 25 Failure in Configuration            | 222.2331.01         |
| 1 / 3  | 25 sup.asym.                        | 1 = 25-supervision V1,V2 asymmetrical      | 222.2309.01         |
| 1 / 4  | 25 sup. $\alpha$                    | 1 = 25-supervision Alpha>                  | 222.2310.01         |
| 1 / 5  | <user-defined>                      | not pre-allocated                          | -                   |
| 1 / 6  | <user-defined>                      | not pre-allocated                          | -                   |
| 1 / 7  | <user-defined>                      | not pre-allocated                          | -                   |
| 2 / 0  | 25-1 PaErr                          | 1 = 25-group 1: Parameter not plausible    | 170.2097.01         |
| 2 / 1  | 25-2 PaErr                          | 1 = 25-group 2: Parameter not plausible    | 170.2097.02         |
| 2 / 2  | 25-3 PaErr                          | 1 = 25-group 3: Parameter not plausible    | 170.2097.03         |
| 2 / 3  | 25-4 PaErr                          | 1 = 25-group 4: Parameter not plausible    | 170.2097.04         |
| 2 / 4  | 25-5 PaErr                          | 1 = 25-group 5: Parameter not plausible    | 170.2097.05         |



| Offset | Designation of the SIPROTEC objects | Comments                                | Internal object no. |
|--------|-------------------------------------|---|---------------------|
| 2 / 5  | 25-6 PaErr                          | 1 = 25-group 6: Parameter not plausible | 170.2097.06         |
| 2 / 6  | 25-7 PaErr                          | 1 = 25-group 7: Parameter not plausible | 170.2097.07         |
| 2 / 7  | 25-8 PaErr                          | 1 = 25-group 8: Parameter not plausible | 170.2097.08         |
| 3 / 0  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 1  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 2  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 3  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 4  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 5  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 6  | <user-defined>                      | not pre-allocated                       | -                   |
| 3 / 7  | <user-defined>                      | not pre-allocated                       | -                   |

### 2.2.1.3 Synchronization

| Offset | Designation of the SIPROTEC objects | Comments                                | Internal object no. |
|--------|-------------------------------------|---|---------------------|
| 4 / 0  | 25-1 activ                          | 1 = 25 Function group 1 is active       | 170.2311.01         |
| 4 / 1  | 25-2 activ                          | 1 = 25 Function group 2 is active       | 170.2311.02         |
| 4 / 2  | 25-3 activ                          | 1 = 25 Function group 3 is active       | 170.2311.03         |
| 4 / 3  | 25-4 activ                          | 1 = 25 Function group 4 is active       | 170.2311.04         |
| 4 / 4  | 25-5 activ                          | 1 = 25 Function group 5 is active       | 170.2311.05         |
| 4 / 5  | 25-6 activ                          | 1 = 25 Function group 6 is active       | 170.2311.06         |
| 4 / 6  | 25-7 activ                          | 1 = 25 Function group 7 is active       | 170.2311.07         |
| 4 / 7  | 25-8 activ                          | 1 = 25 Function group 8 is active       | 170.2311.08         |
| 5 / 0  | 25-1 meas.                          | 1 = 25-group 1: measurement in progress | 170.2022.01         |
| 5 / 1  | 25-2 meas.                          | 1 = 25-group 2: measurement in progress | 170.2022.02         |
| 5 / 2  | 25-3 meas.                          | 1 = 25-group 3: measurement in progress | 170.2022.03         |
| 5 / 3  | 25-4 meas.                          | 1 = 25-group 4: measurement in progress | 170.2022.04         |
| 5 / 4  | 25-5 meas.                          | 1 = 25-group 5: measurement in progress | 170.2022.05         |
| 5 / 5  | 25-6 meas.                          | 1 = 25-group 6: measurement in progress | 170.2022.06         |
| 5 / 6  | 25-7 meas.                          | 1 = 25-group 7: measurement in progress | 170.2022.07         |
| 5 / 7  | 25-8 meas.                          | 1 = 25-group 8: measurement in progress | 170.2022.08         |
| 6 / 0  | 25-1 BLOCK                          | 1 = 25-group 1 is BLOCKED               | 170.0051.01         |
| 6 / 1  | 25-2 BLOCK                          | 1 = 25-group 2 is BLOCKED               | 170.0051.02         |
| 6 / 2  | 25-3 BLOCK                          | 1 = 25-group 3 is BLOCKED               | 170.0051.03         |
| 6 / 3  | 25-4 BLOCK                          | 1 = 25-group 4 is BLOCKED               | 170.0051.04         |
| 6 / 4  | 25-5 BLOCK                          | 1 = 25-group 5 is BLOCKED               | 170.0051.05         |
| 6 / 5  | 25-6 BLOCK                          | 1 = 25-group 6 is BLOCKED               | 170.0051.06         |

| Offset | Designation of the SIPROTEC objects | Comments   | Internal object no. |
|--------|-------------------------------------|--|---------------------|
| 6 / 6  | 25-7 BLOCK                          | 1 = 25-group 7 is BLOCKED                            | 170.0051.07         |
| 6 / 7  | 25-8 BLOCK                          | 1 = 25-group 8 is BLOCKED                            | 170.0051.08         |
| 7 / 0  | 25 V1>V2<                           | 1 = 25 Condition V1> V2< fulfilled                   | 222.2027.01         |
| 7 / 1  | 25 V1<V2>                           | 1 = 25 Condition V1< V2> fulfilled                   | 222.2028.01         |
| 7 / 2  | 25 V1<V2<                           | 1 = 25 Condition V1< V2< fulfilled                   | 222.2029.01         |
| 7 / 3  | 25 Vdiff ok                         | 1 = 25 Voltage difference (Vdiff) okay               | 222.2030.01         |
| 7 / 4  | 25 fdiff ok                         | 1 = 25 Frequency difference (fdiff) okay             | 222.2031.01         |
| 7 / 5  | 25 $\alpha$ diff ok                 | 1 = 25 Angle difference (alphadiff) okay             | 222.2032.01         |
| 7 / 6  | 25 f1>>                             | 1 = 25 Frequency f1 > fmax permissible               | 222.2033.01         |
| 7 / 7  | 25 f1<<                             | 1 = 25 Frequency f1 < fmin permissible               | 222.2034.01         |
| 8 / 0  | 25 f2>>                             | 1 = 25 Frequency f2 > fmax permissible               | 222.2035.01         |
| 8 / 1  | 25 f2<<                             | 1 = 25 Frequency f2 < fmin permissible               | 222.2036.01         |
| 8 / 2  | 25 V1>>                             | 1 = 25 Voltage V1 > Vmax permissible                 | 222.2037.01         |
| 8 / 3  | 25 V1<<                             | 1 = 25 Voltage V1 < Vmin permissible                 | 222.2038.01         |
| 8 / 4  | 25 V2>>                             | 1 = 25 Voltage V2 > Vmax permissible                 | 222.2039.01         |
| 8 / 5  | 25 V2<<                             | 1 = 25 Voltage V2 < Vmin permissible                 | 222.2040.01         |
| 8 / 6  | 25 V2>V1                            | 1 = 25 Vdiff too large (V2>V1)                       | 222.2090.01         |
| 8 / 7  | 25 V2<V1                            | 1 = 25 Vdiff too large (V2<V1)                       | 222.2091.01         |
| 9 / 0  | 25 f2>f1                            | 1 = 25 fdiff too large (f2>f1)                       | 222.2092.01         |
| 9 / 1  | 25 f2<f1                            | 1 = 25 fdiff too large (f2<f1)                       | 222.2093.01         |
| 9 / 2  | 25 $\alpha$ 2> $\alpha$ 1           | 1 = 25 alphadiff too large ( $\alpha$ 2> $\alpha$ 1) | 222.2094.01         |
| 9 / 3  | 25 $\alpha$ 2< $\alpha$ 1           | 1 = 25 alphadiff too large ( $\alpha$ 2< $\alpha$ 1) | 222.2095.01         |
| 9 / 4  | 25 synchron 1                       | 1 = 25 Synchronization condition 1 okay              | 222.2302.01         |
| 9 / 5  | 25 synchron 2                       | 1 = 25 Synchronization condition 2 okay              | 222.2303.01         |
| 9 / 6  | <user-defined>                      | not pre-allocated                                    | -                   |
| 9 / 7  | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 0 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 1 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 2 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 3 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 4 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 5 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 6 | <user-defined>                      | not pre-allocated                                    | -                   |
| 10 / 7 | <user-defined>                      | not pre-allocated                                    | -                   |
| 11 / 0 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-1                  | 170.2300.01         |
| 11 / 1 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-1                  | 170.2301.01         |
| 11 / 2 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-2                  | 170.2300.02         |
| 11 / 3 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-2                  | 170.2301.02         |

| Offset | Designation of the SIPROTEC objects | Comments                            | Internal object no. |
|--------|-------------------------------------|-------------------------------------|---------------------|
| 11 / 4 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-3 | 170.2300.03         |
| 11 / 5 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-3 | 170.2301.03         |
| 11 / 6 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-4 | 170.2300.04         |
| 11 / 7 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-4 | 170.2301.04         |
| 12 / 0 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-5 | 170.2300.05         |
| 12 / 1 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-5 | 170.2301.05         |
| 12 / 2 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-6 | 170.2300.06         |
| 12 / 3 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-6 | 170.2301.06         |
| 12 / 4 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-7 | 170.2300.07         |
| 12 / 5 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-7 | 170.2301.07         |
| 12 / 6 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-8 | 170.2300.08         |
| 12 / 7 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-8 | 170.2301.08         |
| 13 / 0 | 25 V2 down                          | 1 = 25 decrease voltage V2          | 222.2324.01         |
| 13 / 1 | 25 V2 up                            | 1 = 25 increase voltage V2          | 222.2325.01         |
| 13 / 2 | 25 f2 down                          | 1 = 25 decrease frequency f2        | 222.2326.01         |
| 13 / 3 | 25 f2 up                            | 1 = 25 increase frequency f2        | 222.2327.01         |

#### 2.2.1.4 Single-point indications and taggings

- Single-point indications, protection annunciations and taggings (internal single-point indications) 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 13 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 13 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 13 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 13 / 7 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 0 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 2 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 3 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 14 / 7 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 0 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 2 | <user-defined>                      | not pre-allocated | -                   |

| Offset | Designation of the SIPROTEC objects | Comments          | Internal object no. |
|--------|-------------------------------------|-------------------|---------------------|
| 15 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 2 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 3 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 7 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 0 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 2 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 3 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 7 | <user-defined>                      | not pre-allocated | -                   |

**2.2.1.5 Internal commands (checkback indications)**

| Offset | Designation of the SIPROTEC objects | Comments                      | Internal object no. |
|--------|-------------------------------------|-------------------------------|---------------------|
| 17 / 0 | Group A                             | 1 = Setting group A is active | -                   |
| 17 / 1 | Group B                             | 1 = Setting group B is active | -                   |
| 17 / 2 | Group C                             | 1 = Setting group C is active | -                   |
| 17 / 3 | Group D                             | 1 = Setting group D is active | -                   |

**2.2.1.6 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 17 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 17 / 5 | <user-defined> ON                   |                   |                     |
| 17 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 17 / 7 | <user-defined> ON                   |                   |                     |

## 2.2.2 Measured values

- The measured values are transferred as secondary values.
- Measured values are only available at use of standard mapping 3-1.

| Offset | Designation of the SIPROTEC objects | Comments                  | Scaling<br>(32767 corresponds to...) | Internal object no. |
|--------|-------------------------------------|---------------------------|--------------------------------------|---------------------|
| 18     | V1 =                                | Measured value V1         | 3276.7 V                             | 25044               |
| 20     | V2 =                                | Measured value V2         | 3276.7 V                             | 25045               |
| 22     | f1 =                                | Measured value f1         | 327.67 Hz                            | 25046               |
| 24     | f2 =                                | Measured value f2         | 327.67 Hz                            | 25047               |
| 26     | dV =                                | Measured value dV         | 3276.7 V                             | 25048               |
| 28     | df =                                | Measured value df         | 327.67 Hz                            | 25049               |
| 30     | d $\alpha$ =                        | Measured value d $\alpha$ | 327.67 °                             | 25050               |
| 32     | <user-defined>                      | not pre-allocated         | -                                    | -                   |
| 34     | <user-defined>                      | not pre-allocated         | -                                    | -                   |
| 36     | <user-defined>                      | not pre-allocated         | -                                    | -                   |
| 38     | <user-defined>                      | not pre-allocated         | -                                    | -                   |
| 40     | <user-defined>                      | not pre-allocated         | -                                    | -                   |
| 42     | <user-defined>                      | not pre-allocated         | -                                    | -                   |



## Standard mapping 3-3

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7VE61 and 7VE63 if standard mapping 3-3 ist selected.

|     |                             |    |
|-----|-----------------------------|----|
| 3.1 | Message in output direction | 32 |
| 3.2 | Message in input direction  | 36 |

### 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<br>(the value at this position is ignored) | -                   |

#### 3.1.2 Double commands

- 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

- Ref. to chap. 1.5.1 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  | Setting group A                     | Activation of setting group A | -                   |
| 3 / 1  | Setting group A                     |                               |                     |
| 3 / 2  | Setting group B                     | Activation of setting group B | -                   |
| 3 / 3  | Setting group B                     |                               |                     |



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

### 3.1.4 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 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                   |                   |                     |
| 6 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 1  | <user-defined> ON                   |                   |                     |
| 6 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 3  | <user-defined> ON                   |                   |                     |
| 6 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 5  | <user-defined> ON                   |                   |                     |
| 6 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 6 / 7  | <user-defined> ON                   |                   |                     |
| 7 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 1  | <user-defined> ON                   |                   |                     |

| Offset | Designation of the SIPROTEC objects | Comments          | Internal object no. |
|--------|-------------------------------------|-------------------|---------------------|
| 7 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 3  | <user-defined> ON                   |                   |                     |
| 7 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 5  | <user-defined> ON                   |                   |                     |
| 7 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 7 / 7  | <user-defined> ON                   |                   |                     |
| 8 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 1  | <user-defined> ON                   |                   |                     |
| 8 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 3  | <user-defined> ON                   |                   |                     |
| 8 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 5  | <user-defined> ON                   |                   |                     |
| 8 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 8 / 7  | <user-defined> ON                   |                   |                     |
| 9 / 0  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 1  | <user-defined> ON                   |                   |                     |
| 9 / 2  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 3  | <user-defined> ON                   |                   |                     |
| 9 / 4  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 5  | <user-defined> ON                   |                   |                     |
| 9 / 6  | <user-defined> OFF                  | not pre-allocated | -                   |
| 9 / 7  | <user-defined> ON                   |                   |                     |
| 10 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 1 | <user-defined> ON                   |                   |                     |
| 10 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 3 | <user-defined> ON                   |                   |                     |
| 10 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 5 | <user-defined> ON                   |                   |                     |
| 10 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 10 / 7 | <user-defined> ON                   |                   |                     |
| 11 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 1 | <user-defined> ON                   |                   |                     |
| 11 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 3 | <user-defined> ON                   |                   |                     |
| 11 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 5 | <user-defined> ON                   |                   |                     |
| 11 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 11 / 7 | <user-defined> ON                   |                   |                     |

| Offset | Designation of the SIPROTEC objects | Comments          | Internal object no. |
|--------|-------------------------------------|-------------------|---------------------|
| 12 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 12 / 1 | <user-defined> ON                   |                   |                     |
| 12 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 12 / 3 | <user-defined> ON                   |                   |                     |
| 12 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 12 / 5 | <user-defined> ON                   |                   |                     |
| 12 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 12 / 7 | <user-defined> ON                   |                   |                     |
| 13 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 1 | <user-defined> ON                   |                   |                     |
| 13 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 3 | <user-defined> ON                   |                   |                     |
| 13 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 5 | <user-defined> ON                   |                   |                     |
| 13 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 13 / 7 | <user-defined> ON                   |                   |                     |
| 14 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 14 / 1 | <user-defined> ON                   |                   |                     |
| 14 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 14 / 3 | <user-defined> ON                   |                   |                     |
| 14 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 14 / 5 | <user-defined> ON                   |                   |                     |
| 14 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 14 / 7 | <user-defined> ON                   |                   |                     |
| 15 / 0 | <user-defined> OFF                  | not pre-allocated | -                   |
| 15 / 1 | <user-defined> ON                   |                   |                     |
| 15 / 2 | <user-defined> OFF                  | not pre-allocated | -                   |
| 15 / 3 | <user-defined> ON                   |                   |                     |
| 15 / 4 | <user-defined> OFF                  | not pre-allocated | -                   |
| 15 / 5 | <user-defined> ON                   |                   |                     |
| 15 / 6 | <user-defined> OFF                  | not pre-allocated | -                   |
| 15 / 7 | <user-defined> ON                   |                   |                     |

## 3.2 Message in input direction

### 3.2.1 Annunciations

#### 3.2.1.1 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                   |                   |                     |

#### 3.2.1.2 Single-point indications and taggings

- Single-point indications (e.g. checkback indications of single commands), protection annunciations and taggings (internal single-point indications) 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 | -                   |

#### 3.2.1.3 Setting group

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

## 3.2.1.4 Diagnosis

| Offset | Designation of the SIPROTEC objects | Comments  | Internal object no. |
|--------|-------------------------------------|---|---------------------|
| 2 / 0  | Device OK                           | 1 = Update of the device replica in the SIPROTEC device completed after initial start or restart  | 51                  |
| 2 / 1  | ProtActive                          | 1 = At least one protection function is active  | 52                  |
| 2 / 2  | <user-defined>                      | not pre-allocated   | -                   |
| 2 / 3  | Error Sum Alarm                     | 1 = Error with a summary alarm  | 140                 |
| 2 / 4  | Alarm Sum Event                     | 1 = Alarm Summary Event   | 160                 |
| 2 / 5  | Relay PICKUP                        | 1 = Relay PICKUP  | 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 Error messages synchronization

| Offset | Designation of the SIPROTEC objects | Comments                                   | Internal object no. |
|--------|-------------------------------------|--|---------------------|
| 3 / 0  | 25 MonTimeExc                       | 1 = 25-group 1: Monitoring time exceeded   | 222.2025.01         |
| 3 / 1  | 25 FG-Error                         | 1 = 25 Multiple selection of funct.-groups | 222.2096.01         |
| 3 / 2  | 25 Fail.Conf.                       | 1 = 25 Failure in Configuration            | 222.2331.01         |
| 3 / 3  | 25 sup.asym.                        | 1 = 25-supervision V1,V2 asymmetrical      | 222.2309.01         |
| 3 / 4  | 25 sup. $\alpha$                    | 1 = 25-supervision Alpha>                  | 222.2310.01         |
| 3 / 5  | <user-defined>                      | not pre-allocated                          | -                   |
| 3 / 6  | <user-defined>                      | not pre-allocated                          | -                   |
| 3 / 7  | <user-defined>                      | not pre-allocated                          | -                   |
| 4 / 0  | 25-1 PaErr                          | 1 = 25-group 1: Parameter not plausible    | 170.2097.01         |
| 4 / 1  | 25-2 PaErr                          | 1 = 25-group 2: Parameter not plausible    | 170.2097.02         |
| 4 / 2  | 25-3 PaErr                          | 1 = 25-group 3: Parameter not plausible    | 170.2097.03         |
| 4 / 3  | 25-4 PaErr                          | 1 = 25-group 4: Parameter not plausible    | 170.2097.04         |
| 4 / 4  | 25-5 PaErr                          | 1 = 25-group 5: Parameter not plausible    | 170.2097.05         |
| 4 / 5  | 25-6 PaErr                          | 1 = 25-group 6: Parameter not plausible    | 170.2097.06         |
| 4 / 6  | 25-7 PaErr                          | 1 = 25-group 7: Parameter not plausible    | 170.2097.07         |
| 4 / 7  | 25-8 PaErr                          | 1 = 25-group 8: Parameter not plausible    | 170.2097.08         |
| 5 / 0  | <user-defined>                      | not pre-allocated                          | -                   |
| 5 / 1  | <user-defined>                      | not pre-allocated                          | -                   |

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

### 3.2.1.6 Synchronization

| Offset | Designation of the SIPROTEC objects | Comments                                | Internal object no. |
|--------|-------------------------------------|---|---------------------|
| 6 / 0  | 25-1 activ                          | 1 = 25 Function group 1 is active       | 170.2311.01         |
| 6 / 1  | 25-2 activ                          | 1 = 25 Function group 2 is active       | 170.2311.02         |
| 6 / 2  | 25-3 activ                          | 1 = 25 Function group 3 is active       | 170.2311.03         |
| 6 / 3  | 25-4 activ                          | 1 = 25 Function group 4 is active       | 170.2311.04         |
| 6 / 4  | 25-5 activ                          | 1 = 25 Function group 5 is active       | 170.2311.05         |
| 6 / 5  | 25-6 activ                          | 1 = 25 Function group 6 is active       | 170.2311.06         |
| 6 / 6  | 25-7 activ                          | 1 = 25 Function group 7 is active       | 170.2311.07         |
| 6 / 7  | 25-8 activ                          | 1 = 25 Function group 8 is active       | 170.2311.08         |
| 7 / 0  | 25-1 meas.                          | 1 = 25-group 1: measurement in progress | 170.2022.01         |
| 7 / 1  | 25-2 meas.                          | 1 = 25-group 2: measurement in progress | 170.2022.02         |
| 7 / 2  | 25-3 meas.                          | 1 = 25-group 3: measurement in progress | 170.2022.03         |
| 7 / 3  | 25-4 meas.                          | 1 = 25-group 4: measurement in progress | 170.2022.04         |
| 7 / 4  | 25-5 meas.                          | 1 = 25-group 5: measurement in progress | 170.2022.05         |
| 7 / 5  | 25-6 meas.                          | 1 = 25-group 6: measurement in progress | 170.2022.06         |
| 7 / 6  | 25-7 meas.                          | 1 = 25-group 7: measurement in progress | 170.2022.07         |
| 7 / 7  | 25-8 meas.                          | 1 = 25-group 8: measurement in progress | 170.2022.08         |
| 8 / 0  | 25-1 BLOCK                          | 1 = 25-group 1 is BLOCKED               | 170.0051.01         |
| 8 / 1  | 25-2 BLOCK                          | 1 = 25-group 2 is BLOCKED               | 170.0051.02         |
| 8 / 2  | 25-3 BLOCK                          | 1 = 25-group 3 is BLOCKED               | 170.0051.03         |
| 8 / 3  | 25-4 BLOCK                          | 1 = 25-group 4 is BLOCKED               | 170.0051.04         |
| 8 / 4  | 25-5 BLOCK                          | 1 = 25-group 5 is BLOCKED               | 170.0051.05         |
| 8 / 5  | 25-6 BLOCK                          | 1 = 25-group 6 is BLOCKED               | 170.0051.06         |
| 8 / 6  | 25-7 BLOCK                          | 1 = 25-group 7 is BLOCKED               | 170.0051.07         |
| 8 / 7  | 25-8 BLOCK                          | 1 = 25-group 8 is BLOCKED               | 170.0051.08         |
| 9 / 0  | 25 V1>V2<                           | 1 = 25 Condition V1> V2< fulfilled      | 222.2027.01         |
| 9 / 1  | 25 V1<V2>                           | 1 = 25 Condition V1< V2> fulfilled      | 222.2028.01         |
| 9 / 2  | 25 V1<V2<                           | 1 = 25 Condition V1< V2< fulfilled      | 222.2029.01         |

| Offset | Designation of the SIPROTEC objects | Comments   | Internal object no. |
|--------|-------------------------------------|--|---------------------|
| 9 / 3  | 25 Vdiff ok                         | 1 = 25 Voltage difference (Vdiff) okay               | 222.2030.01         |
| 9 / 4  | 25 fdiff ok                         | 1 = 25 Frequency difference (fdiff) okay             | 222.2031.01         |
| 9 / 5  | 25 $\alpha$ diff ok                 | 1 = 25 Angle difference (alphadiff) okay             | 222.2032.01         |
| 9 / 6  | 25 f1>>                             | 1 = 25 Frequency f1 > fmax permissible               | 222.2033.01         |
| 9 / 7  | 25 f1<<                             | 1 = 25 Frequency f1 < fmin permissible               | 222.2034.01         |
| 10 / 0 | 25 f2>>                             | 1 = 25 Frequency f2 > fmax permissible               | 222.2035.01         |
| 10 / 1 | 25 f2<<                             | 1 = 25 Frequency f2 < fmin permissible               | 222.2036.01         |
| 10 / 2 | 25 V1>>                             | 1 = 25 Voltage V1 > Vmax permissible                 | 222.2037.01         |
| 10 / 3 | 25 V1<<                             | 1 = 25 Voltage V1 < Vmin permissible                 | 222.2038.01         |
| 10 / 4 | 25 V2>>                             | 1 = 25 Voltage V2 > Vmax permissible                 | 222.2039.01         |
| 10 / 5 | 25 V2<<                             | 1 = 25 Voltage V2 < Vmin permissible                 | 222.2040.01         |
| 10 / 6 | 25 V2>V1                            | 1 = 25 Vdiff too large (V2>V1)                       | 222.2090.01         |
| 10 / 7 | 25 V2<V1                            | 1 = 25 Vdiff too large (V2<V1)                       | 222.2091.01         |
| 11 / 0 | 25 f2>f1                            | 1 = 25 fdiff too large (f2>f1)                       | 222.2092.01         |
| 11 / 1 | 25 f2<f1                            | 1 = 25 fdiff too large (f2<f1)                       | 222.2093.01         |
| 11 / 2 | 25 $\alpha$ 2> $\alpha$ 1           | 1 = 25 alphadiff too large ( $\alpha$ 2> $\alpha$ 1) | 222.2094.01         |
| 11 / 3 | 25 $\alpha$ 2< $\alpha$ 1           | 1 = 25 alphadiff too large ( $\alpha$ 2< $\alpha$ 1) | 222.2095.01         |
| 11 / 4 | 25 synchron 1                       | 1 = 25 Synchronization condition 1 okay              | 222.2302.01         |
| 11 / 5 | 25 synchron 2                       | 1 = 25 Synchronization condition 2 okay              | 222.2303.01         |
| 11 / 6 | <user-defined>                      | not pre-allocated                                    | -                   |
| 11 / 7 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 0 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 1 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 2 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 3 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 4 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 5 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 6 | <user-defined>                      | not pre-allocated                                    | -                   |
| 12 / 7 | <user-defined>                      | not pre-allocated                                    | -                   |
| 13 / 0 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-1                  | 170.2300.01         |
| 13 / 1 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-1                  | 170.2301.01         |
| 13 / 2 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-2                  | 170.2300.02         |
| 13 / 3 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-2                  | 170.2301.02         |
| 13 / 4 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-3                  | 170.2300.03         |
| 13 / 5 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-3                  | 170.2301.03         |
| 13 / 6 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-4                  | 170.2300.04         |
| 13 / 7 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-4                  | 170.2301.04         |
| 14 / 0 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-5                  | 170.2300.05         |

| Offset | Designation of the SIPROTEC objects | Comments                            | Internal object no. |
|--------|-------------------------------------|-------------------------------------|---------------------|
| 14 / 1 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-5 | 170.2301.05         |
| 14 / 2 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-6 | 170.2300.06         |
| 14 / 3 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-6 | 170.2301.06         |
| 14 / 4 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-7 | 170.2300.07         |
| 14 / 5 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-7 | 170.2301.07         |
| 14 / 6 | 25 CloseRel 1                       | 1 = 25 Release of Close Command 1-8 | 170.2300.08         |
| 14 / 7 | 25 CloseRel 2                       | 1 = 25 Release of Close Command 2-8 | 170.2301.08         |
| 15 / 0 | 25 V2 down                          | 1 = 25 decrease voltage V2          | 222.2324.01         |
| 15 / 1 | 25 V2 up                            | 1 = 25 increase voltage V2          | 222.2325.01         |
| 15 / 2 | 25 f2 down                          | 1 = 25 decrease frequency f2        | 222.2326.01         |
| 15 / 3 | 25 f2 up                            | 1 = 25 increase frequency f2        | 222.2327.01         |

### 3.2.1.7 Single-point indications and taggings

- Single-point indications, protection annunciations and taggings (internal single-point indications) 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. |
|--------|-------------------------------------|-------------------|---------------------|
| 15 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 15 / 7 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 0 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 2 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 3 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 16 / 7 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 0 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 1 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 2 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 3 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 4 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 5 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 6 | <user-defined>                      | not pre-allocated | -                   |
| 17 / 7 | <user-defined>                      | not pre-allocated | -                   |



### 3.2.2 Measured values

- The measured values are transferred as secondary values.

| Offset | Designation of the SIPROTEC objects | Comments                  | Scaling<br>(32767 corresponds to...) | Internal<br>object no. |
|--------|-------------------------------------|---------------------------|--------------------------------------|------------------------|
| 18     | V1 =                                | Measured value V1         | 3276.7 V                             | 25044                  |
| 20     | V2 =                                | Measured value V2         | 3276.7 V                             | 25045                  |
| 22     | f1 =                                | Measured value f1         | 327.67 Hz                            | 25046                  |
| 24     | f2 =                                | Measured value f2         | 327.67 Hz                            | 25047                  |
| 26     | dV =                                | Measured value dV         | 3276.7 V                             | 25048                  |
| 28     | df =                                | Measured value df         | 327.67 Hz                            | 25049                  |
| 30     | d $\alpha$ =                        | Measured value d $\alpha$ | 327.67 °                             | 25050                  |
| 32     | <user-defined>                      | not pre-allocated         | -                                    | -                      |
| 34     | <user-defined>                      | not pre-allocated         | -                                    | -                      |
| 36     | <user-defined>                      | not pre-allocated         | -                                    | -                      |
| 38     | <user-defined>                      | not pre-allocated         | -                                    | -                      |
| 40     | <user-defined>                      | not pre-allocated         | -                                    | -                      |
| 42     | <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. |
|--------|-------------------------------------|--|---------------------|
| 44     | Control_I                           | Handshake byte for event list via PROFIBUS-DP                            | -                   |
| 45     | SPARE                               | reserved for future use<br>(the value 0 is transmitted at this position) | -                   |
| 46     | Message block #1                    | Identification #1  | -                   |
| 47     |                                     | Value #1   |                     |
| 48     |                                     | Time stamp #1  |                     |
| 55     |                                     |  |                     |
| 56     | Message block #2                    | Identification #2  | -                   |
| 57     |                                     | Value #2   |                     |
| 58     |                                     | Time stamp #2  |                     |
| 65     |                                     |  |                     |
| 66     | Message block #3                    | Identification #3  | -                   |
| 67     |                                     | Value #3   |                     |
| 68     |                                     | Time stamp #3  |                     |
| 75     |                                     |  |                     |

# 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 /<br/>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 /<br/>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  |



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