

# SIPROTEC

## Multifunctional machine protection 7UM62

Communication module

PROFIBUS-DP  
Bus mapping

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The information in this manual is checked periodically, and necessary corrections will be included in future editions. We appreciate any suggested improvements.

We reserve the right to make technical improvements without notice.

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# Preface

## Purpose of this manual

This manual describes the data in the PROFIBUS-DP messages of the SIPROTEC device 7UM62 and is divided into the following topics:

- Data of the PROFIBUS-DP messages → Chapter 1,
- Standard mappings 3-1 to 3-3 → Chapter 2,
- Standard mapping 3-4 → Chapter 3,
- Standard mapping 3-5 → Chapter 4.

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 International Standards:

- IEC 61158  
“Digital data communications for measurement and control -  
Fieldbus for use in industrial control systems”  
Communication profile type 3
- IEC 61784  
“Digital data communications for measurement and control”  
Communication profile family CPF3/1

<b>Validity</b>	<p>This manual is valid for the SIPROTEC device:</p> <ul style="list-style-type: none"><li>• 7UM62 (firmware version 4.00 or higher),</li><li>• 7UM62 (firmware version 4.10 or higher) at use of<ul style="list-style-type: none"><li>• Standard mapping 3-5</li></ul></li></ul> <p>with</p> <ul style="list-style-type: none"><li>• PROFIBUS-DP communication module version 02.00.05 or higher,</li><li>• PROFIBUS-DP communication module version 03.00.03 or higher at use of<ul style="list-style-type: none"><li>• Standard mappings 3-4 and 3-5.</li></ul></li></ul> <p>For device parameterization have to be used:</p> <ul style="list-style-type: none"><li>• DIGSI 4.3 or higher,</li><li>• DIGSI 4.21 considering the preconditions explained in the manual “SIPROTEC Communication module, PROFIBUS-DP - Communication profile” (ref. to page 3),</li><li>• PROFIBUS-DP standard mappings 3-1 to 3-n (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
	1.00	First edition, Doc.-No.: C53000-L1840-B009-04 Sept. 26 <sup>th</sup> , 2001
Chap. 1.4 Chap. 2.1.3 Chap. 2.2.1.27 Chap. 2.2.1.32 - 2.2.1.36 Chap. 2.2.2	2.00	<ul style="list-style-type: none"> <li>• Standard mapping's data sizes now listed by information types</li> <li>• Message positions 5/4 to 5/7 available for double commands</li> <li>• Offset 13/5: 64R-2 picked up --&gt; 64R-1 picked up</li> <li>• Additional indications at byte offsets 18 and 19 with 7UM62 V4.10</li> <li>• Offset 42: <math>\Theta R/\Theta R_{max}</math> --&gt; &lt;user-defined&gt;</li> </ul> March 26 <sup>th</sup> , 2002
general  Chap. 1.4, 3 Chap. 1.3.2	3.00	<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 3-4 with event list</li> <li>• note added: Temperature measured values from the RTD-Box can only be transmitted as primary values</li> </ul> Nov. 18 <sup>th</sup> , 2004
Chap. 1.4, 4	3.10	<ul style="list-style-type: none"> <li>• New: description of Standard mapping 3-5 with event list</li> </ul> Oct. 23 <sup>rd</sup> , 2006
Chap. 1.3.3	3.11	<ul style="list-style-type: none"> <li>• Scaling of the metered measurands</li> </ul> March 21 <sup>st</sup> , 2013







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## Data of the PROFIBUS-DP messages

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

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## 1.1 Explanations



*Note:*

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

Chapters 2 to 4 define the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC device 7UM62 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.
20	IA S2 =	Operat. meas. current A side 2	327.67 %	724

The measured value "IA S2" is assigned to data byte 20 (most significant byte of the measured value) and data byte 21 (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.
2 / 0	50/51-1 Ph A PU	1 = 50/51-1 Phase A picked up	1811

The single-point indication "50/51 - 1 Ph A PU" is located in byte 2, bit position 2<sup>0</sup>.



*Note:*

The definition of the data types (single-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, 3.1 and 4.1) allow:

- command outputs through the output relays of the SIPROTEC devices (external commands),
- manipulation of taggings (internal commands),
- transmission of measured values to the SIPROTEC device.

### 1.2.1 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.
- 

### 1.2.2 Measured values



*Note:*

- Unlike measured values in input direction, the identification "Overflow" or "Invalid" is not indicated with the value -32768 (ref. to manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile").
  - If an evaluation of the measurement status of the cooling medium temperature is required then the indication ">Fail.Temp.inp" (>49 Failure temperature input, internal object no. = 1508), routed to "Destination system interface" in the **DIGSI Configuration matrix**, has to be used for this separately.
-

## 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, 3.2 and 4.2) allow:

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

### 1.3.1 Indications



*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 indications (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 transferred percentage values are with reference to the nominal values of the primary equipment.
  - Changes of the scaling of the measured values and the type (percentage value or primary value) 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).
  - Temperature measured values from the RTD-Box can only be transmitted as primary values.
-



### 1.3.3 Metered measurands

#### Scaling

The scaling of the metered measurands which are derived from measured values refers to:

$$(60000 * V_{\text{nom, secondary}}/100 \text{ V}) \text{ impulses per hour for } S = S_{\text{nom}}$$

$S_{\text{nom}}$  = Rated Apparent Power of the Generator (parameter address = 0252)

$V_{\text{nom,secondary}}$  = phase-to-phase secondary voltage of the voltage transformer (parameter address = 0222)

#### Example

In the parameter set is configured:

$$S_{\text{nom}} = 5.27 \text{ MVA}$$

$$V_{\text{nom,secondary}} = 100 \text{ V}$$

60000 impulses correspond so that:

$$1 \text{ h} * 5.27 \text{ MVA} * 100 \text{ V}/100 \text{ V} = 5.27 \text{ MVAh}$$



*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 are five standard mappings (standard mapping 3-1 to standard mapping 3-5) available for the SIPROTEC device 7UM62 which differ in the available data size in the PROFIBUS-DP messages.

### Standard mapping 3-1

*The standard mapping 3-1 contains:*

Output direction:

- 2 Double commands (with 7UM62 V4.10 or higher)
- 22 Single commands
- 1 Measured value (Cooling medium temperature)

Input direction:

- 2 Double-point indications (with 7UM62 V4.10 or higher)
- 160 Single-point indications (7UM62 V4.0: 144 Single-point indications)
- 16 Measured values (integer)
- 4 Metered measurands (counter, unsigned long)

### Standard mapping 3-2

*The standard mapping 3-2 contains:*

Output direction:

- 2 Double commands (with 7UM62 V4.10 or higher)
- 22 Single commands

Input direction:

- 2 Double-point indications (with 7UM62 V4.10 or higher)
- 160 Single-point indications (7UM62 V4.0: 144 Single-point indications)
- 16 Measured values (integer)

Unlike the standard mapping 3-1 there are no measured values in output direction and no metered measurands in input direction contained in the standard mapping 3-2.

### Standard mapping 3-3

*The standard mapping 3-3 contains:*

Output direction:

- 2 Double commands (with 7UM62 V4.10 or higher)
- 22 Single commands

Input direction:

- 2 Double-point indications (with 7UM62 V4.10 or higher)
- 160 Single-point indications (7UM62 V4.0: 144 Single-point indications)

Unlike the standard mapping 3-1 there are no measured values in output direction as well as no measured values and metered measurands in input direction contained in the standard mapping 3-3.

**Standard mapping  
3-4***The standard mapping 3-4 contains:*

Output direction:

- Handshake byte for event list via PROFIBUS-DP
- 4 Double commands
- 12 Single commands
- 1 Measured value (Cooling medium temperature)

Input direction:

- 4 Double-point indications
- 152 Single-point indications
- 16 Measured values (integer)
- 4 Metered measurands (counters, unsigned long)
- Handshake byte and three message blocks for event list via PROFIBUS-DP

**Standard mapping  
3-5***The standard mapping 3-5 contains:*

Output direction:

- Handshake byte for event list via PROFIBUS-DP
- 2 Double commands
- 22 Single commands
- 1 Measured value (Cooling medium temperature)

Input direction:

- 2 Double-point indications
- 160 Single-point indications
- 16 Measured values (integer)
- 4 Metered measurands (counter, unsigned long)
- Handshake byte and three message blocks for event list via PROFIBUS-DP

**Configuration data***Standard mapping 3-1: 1FH 1FH 1FH 1FH 13H 27H*

(68 bytes input-, 8 bytes output direction)

*Standard mapping 3-2: 1FH 1FH 1FH 13H 25H*

(52 bytes input-, 6 bytes output direction)

*Standard mapping 3-3: 1FH 13H 25H*

(20 bytes input-, 6 bytes output direction)

*Standard mapping 3-4: 1FH 1FH 1FH 1FH 13H DFH 27H*

(100 bytes input-, 8 bytes output direction)

*Standard mapping 3-5: 1FH 1FH 1FH 1FH 13H DFH 29H*

(100 bytes input-, 10 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 7UM62 standard mappings and to allocate associated addresses in the I/O addressing range of the PROFIBUS-DP master:

*Standard mapping 3-1:*

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_Ix	
1	Input - 16 Bytes	Adr_Ix + 16	
2	Input - 16 Bytes	Adr_Ix + 32	
3	Input - 16 Bytes	Adr_Ix + 48	
4	Input - 4 Bytes	Adr_Ix + 64	
5	Output - 8 Bytes		Adr_Ox

*Standard mapping 3-2:*

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

*Standard mapping 3-3:*

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_Ix	
1	Input - 4 Bytes	Adr_Ix + 16	
2	Output - 6 Bytes		Adr_Ox

*Standard mapping 3-4:*

Module	Order number	Input address	Output address
0	Input - 16 Bytes	Adr_Ix	
1	Input - 16 Bytes	Adr_Ix + 16	
2	Input - 16 Bytes	Adr_Ix + 32	
3	Input - 16 Bytes	Adr_Ix + 48	
4	Input - 4 Bytes	Adr_Ix + 64	
5	Input - 16 Words, consistent	Adr_Ix + 68	
6	Output - 8 Bytes		Adr_Ox

*Standard mapping 3-5:*

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	Input - 16 Words, consistent	Adr_lx + 68	
6	Output - 10 Bytes		Adr_Ox

Adr\_lx and Addr\_Ox indicates 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, 3.2 and 4.2).

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, 3.1 and 4.1).

*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, 3.2.3 and 4.2.3) can be correctly carried out in the PROFIBUS-DP master.

## 1.5 Notes to SIPROTEC objects

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



*Note:*

- The descriptions of the standard mappings (ref. to chap. 2 to 4) contain the pre-allocation of the mapping files at delivery or at first assignment of a mapping in DIGSI to the SIPROTEC device.
  - Changes of the allocation and the scaling of the measured values are possible in adaptation to the concrete installation environment.  
You find information about this in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile" (ref. to page 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 to 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 to 3-3:* ref. to chap. 2.1.2

*Standard mapping 3-4:* ref. to chap. 3.1.3

*Standard mapping 3-5:* ref. to chap. 4.1.3

## 1.5.2 Cooling medium temperature

- The cooling medium temperature is transferred in per cent (%) to the 7UM62. The protection device must be informed about the 100 % corresponding temperature using parameter **49 Temperature for Scaling** (function **49 Thermal Overload**, parameter address = 1608).
- The temperature value via PROFIBUS-DP is only taken into account and shown at the SIPROTEC device if the parameter **49 Temperature Input** (function **49 Thermal Overload**, parameter address = 1607) has the value **Fieldbus**.

### Reference

*Standard mapping 3-1:* ref. to chap. 2.1.4

*Standard mappings 3-2 and 3-3:* not available

*Standard mapping 3-4:* ref. to chap. 3.1.5

*Standard mapping 3-5:* ref. to chap. 4.1.5







## Standard mappings 3-1 to 3-3

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC device 7UM62 if one of the standard mappings 3-1 to 3-3 is selected.

2.1	Message in output direction	26
2.2	Message in input direction	29

## 2.1 Message in output direction

### 2.1.1 User-defined commands and taggings

- User-defined 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		

## 2.1.2 Internal Commands

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

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

## 2.1.3 Double commands

- With 7UM62 V4.10 or higher, double commands with double-point indications as checkback indication can be routed on these positions as “Source system interface” using the **DIGSI Configuration matrix**.
- 7UM62 V4.0: single commands can be routed on these positions as “Source system interface”.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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		

### 2.1.4 Measured values

- Measured values in output direction are only available at use of standard mapping 3-1 (ref. to chap. 1.4).
- Ref. to chap. 1.5.2 for additional notes regarding the measured value “Cooling medium temperature”.

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
6	AMB.TEMP =	Cooling medium temperature	327.67 %	-

## 2.2 Message in input direction

### 2.2.1 Indications

#### 2.2.1.1 User-defined indications

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

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

#### 2.2.1.2 Diagnosis

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
1 / 0	Device OK	1 = Update of the device replica in the SIPROTEC device completed after initial start or restart	51
1 / 1	ProtActive	1 = At least one protection function is active	52
1 / 2	Error Sum Alarm	1 = Error with a summary alarm ON	140
1 / 3	Alarm Sum Event	1 = Alarm summary event ON	160
1 / 4	Relay PICKUP	1 = Relay PICKUP (group signal)	501
1 / 5	Relay TRIP	1 = Relay GENERAL TRIP command	511
1 / 6	Operat. Cond.	1 = Suitable measured quantities are present at the device inputs ( $V > 0,1 * V_{nom}$ , $I > 0,1 * I_{nom}$ and $10 \text{ Hz} < \text{Freq.} < 70 \text{ Hz}$ )	5002
1 / 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.)	-

### 2.2.1.3 Overcurrent time protection I>

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 0	50/51-1 Ph A PU	1 = 50/51-1 Phase A picked up	1811
2 / 1	50/51-1 Ph B PU	1 = 50/51-1 Phase B picked up	1812
2 / 2	50/51-1 Ph C PU	1 = 50/51-1 Phase C picked up	1813
2 / 3	V< seal in	1 = 50/51-1 undervoltage seal-in	1970
2 / 4	50/51 TRIP	1 = 50/51 I> TRIP	1815

### 2.2.1.4 Overcurrent time protection I>>

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 5	67 forward	1 = 67 I>> direction forward	1806
2 / 6	67 backward	1 = 67 I>> direction backward	1807
2 / 7	50/51-2 Ph A PU	1 = 50/51-2 Phase A picked up	1801
3 / 0	50/51-2 Ph B PU	1 = 50/51-2 Phase B picked up	1802
3 / 1	50/51-2 Ph C PU	1 = 50/51-2 Phase C picked up	1803
3 / 2	51/67 TRIP	1 = 50/51/67 I>> TRIP	1809

### 2.2.1.5 Inverse time overcurrent protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 3	51V Ph A PU	1 = 51V Phase A picked up	1896
3 / 4	51V Ph B PU	1 = 51V Phase B picked up	1897
3 / 5	51V Ph C PU	1 = 51V Phase C picked up	1898
3 / 6	51V TRIP	1 = 51V TRIP	1900
3 / 7	<user-defined>	not pre-allocated	-

### 2.2.1.6 Thermal overload protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 0	49 O/L I Alarm	1 = 49 Overload Current Alarm (I alarm)	1515
4 / 1	49 O/L Θ Alarm	1 = 49 Thermal Overload Alarm	1516
4 / 2	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521

**2.2.1.7 Unbalanced load protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 3	46-1 Warn	1 = 46-1 Current warning stage	5156
4 / 4	46-1 picked up	1 = 46-1 picked up	5165
4 / 5	46-2 picked up	1 = 46-2 picked up	5159
4 / 6	46-2 TRIP	1 = 46-2 TRIP of current stage	5160
4 / 7	46-⊖ TRIP	1 = 46 TRIP of thermal stage	5161

**2.2.1.8 Sensitive ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 0	Failure 64R In<	1 = Failure 64R In<: measuring circuit	5396
5 / 1	50Ns-1 Pickup	1 = 50Ns-1 Pickup	1224
5 / 2	50Ns-1 TRIP	1 = 50Ns-1 TRIP	1226
5 / 3	50Ns-2 Pickup	1 = 50Ns-2 Pickup	1221
5 / 4	50Ns-2 TRIP	1 = 50Ns-2 TRIP	1223

**2.2.1.9 Stator ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 5	59/67 V0 PU	1 = 59N/67GN V0 picked up	5186
5 / 6	59/67 I0 PU	1 = 59N/67GN I0 picked up	5188
5 / 7	59/67 V0 TRIP	1 = 59N/67GN V0 stage TRIP	5187
6 / 0	59N/67GN TRIP	1 = 59N/67GN TRIP	5193

**2.2.1.10 Stator ground fault protection with 3<sup>rd</sup> harmonic**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 1	27TN/59TN PU	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic picked up	5567
6 / 2	27TN/59TN TRP	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic TRIP	5568

### 2.2.1.11 Overvoltage protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 3	59-1 picked up	1 = 59-1 Overvoltage V> picked up	6568
6 / 4	59-2 picked up	1 = 59-2 Overvoltage V>> picked up	6571
6 / 5	59-1 TRIP	1 = 59-1 Overvoltage V> TRIP	6570
6 / 6	59-2 TRIP	1 = 59-2 Overvoltage V>> TRIP	6573

### 2.2.1.12 Undervoltage protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 7	27-1 picked up	1 = 27-1 Undervoltage V< picked up	6533
7 / 0	27-2 picked up	1 = 27-2 Undervoltage V<< picked up	6537
7 / 1	27-1 TRIP	1 = 27-1 Undervoltage V< TRIP	6539
7 / 2	27-2 TRIP	1 = 27-2 Undervoltage V<< TRIP	6540

### 2.2.1.13 Frequency protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
7 / 3	81-1 picked up	1 = 81-1 picked up	5232
7 / 4	81-2 picked up	1 = 81-2 picked up	5233
7 / 5	81-3 picked up	1 = 81-3 picked up	5234
7 / 6	81-4 picked up	1 = 81-4 picked up	5235
7 / 7	81-1 TRIP	1 = 81-1 TRIP	5236
8 / 0	81-2 TRIP	1 = 81-2 TRIP	5237
8 / 1	81-3 TRIP	1 = 81-3 TRIP	5238
8 / 2	81-4 TRIP	1 = 81-4 TRIP	5239

### 2.2.1.14 Overexcitation protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 3	24 warn	1 = 24 V/f warning stage	5367
8 / 4	24-1 picked up	1 = 24-1 V/f> picked up	5370
8 / 5	24-2 picked up	1 = 24-2 V/f>> picked up	5373
8 / 6	24 th.TRIP	1 = 24 TRIP of thermal stage	5372
8 / 7	24-2 TRIP	1 = 24-2 TRIP of V/f>> stage	5371



**2.2.1.15 Reverse power protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 0	32R picked up	1 = 32R picked up	5096
9 / 1	32R TRIP	1 = 32R TRIP	5097
9 / 2	32R+SV TRIP	1 = 32R TRIP with stop valve	5098

**2.2.1.16 Forward power supervision**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 3	32F< picked up	1 = 32F P< stage picked up	5126
9 / 4	32F> picked up	1 = 32F P> stage picked up	5127
9 / 5	32F P< TRIP	1 = 32F P< stage TRIP	5128
9 / 6	32F P> TRIP	1 = 32F P> stage TRIP	5129

**2.2.1.17 Fuse Failure Monitor**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 7	VT Fuse Failure	1 = Voltage Transformer Fuse Failure	6575

**2.2.1.18 Underexcitation protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 0	40 Vexc failure	1 = 40 Exc. voltage failure recognized	5336
10 / 1	40 picked up	1 = 40 picked up	5337
10 / 2	40-1 TRIP	1 = 40 characteristic 1 TRIP	5344
10 / 3	40-2 TRIP	1 = 40 characteristic 2 TRIP	5345
10 / 4	40&V<TRIP	1 = 40 characteristic&Vexc< TRIP	5346
10 / 5	40-3 TRIP	1 = 40 characteristic 3 TRIP	5343

**2.2.1.19 Circuit breaker failure protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 6	50BF pickup	1 = 50BF picked up	1455
10 / 7	50BF TRIP	1 = 50BF TRIP	1471

**2.2.1.20 Impedance protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
11 / 0	21 Fault Ph A	1 = 21 Fault detection Phase A	3967
11 / 1	21 Fault Ph B	1 = 21 Fault detection Phase B	3968
11 / 2	21 Fault Ph C	1 = 21 Fault detection Phase C	3969
11 / 3	21 I> & U<	1 = 21 O/C with undervoltage seal in	3970
11 / 4	21 Z1< TRIP	1 = 21 Z1< TRIP	3977
11 / 5	21 Z1B< TRIP	1 = 21 Z1B< TRIP	3978
11 / 6	21 Z2< TRIP	1 = 21 Z2< TRIP	3979
11 / 7	21 T3> TRIP	1 = 21 T3> TRIP	3980

**2.2.1.21 Binary inputs**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 0	Ext 1 Gen.TRIP	1 = External trip 1: General TRIP	4537
12 / 1	Ext 2 Gen.TRIP	1 = External trip 2: General TRIP	4557
12 / 2	Ext 3 Gen.TRIP	1 = External trip 3: General TRIP	4577
12 / 3	Ext 4 Gen.TRIP	1 = External trip 4: General TRIP	4597

**2.2.1.22 Inadvertent energisation protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 4	50/27 picked up	1 = 50/27 picked up	5547
12 / 5	50/27 TRIP	1 = 50/27 TRIP	5548

**2.2.1.23 Trip coil monitor**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 6	FAIL: Trip cir.	1 = 74TC Failure Trip Circuit	6865

**2.2.1.24 Inverse undervoltage protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 7	Vp< picked up	1 = Inverse Undervoltage Vp< picked up	6525
13 / 0	Vp< TRIP	1 = Inverse Undervoltage Vp< TRIP	6527

**2.2.1.25 Startup supervision of motors**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 1	48 Rot. locked	1 = 48 Rotor LOCKED after Lock. Rotor Time	6822
13 / 2	48 picked up	1 = 48 Starting time supervision picked up	6823
13 / 3	48 TRIP	1 = 48 Starting time supervision TRIP	6821

**2.2.1.26 Startup counter for motors**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 4	66 TRIP	1 = 66 Restart inhibit motor TRIP	4827

**2.2.1.27 Rotor ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 5	64R-1 picked up	1 = 64R-1 picked up (Alarm)	5397
13 / 6	64R-2 TRIP	1 = 64R-2 TRIP	5399

**2.2.1.28 DC voltage/current protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 7	DC Prot.pick.up	1 = DC protection picked up	5306
14 / 0	DC Prot. TRIP	1 = DC protection TRIP	5307

**2.2.1.29 State of the out-of-step protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
14 / 1	78 det. char. 1	1 = 78 characteristic 1 picked up	5069
14 / 2	78 det. char. 2	1 = 78 characteristic 2 picked up	5070
14 / 3	78 TRIP char. 1	1 = 78 TRIP characteristic 1	5071
14 / 4	78 TRIP char. 2	1 = 78 TRIP characteristic 2	5072

**2.2.1.30 Differential Protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
14 / 5	87 picked up	1 = 87 Differential protection picked up	5631
14 / 6	87 TRIP	1 = 87 Differential protection TRIP	5671
14 / 7	87 TRIP Phase A	1 = 87 Differential protection: TRIP Phase A	5672
15 / 0	87 TRIP Phase B	1 = 87 Differential protection: TRIP Phase B	5673
15 / 1	87 TRIP Phase C	1 = 87 Differential protection: TRIP Phase C	5674
15 / 2	87 Diff> TRIP	1 = 87 Differential prot.: TRIP by IDIFF>	5691
15 / 3	87 Diff>> TRIP	1 = 87 Diff>> TRIP	5692

**2.2.1.31 User-defined indications**

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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	-

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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	-

### 2.2.1.32 Stator ground fault protection 100%

- Message positions 18 / 0 and 18 / 1 are available with 7UM62 V4.10 or higher.  
7UM62 V4.00: the value 0 is transmitted at these positions.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 0	SGF100 Alarm	1 = Stator ground fault prot. 100%: Alarm stage	5487
18 / 1	SGF100 TRIP	1 = Stator ground fault prot. 100%: TRIP	5489

### 2.2.1.33 Rotor ground fault protection 1-3 Hz

- Message positions 18 / 2 and 18 / 3 are available with 7UM62 V4.10 or higher.  
7UM62 V4.00: the value 0 is transmitted at these positions.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 2	64R-1_3Hzpickup	1 = 64R-1 (1-3Hz) picked up (Alarm)	5403
18 / 3	64R-2_3Hz TRIP	1 = 64R-2 (1-3Hz) TRIP	5407

### 2.2.1.34 Restricted ground fault protection

- Message positions 18 / 4 and 18 / 5 are available with 7UM62 V4.10 or higher.  
7UM62 V4.00: the value 0 is transmitted at these positions.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 4	87N picked up	1 = 87N picked up	5817
18 / 5	87N TRIP	1 = 87N TRIP	5821

### 2.2.1.35 Fault indications of protection functions

- Message positions 18 / 6 to 19 / 3 are available with 7UM62 V4.10 or higher. User-defined protection indications, single-point indications or taggings can be routed on the positions "<user-defined>" as "Destination system interface" using the **DIGSI Configuration matrix**.
- 7UM62 V4.00: the value 0 is transmitted at these positions.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 6	Failure SGF	1 = Failure stator ground fault prot. 100%	5486
18 / 7	Failure 64R	1 = Failure 64R: measuring circuit	5400
19 / 0	Fail 64R 1-3Hz	1 = Failure 64R protection (1-3Hz)	5401
19 / 1	<user-defined>	not pre-allocated	-
19 / 2	<user-defined>	not pre-allocated	-
19 / 3	<user-defined>	not pre-allocated	-

### 2.2.1.36 Double-point indications

- Message positions 19 / 4 to 19 / 7 are available with 7UM62 V4.10 or higher. User-defined 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**.
- 7UM62 V4.00: the value 0 is transmitted at these positions.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
19 / 4	<user-defined> OFF	not pre-allocated	-
19 / 5	<user-defined> ON		
19 / 6	<user-defined> OFF	not pre-allocated	-
19 / 7	<user-defined> ON		

## 2.2.2 Measured values

- Measured values in input direction are only available at use of standard mapping 3-1 or standard mapping 3-2 (ref. to chap. 1.4).
- 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.
20	IA S2 =	Operat. meas. current A side 2	327.67 %	724
22	IB S2 =	Operat. meas. current B side 2	327.67 %	725
24	IC S2 =	Operat. meas. current C side 2	327.67 %	726
26	Va-b =	Va-b	327.67 %	624
28	Vb-c =	Vb-c	327.67 %	625
30	Vc-a =	Vc-a	327.67 %	626
32	P =	P (active power)	327.67 %	641
34	Q =	Q (reactive power)	327.67 %	642
36	f =	Frequency	327.67 Hz	644
38	I2 =	I2 (negative sequence)	327.67 %	606
40	Θ/Θtrip =	Temperature rise for warning and trip	327.67 %	801
42	<user-defined>	not pre-allocated	-	-
44	IA S1 =	Operat. meas. current A side 1	327.67 %	721
46	IB S1 =	Operat. meas. current B side 1	327.67 %	722
48	IC S1 =	Operat. meas. current C side 1	327.67 %	723
50	<user-defined>	not pre-allocated	-	-

### 2.2.3 Metered measurands

- Metered measurands are only available at use of standard mapping 3-1 (ref. to chap. 1.4).
- 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





## Standard mapping 3-4

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC device 7UM62 if standard mapping 3-4 is selected.

3.1	Message in output direction	42
3.2	Message in input direction	44

### 3.1 Message in output direction

#### 3.1.1 Event list

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

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

#### 3.1.2 Double commands

- Double commands with double-point indications 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		
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		

#### 3.1.3 Internal Commands

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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		
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		

### 3.1.4 User-defined commands and taggings

- User-defined 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		

### 3.1.5 Measured values

- Ref. to chap. 1.5.2 for additional notes regarding the measured value “Cooling medium temperature”.

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
6	AMB.TEMP =	Cooling medium temperature	327.67 %	-

## 3.2 Message in input direction

### 3.2.1 Indications

#### 3.2.1.1 Double-point indications

- User-defined double-point indications (e.g. checkback indications of double commands) can be routed on these positions as “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		

#### 3.2.1.2 Single-point indications

- User-defined single-point indications (e.g. checkback indications of single 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.
1 / 0	<user-defined>	not pre-allocated	-
1 / 1	<user-defined>	not pre-allocated	-
1 / 2	<user-defined>	not pre-allocated	-
1 / 3	<user-defined>	not pre-allocated	-

#### 3.2.1.3 Setting group

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
1 / 4	Group A	1 = Group A is active	-
1 / 5	Group B	1 = Group B is active	-
1 / 6	<user-defined>	not pre-allocated	-
1 / 7	<user-defined>	not pre-allocated	-

### 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 ON	140
2 / 4	Alarm Sum Event	1 = Alarm summary event ON	160
2 / 5	Relay PICKUP	1 = Relay PICKUP (group signal)	501
2 / 6	Relay TRIP	1 = Relay GENERAL TRIP command	511
2 / 7	Data valid	1 = Data in the PROFIBUS-DP message are valid. (This indication is created by the PROFIBUS-DP slave; not available in DIGSI and not relocatable.)	-

### 3.2.1.5 Protection pickup indications

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 0	87 picked up	1 = 87 Differential protection picked up	5631
3 / 1	50/51-1 Ph A PU	1 = 50/51-1 Phase A picked up	1811
3 / 2	50/51-1 Ph B PU	1 = 50/51-1 Phase B picked up	1812
3 / 3	50/51-1 Ph C PU	1 = 50/51-1 Phase C picked up	1813
3 / 4	V< seal in	1 = 50/51-1 undervoltage seal-in	1970
3 / 5	67 forward	1 = 67 I>> direction forward	1806
3 / 6	67 backward	1 = 67 I>> direction backward	1807
3 / 7	50/51-2 Ph A PU	1 = 50/51-2 Phase A picked up	1801
4 / 0	50/51-2 Ph B PU	1 = 50/51-2 Phase B picked up	1802
4 / 1	50/51-2 Ph C PU	1 = 50/51-2 Phase C picked up	1803
4 / 2	51V Ph A PU	1 = 51V Phase A picked up	1896
4 / 3	51V Ph B PU	1 = 51V Phase B picked up	1897
4 / 4	51V Ph C PU	1 = 51V Phase C picked up	1898

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 5	49 O/L I Alarm	1 = 49 Overload Current Alarm (I alarm)	1515
4 / 6	49 O/L $\Theta$ Alarm	1 = 49 Thermal Overload Alarm	1516
4 / 7	59/67 V0 PU	1 = 59N/67GN V0 picked up	5186
5 / 0	59/67 I0 PU	1 = 59N/67GN I0 picked up	5188
5 / 1	50Ns-1 Pickup	1 = 50Ns-1 Pickup	1224
5 / 2	50Ns-2 Pickup	1 = 50Ns-2 Pickup	1221
5 / 3	59-1 picked up	1 = 59-1 Overvoltage V> picked up	6568
5 / 4	59-2 picked up	1 = 59-2 Overvoltage V>> picked up	6571
5 / 5	Vp< picked up	1 = Inverse Undervoltage Vp< picked up	6525
5 / 6	81-1 picked up	1 = 81-1 picked up	5232
5 / 7	81-2 picked up	1 = 81-2 picked up	5233
6 / 0	81-3 picked up	1 = 81-3 picked up	5234
6 / 1	81-4 picked up	1 = 81-4 picked up	5235
6 / 2	24 warn	1 = 24 V/f warning stage	5367
6 / 3	24-1 picked up	1 = 24-1 V/f> picked up	5370
6 / 4	24-2 picked up	1 = 24-2 V/f>> picked up	5373
6 / 5	32R picked up	1 = 32R picked up	5096
6 / 6	32F< picked up	1 = 32F P< stage picked up	5126
6 / 7	32F> picked up	1 = 32F P> stage picked up	5127
7 / 0	50BF pickup	1 = 50BF picked up	1455
7 / 1	46-1 Warn	1 = 46-1 Current warning stage	5156
7 / 2	46-1 picked up	1 = 46-1 picked up	5165
7 / 3	46-2 picked up	1 = 46-2 picked up	5159
7 / 4	48 picked up	1 = 48 Starting time supervision picked up	6823
7 / 5	64R-1 picked up	1 = 64R-1 picked up (Alarm)	5397
7 / 6	50/27 picked up	1 = 50/27 picked up	5547
7 / 7	27TN/59TN PU	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic picked up	5567
8 / 0	40 Vexc failure	1 = 40 Exc. voltage failure recognized	5336

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 1	40 picked up	1 = 40 picked up	5337
8 / 2	21 Fault Ph A	1 = 21 Fault detection Phase A	3967
8 / 3	21 Fault Ph B	1 = 21 Fault detection Phase B	3968
8 / 4	21 Fault Ph C	1 = 21 Fault detection Phase C	3969
8 / 5	21 I> & U<	1 = 21 O/C with undervoltage seal in	3970
8 / 6	<user-defined>	not pre-allocated	-
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	-
9 / 3	<user-defined>	not pre-allocated	-
9 / 4	<user-defined>	not pre-allocated	-
9 / 5	<user-defined>	not pre-allocated	-
9 / 6	<user-defined>	not pre-allocated	-
9 / 7	<user-defined>	not pre-allocated	-

### 3.2.1.6 Protection trip indications

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 0	87 TRIP Phase A	1 = 87 Differential protection: TRIP Phase A	5672
10 / 1	87 TRIP Phase B	1 = 87 Differential protection: TRIP Phase B	5673
10 / 2	87 TRIP Phase C	1 = 87 Differential protection: TRIP Phase C	5674
10 / 3	87 Diff> TRIP	1 = 87 Differential prot.: TRIP by IDIFF>	5691
10 / 4	87 Diff>> TRIP	1 = 87 Diff>> TRIP	5692
10 / 5	50/51 TRIP	1 = 50/51 I> TRIP	1815
10 / 6	51/67 TRIP	1 = 50/51/67 I>> TRIP	1809
10 / 7	51V TRIP	1 = 51V TRIP	1900

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
11 / 0	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521
11 / 1	59/67 V0 TRIP	1 = 59N/67GN V0 stage TRIP	5187
11 / 2	59N/67GN TRIP	1 = 59N/67GN TRIP	5193
11 / 3	50Ns-1 TRIP	1= 50Ns-1 TRIP	1226
11 / 4	50Ns-2 TRIP	1 = 50Ns-2 TRIP	1223
11 / 5	59-1 TRIP	1 = 59-1 Overvoltage V> TRIP	6570
11 / 6	59-2 TRIP	1 = 59-2 Overvoltage V>> TRIP	6573
11 / 7	Vp< TRIP	1 = Inverse Undervoltage Vp< TRIP	6527
12 / 0	81-1 TRIP	1 = 81-1 TRIP	5236
12 / 1	81-2 TRIP	1 = 81-2 TRIP	5237
12 / 2	81-3 TRIP	1 = 81-3 TRIP	5238
12 / 3	81-4 TRIP	1 = 81-4 TRIP	5239
12 / 4	24 th.TRIP	1 = 24 TRIP of thermal stage	5372
12 / 5	24-2 TRIP	1 = 24-2 TRIP of V/f>> stage	5371
12 / 6	32R TRIP	1 = 32R TRIP	5097
12 / 7	32R+SV TRIP	1 = 32R TRIP with stop valve	5098
13 / 0	32F P< TRIP	1 = 32F P< stage TRIP	5128
13 / 1	32F P> TRIP	1 = 32F P> stage TRIP	5129
13 / 2	50BF TRIP	1 = 50BF TRIP	1471
13 / 3	46-2 TRIP	1 = 46-2 TRIP of current stage	5160
13 / 4	46-⊖ TRIP	1 = 46 TRIP of thermal stage	5161
13 / 5	48 TRIP	1 = 48 Starting time supervision TRIP	6821
13 / 6	66 TRIP	1 = 66 Restart inhibit motor TRIP	4827
13 / 7	64R-2 TRIP	1 = 64R-2 TRIP	5399
14 / 0	50/27 TRIP	1 = 50/27 TRIP	5548
14 / 1	27TN/59TN TRP	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic TRIP	5568
14 / 2	21 Z1< TRIP	1 = 21 Z1< TRIP	3977
14 / 3	21 Z1B< TRIP	1 = 21 Z1B< TRIP	3978



Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
14 / 4	21 Z2< TRIP	1 = 21 Z2< TRIP	3979
14 / 5	21 T3> TRIP	1 = 21 T3> TRIP	3980
14 / 6	40-1 TRIP	1 = 40 characteristic 1 TRIP	5344
14 / 7	40-2 TRIP	1 = 40 characteristic 2 TRIP	5345
15 / 0	40&V<TRIP	1 = 40 characteristic&Vexc< TRIP	5346
15 / 1	40-3 TRIP	1 = 40 characteristic 3 TRIP	5343
15 / 2	Ext 1 Gen.TRP	1 = External trip 1: General TRIP	4537
15 / 3	Ext 2 Gen.TRP	1 = External trip 2: General TRIP	4557
15 / 4	Ext 3 Gen.TRP	1 = External trip 3: General TRIP	4577
15 / 5	Ext 4 Gen.TRP	1 = External trip 4: General TRIP	4597
15 / 6	<user-defined>	not pre-allocated	-
15 / 7	<user-defined>	not pre-allocated	-

### 3.2.1.7 User-defined indications (RTD-Box)

- User-defined protection indications, single-point indications and taggings (e.g. indications from the RTD-Box) 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.
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	-

### 3.2.1.8 Device status

- User-defined protection indications, single-point indications and taggings (e.g. Test mode, Control authority, Control mode) can be routed on the positions “<user-defined>” as “Destination system interface” using the **DIGSI Configuration matrix**.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
17 / 5	<user-defined>	not pre-allocated	-
17 / 6	<user-defined>	not pre-allocated	-
17 / 7	<user-defined>	not pre-allocated	-
18 / 0	<user-defined>	not pre-allocated	-
18 / 1	<user-defined>	not pre-allocated	-
18 / 2	<user-defined>	not pre-allocated	-
18 / 3	<user-defined>	not pre-allocated	-
18 / 4	<user-defined>	not pre-allocated	-
18 / 5	VT Fuse Failure	1 = Voltage Transformer Fuse Failure	6575
18 / 6	FAIL: Trip cir.	1 = 74TC Failure Trip Circuit	6865
18 / 7	Failure 64R In<	1 = Failure 64R In<: measuring circuit	5396

### 3.2.1.9 User-defined indications

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
19 / 0	<user-defined>	not pre-allocated	-
19 / 1	<user-defined>	not pre-allocated	-
19 / 2	<user-defined>	not pre-allocated	-
19 / 3	<user-defined>	not pre-allocated	-
19 / 4	<user-defined>	not pre-allocated	-
19 / 5	<user-defined>	not pre-allocated	-
19 / 6	<user-defined>	not pre-allocated	-
19 / 7	<user-defined>	not pre-allocated	-

### 3.2.2 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.
20	IA S2 =	Operat. meas. current A side 2	327.67 kA	724
22	IB S2 =	Operat. meas. current B side 2	327.67 kA	725
24	IC S2 =	Operat. meas. current C side 2	327.67 kA	726
26	Va-b =	Va-b	327.67 kV	624
28	Vb-c =	Vb-c	327.67 kV	625
30	Vc-a =	Vc-a	327.67 kV	626
32	P =	P (active power)	32767 kW	641
34	Q =	Q (reactive power)	32767 kVAr	642
36	f =	Frequency	327.67 Hz	644
38	<user-defined>	not pre-allocated	-	-
40	<user-defined>	not pre-allocated	-	-
42	<user-defined>	not pre-allocated	-	-
44	<user-defined>	not pre-allocated	-	-
46	<user-defined>	not pre-allocated	-	-
48	<user-defined>	not pre-allocated	-	-
50	<user-defined>	not pre-allocated	-	-

### 3.2.3 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

### 3.2.4 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.
68	Control_I	Handshake byte for event list via PROFIBUS-DP	-
69	SPARE	reserved for future use (the value 0 is transmitted at this position)	-
70	Message block #1	Identification #1	-
71		Value #1	
72		Time stamp #1	
79			
80	Message block #2	Identification #2	-
81		Value #2	
82		Time stamp #2	
89			
90	Message block #3	Identification #3	-
91		Value #3	
92		Time stamp #3	
99			



## Standard mapping 3-5

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC device 7UM62 if the standard mapping 3-5 is selected.

4.1	Message in output direction	54
4.2	Message in input direction	57

## 4.1 Message in output direction

### 4.1.1 Event list

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

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

### 4.1.2 User-defined commands and taggings

- User-defined 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.
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		
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		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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		

### 4.1.3 Internal Commands

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

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

#### 4.1.4 Double commands

- Double commands with double-point indications 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.
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		

#### 4.1.5 Measured values

- Ref. to chap. 1.5.2 for additional notes regarding the measured value “Cooling medium temperature”.

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
8	AMB.TEMP =	Cooling medium temperature	327.67 %	-



## 4.2 Message in input direction

### 4.2.1 Indications

#### 4.2.1.1 User-defined indications

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

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

#### 4.2.1.2 Diagnosis

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
1 / 0	Device OK	1 = Update of the device replica in the SIPROTEC device completed after initial start or restart	51
1 / 1	ProtActive	1 = At least one protection function is active	52
1 / 2	Error Sum Alarm	1 = Error with a summary alarm ON	140
1 / 3	Alarm Sum Event	1 = Alarm summary event ON	160
1 / 4	Relay PICKUP	1 = Relay PICKUP (group signal)	501
1 / 5	Relay TRIP	1 = Relay GENERAL TRIP command	511
1 / 6	Operat. Cond.	1 = Suitable measured quantities are present at the device inputs ( $V > 0,1 * V_{nom}$ , $I > 0,1 * I_{nom}$ and $10 \text{ Hz} < \text{Freq.} < 70 \text{ Hz}$ )	5002
1 / 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.)	-

#### 4.2.1.3 Overcurrent time protection I>

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 0	50/51-1 Ph A PU	1 = 50/51-1 Phase A picked up	1811
2 / 1	50/51-1 Ph B PU	1 = 50/51-1 Phase B picked up	1812
2 / 2	50/51-1 Ph C PU	1 = 50/51-1 Phase C picked up	1813
2 / 3	V< seal in	1 = 50/51-1 undervoltage seal-in	1970
2 / 4	50/51 TRIP	1 = 50/51 I> TRIP	1815

#### 4.2.1.4 Overcurrent time protection I>>

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 5	67 forward	1 = 67 I>> direction forward	1806
2 / 6	67 backward	1 = 67 I>> direction backward	1807
2 / 7	50/51-2 Ph A PU	1 = 50/51-2 Phase A picked up	1801
3 / 0	50/51-2 Ph B PU	1 = 50/51-2 Phase B picked up	1802
3 / 1	50/51-2 Ph C PU	1 = 50/51-2 Phase C picked up	1803
3 / 2	51/67 TRIP	1 = 50/51/67 I>> TRIP	1809

#### 4.2.1.5 Inverse time overcurrent protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 3	51V Ph A PU	1 = 51V Phase A picked up	1896
3 / 4	51V Ph B PU	1 = 51V Phase B picked up	1897
3 / 5	51V Ph C PU	1 = 51V Phase C picked up	1898
3 / 6	51V TRIP	1 = 51V TRIP	1900
3 / 7	<user-defined>	not pre-allocated	-

#### 4.2.1.6 Thermal overload protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 0	49 O/L I Alarm	1 = 49 Overload Current Alarm (I alarm)	1515
4 / 1	49 O/L Θ Alarm	1 = 49 Thermal Overload Alarm	1516
4 / 2	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521

**4.2.1.7 Unbalanced load protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 3	46-1 Warn	1 = 46-1 Current warning stage	5156
4 / 4	46-1 picked up	1 = 46-1 picked up	5165
4 / 5	46-2 picked up	1 = 46-2 picked up	5159
4 / 6	46-2 TRIP	1 = 46-2 TRIP of current stage	5160
4 / 7	46-⊖ TRIP	1 = 46 TRIP of thermal stage	5161

**4.2.1.8 Sensitive ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 0	Failure 64R In<	1 = Failure 64R In<: measuring circuit	5396
5 / 1	50Ns-1 Pickup	1 = 50Ns-1 Pickup	1224
5 / 2	50Ns-1 TRIP	1 = 50Ns-1 TRIP	1226
5 / 3	50Ns-2 Pickup	1 = 50Ns-2 Pickup	1221
5 / 4	50Ns-2 TRIP	1 = 50Ns-2 TRIP	1223

**4.2.1.9 Stator ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 5	59/67 V0 PU	1 = 59N/67GN V0 picked up	5186
5 / 6	59/67 I0 PU	1 = 59N/67GN I0 picked up	5188
5 / 7	59/67 V0 TRIP	1 = 59N/67GN V0 stage TRIP	5187
6 / 0	59N/67GN TRIP	1 = 59N/67GN TRIP	5193

**4.2.1.10 Stator ground fault protection with 3<sup>rd</sup> harmonic**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 1	27TN/59TN PU	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic picked up	5567
6 / 2	27TN/59TN TRP	1 = 27TN/59TN with 3 <sup>rd</sup> harmonic TRIP	5568

**4.2.1.11 Overvoltage protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 3	59-1 picked up	1 = 59-1 Overvoltage V> picked up	6568
6 / 4	59-2 picked up	1 = 59-2 Overvoltage V>> picked up	6571
6 / 5	59-1 TRIP	1 = 59-1 Overvoltage V> TRIP	6570
6 / 6	59-2 TRIP	1 = 59-2 Overvoltage V>> TRIP	6573

**4.2.1.12 Undervoltage protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 7	27-1 picked up	1 = 27-1 Undervoltage V< picked up	6533
7 / 0	27-2 picked up	1 = 27-2 Undervoltage V<< picked up	6537
7 / 1	27-1 TRIP	1 = 27-1 Undervoltage V< TRIP	6539
7 / 2	27-2 TRIP	1 = 27-2 Undervoltage V<< TRIP	6540

**4.2.1.13 Frequency protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
7 / 3	81-1 picked up	1 = 81-1 picked up	5232
7 / 4	81-2 picked up	1 = 81-2 picked up	5233
7 / 5	81-3 picked up	1 = 81-3 picked up	5234
7 / 6	81-4 picked up	1 = 81-4 picked up	5235
7 / 7	81-1 TRIP	1 = 81-1 TRIP	5236
8 / 0	81-2 TRIP	1 = 81-2 TRIP	5237
8 / 1	81-3 TRIP	1 = 81-3 TRIP	5238
8 / 2	81-4 TRIP	1 = 81-4 TRIP	5239

**4.2.1.14 Overexcitation protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 3	24 warn	1 = 24 V/f warning stage	5367
8 / 4	24-1 picked up	1 = 24-1 V/f> picked up	5370
8 / 5	24-2 picked up	1 = 24-2 V/f>> picked up	5373
8 / 6	24 th.TRIP	1 = 24 TRIP of thermal stage	5372
8 / 7	24-2 TRIP	1 = 24-2 TRIP of V/f>> stage	5371

**4.2.1.15 Reverse power protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 0	32R picked up	1 = 32R picked up	5096
9 / 1	32R TRIP	1 = 32R TRIP	5097
9 / 2	32R+SV TRIP	1 = 32R TRIP with stop valve	5098

**4.2.1.16 Forward power supervision**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 3	32F< picked up	1 = 32F P< stage picked up	5126
9 / 4	32F> picked up	1 = 32F P> stage picked up	5127
9 / 5	32F P< TRIP	1 = 32F P< stage TRIP	5128
9 / 6	32F P> TRIP	1 = 32F P> stage TRIP	5129

**4.2.1.17 Fuse Failure Monitor**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 7	VT Fuse Failure	1 = Voltage Transformer Fuse Failure	6575

**4.2.1.18 Underexcitation protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 0	40 Vexc failure	1 = 40 Exc. voltage failure recognized	5336
10 / 1	40 picked up	1 = 40 picked up	5337
10 / 2	40-1 TRIP	1 = 40 characteristic 1 TRIP	5344
10 / 3	40-2 TRIP	1 = 40 characteristic 2 TRIP	5345
10 / 4	40&V<TRIP	1 = 40 characteristic&Vexc< TRIP	5346
10 / 5	40-3 TRIP	1 = 40 characteristic 3 TRIP	5343

**4.2.1.19 Circuit breaker failure protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 6	50BF pickup	1 = 50BF picked up	1455
10 / 7	50BF TRIP	1 = 50BF TRIP	1471

#### 4.2.1.20 Impedance protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
11 / 0	21 Fault Ph A	1 = 21 Fault detection Phase A	3967
11 / 1	21 Fault Ph B	1 = 21 Fault detection Phase B	3968
11 / 2	21 Fault Ph C	1 = 21 Fault detection Phase C	3969
11 / 3	21 I> & U<	1 = 21 O/C with undervoltage seal in	3970
11 / 4	21 Z1< TRIP	1 = 21 Z1< TRIP	3977
11 / 5	21 Z1B< TRIP	1 = 21 Z1B< TRIP	3978
11 / 6	21 Z2< TRIP	1 = 21 Z2< TRIP	3979
11 / 7	21 T3> TRIP	1 = 21 T3> TRIP	3980

#### 4.2.1.21 Binary inputs

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 0	Ext 1 Gen.TRIP	1 = External trip 1: General TRIP	4537
12 / 1	Ext 2 Gen.TRIP	1 = External trip 2: General TRIP	4557
12 / 2	Ext 3 Gen.TRIP	1 = External trip 3: General TRIP	4577
12 / 3	Ext 4 Gen.TRIP	1 = External trip 4: General TRIP	4597

#### 4.2.1.22 Inadvertent energisation protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 4	50/27 picked up	1 = 50/27 picked up	5547
12 / 5	50/27 TRIP	1 = 50/27 TRIP	5548

#### 4.2.1.23 Trip coil monitor

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 6	FAIL: Trip cir.	1 = 74TC Failure Trip Circuit	6865

**4.2.1.24 Inverse undervoltage protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 7	Vp< picked up	1 = Inverse Undervoltage Vp< picked up	6525
13 / 0	Vp< TRIP	1 = Inverse Undervoltage Vp< TRIP	6527

**4.2.1.25 Startup supervision of motors**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 1	48 Rot. locked	1 = 48 Rotor LOCKED after Lock. Rotor Time	6822
13 / 2	48 picked up	1 = 48 Starting time supervision picked up	6823
13 / 3	48 TRIP	1 = 48 Starting time supervision TRIP	6821

**4.2.1.26 Startup counter for motors**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 4	66 TRIP	1 = 66 Restart inhibit motor TRIP	4827

**4.2.1.27 Rotor ground fault protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 5	64R-1 picked up	1 = 64R-1 picked up (Alarm)	5397
13 / 6	64R-2 TRIP	1 = 64R-2 TRIP	5399

**4.2.1.28 DC voltage/current protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 7	DC Prot.pick.up	1 = DC protection picked up	5306
14 / 0	DC Prot. TRIP	1 = DC protection TRIP	5307

**4.2.1.29 State of the out-of-step protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
14 / 1	78 det. char. 1	1 = 78 characteristic 1 picked up	5069
14 / 2	78 det. char. 2	1 = 78 characteristic 2 picked up	5070
14 / 3	78 TRIP char. 1	1 = 78 TRIP characteristic 1	5071
14 / 4	78 TRIP char. 2	1 = 78 TRIP characteristic 2	5072

**4.2.1.30 Differential Protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
14 / 5	87 picked up	1 = 87 Differential protection picked up	5631
14 / 6	87 TRIP	1 = 87 Differential protection TRIP	5671
14 / 7	87 TRIP Phase A	1 = 87 Differential protection: TRIP Phase A	5672
15 / 0	87 TRIP Phase B	1 = 87 Differential protection: TRIP Phase B	5673
15 / 1	87 TRIP Phase C	1 = 87 Differential protection: TRIP Phase C	5674
15 / 2	87 Diff> TRIP	1 = 87 Differential prot.: TRIP by IDIFF>	5691
15 / 3	87 Diff>> TRIP	1 = 87 Diff>> TRIP	5692

**4.2.1.31 User-defined indications**

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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	-



Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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	-

#### 4.2.1.32 Stator ground fault protection 100%

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 0	SGF100 Alarm	1 = Stator ground fault prot. 100%: Alarm stage	5487
18 / 1	SGF100 TRIP	1 = Stator ground fault prot. 100%: TRIP	5489

#### 4.2.1.33 Rotor ground fault protection 1-3 Hz

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 2	64R-1_3Hzpickup	1 = 64R-1 (1-3Hz) picked up (Alarm)	5403
18 / 3	64R-2_3Hz TRIP	1 = 64R-2 (1-3Hz) TRIP	5407

#### 4.2.1.34 Restricted ground fault protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 4	87N picked up	1 = 87N picked up	5817
18 / 5	87N TRIP	1 = 87N TRIP	5821

#### 4.2.1.35 Fault indications of protection functions

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
18 / 6	Failure SGF	1 = Failure stator ground fault prot. 100%	5486
18 / 7	Failure 64R	1 = Failure 64R: measuring circuit	5400
19 / 0	Fail 64R 1-3Hz	1 = Failure 64R protection (1-3Hz)	5401
19 / 1	<user-defined>	not pre-allocated	-
19 / 2	<user-defined>	not pre-allocated	-
19 / 3	<user-defined>	not pre-allocated	-

#### 4.2.1.36 Double-point indications

- User-defined 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.
19 / 4	<user-defined> OFF	not pre-allocated	-
19 / 5	<user-defined> ON		
19 / 6	<user-defined> OFF	not pre-allocated	-
19 / 7	<user-defined> ON		

## 4.2.2 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.
20	IA S2 =	Operat. meas. current A side 2	32.767 kA	724
22	IB S2 =	Operat. meas. current B side 2	32.767 kA	725
24	IC S2 =	Operat. meas. current C side 2	32.767 kA	726
26	<user-defined>	not pre-allocated	-	-
28	<user-defined>	not pre-allocated	-	-
30	<user-defined>	not pre-allocated	-	-
32	Va-b =	Va-b	32.767 kV	624
34	Vb-c =	Vb-c	32.767 kV	625
36	Vc-a =	Vc-a	32.767 kV	626
38	P =	P (active power)	327.67 %	641
40	Q =	Q (reactive power)	327.67 %	642
42	<user-defined>	not pre-allocated	-	-
44	f =	Frequency	327.67 Hz	644
46	<user-defined>	not pre-allocated	-	-
48	<user-defined>	not pre-allocated	-	-
50	<user-defined>	not pre-allocated	-	-

### 4.2.3 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

### 4.2.4 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.
68	Control_I	Handshake byte for event list via PROFIBUS-DP	-
69	SPARE	reserved for future use (the value 0 is transmitted at this position)	-
70	Message block #1	Identification #1	-
71		Value #1	
72		Time stamp #1	
- 79			
80	Message block #2	Identification #2	-
81		Value #2	
82		Time stamp #2	
- 89			
90	Message block #3	Identification #3	-
91		Value #3	
92		Time stamp #3	
- 99			



# Glossary

<b>CFC</b>	Continuous Function Chart
<b>DC</b>	Double command
<b>GSD file</b>	<p>The GSD file contains the General Station Description (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





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