

SIPROTEC

Transformer differential  
protection  
7UT613, 7UT63

Communication module

PROFIBUS-DP  
Bus mapping

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# Preface

## Purpose of this manual

This manual describes the data of the PROFIBUS-DP messages of the SIPROTEC devices 7UT613, 7UT63 and is divided into the following topics:

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

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

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

## PROFIBUS-DP communication profile documentation

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

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

## PROFIBUS-DP specification

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

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

<b>Validity</b>	<p>This manual is valid for the SIPROTEC device:</p> <ul style="list-style-type: none"><li>• 7UT613, 7UT63 (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 4.40 or higher,</li><li>• PROFIBUS-DP standard mappings 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
	1.0	First edition, Doc.-No.: C53000-L1840-B015-03 Apr 24 <sup>th</sup> , 2003
general Chap. 1.3.2 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>• Specifications for measurement scaling values corrected</li><li>• New: description of Standard mapping 3-2 with event list</li></ul> Dec. 15 <sup>th</sup> , 2004





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## Data of the PROFIBUS-DP messages

This chapter delivers explanations to the data descriptions of the standard mapping 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 and 3 define the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC devices 7UT613, 7UT63 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.
14	IA S1=	Operat. meas. current A side 1	32767 A	721

The measured value "IA S1" is assigned to data byte 14 (most significant byte of the measured value) and data byte 15 (least significant byte of the measured value) in the PROFIBUS-DP message

### Bit variables (SP/SC, DP/DC)

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0 / 0	Breaker ON/OFF OFF	Circuit breaker	-
0 / 1	Breaker ON/OFF ON		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 4	Relay TRIP	1 = Relay GENERAL TRIP command	511

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

The single-point indication "Relay TRIP" is located in byte 3, bit position  $2^4$ .



*Note:*

The definition of the data types (single-point indication, measured value etc.) and notes for parameterization in DIGSI are contained in the manual "SIPROTEC Communication module, PROFIBUS-DP - Communication profile" (ref. to page 3).

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

The messages in PROFIBUS-DP output direction (ref. to chap. 2.1 and 3.1) 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.



*Note:*

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

### References

*Standard mapping 3-1:* ref. to chap. 2.1

*Standard mapping 3-2:* 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, measurands and meter values to the PROFIBUS-DP master.

### 1.3.1 Annunciations



*Note:*

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

#### References

*Standard mapping 3-1:* ref. to chap. 2.2.1

*Standard mapping 3-2:* 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 given default scaling values for the measured values in the standard mapping apply to installations with the following nominal operating values:

ILxS1 =

$$S_{\text{NSide1}} / (\sqrt{3} * V_{\text{NSide1}}) \rightarrow 100,01 \dots 1000,00 \text{ A}$$

ILxS2 =

$$S_{\text{NSide2}} / (\sqrt{3} * V_{\text{NSide2}}) \rightarrow 1,01 \dots 10,00 \text{ kA}$$

ILxS3 =

$$S_{\text{NSide3}} / (\sqrt{3} * V_{\text{NSide3}}) \rightarrow 100,01 \dots 1000,00 \text{ A}$$

$S_{N\text{Side}1}$	= Rated apparent power of transformer Side 1 (parameter address 0312)
$S_{N\text{Side}2}$	= Rated apparent power of transformer Side 2 (parameter address 0322)
$S_{N\text{Side}3}$	= Rated apparent power of transformer Side 3 (parameter address 0332)
$V_{N\text{Side}1}$	= Rated primary voltage Side 1 (parameter address 0311)
$V_{N\text{Side}2}$	= Rated primary voltage Side 2 (parameter address 0321)
$V_{N\text{Side}3}$	= Rated primary voltage Side 3 (parameter address 0331)

## References

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

*Standard mapping 3-2:* ref. to chap. 3.2.2



### Note:

- Changes of the scaling of the measured values are possible in adaption 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 other measured values than routed per default shall be transmitted via PROFIBUS-DP, then the positions of the not required measured values have to be released in the **DIGSI Configuration matrix** first (remove the cross in the associated column "Destination system interface").  
For this the protection function of the SIPROTEC device in which the measured values currently routed are available must if necessary be activated.

### Example:

The device 7UT613, 7UT63 shall be used as 1 phase busbar protection.  
To release the positions of the measured values routed per default for transformer protection select Protection Object = 3 phase Transformer first and remove the measured values from "Destination system interface".  
After this the positions are available for new routing with device configuration Protection Object = 1 phase Busbar.

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## 1.3.3 Metered measurands



### Note:

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

---

## References

*Standard mapping 3-1:* ref. to chap. 2.2.4

*Standard mapping 3-2:* ref. to chap. 3.2.3



## 1.4 Configuration data of the standard mappings

There are two standard mapping (Standard mapping 3-1 and Standard mapping 3-2) available for the SIPROTEC devices 7UT613, 7UT63 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
- 2 transformer tap change commands
- 12 single commands

Input direction:

- 4 double-point indications
- 112 single-point indications
- 26 measured values (integer)
- 2 transformer tap position indications
- 4 metered measurands (unsigned long)

### Standard mapping 3-2

*The standard mapping 3-2 contains:*

Output direction:

- Handshake byte for event list via PROFIBUS-DP
- 2 double commands
- 14 single commands

Input direction:

- 4 double-point indications
- 88 single-point indications
- 26 measured values (integer)
- 1 metered measurand (unsigned long)
- Handshake byte and three message blocks for event list via PROFIBUS-DP

### Configuration data

*Standard mapping 3-1:* **1FH 1FH 1FH 1FH 1FH 13H 23H**

(84 bytes input-, 4 bytes output direction)

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

(100 bytes input-, 6 bytes output direction)

**PROFIBUS-DP  
master**

At the configuration of a PROFIBUS-DP slave of the SIPROTEC devices in the parameterization system of the PROFIBUS-DP masters are to select the following modules for the 7UT613, 7UT63 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_lx	
1	Input - 16 Bytes	Adr_lx + 16	
2	Input - 16 Bytes	Adr_lx + 32	
3	Input - 16 Bytes	Adr_lx + 48	
4	Input - 16 Bytes	Adr_lx + 64	
5	Input - 4 Bytes	Adr_lx + 80	
6	Output - 4 Bytes		Adr_Ox

*Standard mapping 3-2:*

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 - 6 Bytes		Adr_Ox

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

Adr\_lx (base address of the inputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in input direction (ref. to chap. 2.2 and 3.2).

Adr\_Ox (base address of the outputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in output direction (ref. to chap. 2.1 and 3.1).

*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. 2.2.4 and 3.2.3) 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 description of the standard mappings (ref. to chap. 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 Control mode REMOTE

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

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

#### References

*Standard mapping 3-1:* ref. to chap. 2.1.3

*Standard mapping 3-2:* not pre-allocated

## 1.5.2 Changing the setting group

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

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

**References**            *Standard mapping 3-1*: ref. to chap. 2.1.3  
                              *Standard mapping 3-2*: ref. to chap. 3.1.3

## 1.5.3 Stop data transmission

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

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

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

**References**            *Standard mapping 3-1*: ref. to chap. 2.2.1.5  
                              *Standard mapping 3-2*: not pre-allocated

## Standard mapping 3-1

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7UT613, 7UT63 if standard mapping 3-1 is selected.

2.1	Message in output direction	22
2.2	Message in input direction	24

## 2.1 Message in output direction

### 2.1.1 Double commands

- User-defined 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.
0 / 0	<user-defined> OFF	not pre-allocated	-
0 / 1	<user-defined> ON		
0 / 2	<user-defined> OFF	not pre-allocated	-
0 / 3	<user-defined> ON		

### 2.1.2 Transformer tap change commands

- User-defined transformer tap change commands can be routed on these positions as “Source system interface” using the **DIGSI Configuration matrix**.

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

### 2.1.3 Internal commands

- Ref. to chap. 1.5.1 and 1.5.2 for additional notes regarding “Control mode REMOTE” and Changing the setting group.

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
1 / 0	ProtActive OFF	Deactivation of protection functions	52
1 / 1	ProtActive ON	Activation of protection functions	
1 / 2	ModeREMOTE LOCKED	Control mode REMOTE = LOCKED	-
1 / 3	ModeREMOTE UNLOCKED	Control mode REMOTE = UNLOCKED	
1 / 4	Setting Group A	Activation of setting group A	-
1 / 5	Setting Group A		
1 / 6	Setting Group B	Activation of setting group B	-
1 / 7	Setting Group B		

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

#### 2.1.4 Single commands or taggings

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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		

## 2.2 Message in input direction

### 2.2.1 Annunciations

#### 2.2.1.1 Double-point indications

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

#### 2.2.1.2 Single-point indications or taggings

- User-defined protection annunciations, single-point indications or 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.
1 / 0	<user-defined>	not pre-allocated	-
1 / 1	<user-defined>	not pre-allocated	-
1 / 2	<user-defined>	not pre-allocated	-
1 / 3	<user-defined>	not pre-allocated	-
1 / 4	<user-defined>	not pre-allocated	-
1 / 5	<user-defined>	not pre-allocated	-
1 / 6	<user-defined>	not pre-allocated	-
1 / 7	<user-defined>	not pre-allocated	-
2 / 0	<user-defined>	not pre-allocated	-
2 / 1	<user-defined>	not pre-allocated	-



**2.2.1.3 Internal commands - Status**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 2	Group A	1 = Setting group A is active	-
2 / 3	Group B	1 = Setting group A is active	-
2 / 4	Group C	1 = Setting group A is active	-
2 / 5	Group D	1 = Setting group A is active	-

**2.2.1.4 Diagnosis**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2 / 6	Device OK	1 = Update of the device replica in the SIPROTEC device completed after initial start or restart	51
2 / 7	ProtActive	1 = At least one protection function is active	52
3 / 0	Settings Calc.	1 = Setting calculation is running	70
3 / 1	Error Sum Alarm	1 = Error with a summary alarm ON	140
3 / 2	Alarm Sum Event	1 = Alarm summary event ON	160
3 / 3	Relay PICKUP	1 = Relay PICKUP (group signal)	501
3 / 4	Relay TRIP	1 = Relay GENERAL TRIP command	511
3 / 5	Data valid	1 = Data in the PROFIBUS-DP message are valid. (This indication is created by the PROFIBUS-DP slave; not available in DIGSI and not relocatable.)	-

**2.2.1.5 Status annunciations**

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 6	DataStop	1 = Stop data transmission is active	-
3 / 7	Test mode	1 = Test mode is active	-
4 / 0	Cntrl Auth (device 7UT63) <sup>1</sup>	Control authority (0 = REMOTE, 1 = LOCAL)	-
4 / 1	ModeLOCAL (device 7UT63) <sup>1</sup>	Control mode LOCAL (0 = LOCKED, 1 = UNLOCKED)	-

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 2	ModeREMOTE	Control mode REMOTE (0 = LOCKED , 1 = UNLOCKED)	-
4 / 3	Cntrl Auth (device 7UT613) <sup>2</sup>	Control authority (0 = REMOTE, 1 = LOCAL)	-
4 / 4	ModeLOCAL (device 7UT613) <sup>2</sup>	Control mode LOCAL (0 = LOCKED, 1 = UNLOCKED)	-

- 1 Not used in the 7UT613.
- 2 Not used in the 7UT63.

### 2.2.1.6 Differential protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 5	87 picked up	1 = 87 Differential protection picked up	5631
4 / 6	87 TRIP	1 = 87 TRIP	5671
4 / 7	87 TRIP Phase A	1 = 87 TRIP Phase A	5672
5 / 0	87 TRIP Phase B	1 = 87 TRIP Phase B	5673
5 / 1	87 TRIP Phase C	1 = 87 TRIP Phase C	5674
5 / 2	87-1 TRIP	1 = 87 TRIP by 87-1	5691
5 / 3	87-2 TRIP	1 = 87 TRIP by 87-2	5692

### 2.2.1.7 Restricted ground fault protection

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

### 2.2.1.8 Time overcurrent protection (general)

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5 / 6	50(N,G) PU	1 = 50(N,G)/51(N,G) O/C PICKUP	1761
5 / 7	50/51(N,G) TRIP	1 = 50(N,G)/51(N,G) TRIP	1791

**2.2.1.9 Time overcurrent protection (50/51)**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 0	50/51 Ph A PU	1 = 50/51 Phase A picked up	1762
6 / 1	50/51 Ph B PU	1 = 50/51 Phase B picked up	1763
6 / 2	50/51 Ph C PU	1 = 50/51 Phase C picked up	1764
6 / 3	50-2 TRIP	1 = 50-2 TRIP	1805
6 / 4	50/51 TRIP	1 = 50/51 I> TRIP	1815
6 / 5	51 picked up	1 = 51 picked up	1820
6 / 6	51 TRIP	1 = 51 TRIP	1825
6 / 7	50/51 PhA InrPU	1 = 50/51 Phase A InRush picked up	7565
7 / 0	50/51 PhB InrPU	1 = 50/51 Phase B InRush picked up	7566
7 / 1	50/51 PhC InrPU	1 = 50/51 Phase C InRush picked up	7567
7 / 2	50/51 Dset.ACT	1 = Dynamic settings 50/51 are ACTIVE	1998

**2.2.1.10 Time overcurrent protection (50N/51N)**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
7 / 3	50N/51N pick.up	1 = 50N/51N picked up	1766
7 / 4	50N-2 TRIP	1 = 50N-2 TRIP	1903
7 / 5	50N-1 TRIP	1 = 50N-1 TRIP	1906
7 / 6	51N picked up	1 = 51N picked up	1907
7 / 7	51N TRIP	1 = 51N TRIP	1909
8 / 0	50/51N InRushPU	1 = 50/51N InRush picked up	7568
8 / 1	50/51N Dset.ACT	1 = Dynamic settings 50N/51N are ACTIVE	1999

**2.2.1.11 Time overcurrent protection (50G/51G)**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 2	50G/51G pick.up	1 = 50G/51G picked up	1765
8 / 3	50G-2 TRIP	1 = 50G-2 TRIP	1833
8 / 4	50G-1 TRIP	1 = 50G-1 TRIP	1836
8 / 5	51G picked up	1 = 51G picked up	1837
8 / 6	51G TRIP	1 = 51G TRIP	1839
8 / 7	Gnd InRush PU	1 = Ground InRush picked up	7564
9 / 0	50/51G Dset.ACT	1 = Dynamic settings 50G/51G are ACTIVE	2000

**2.2.1.12 Thermal overload protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
9 / 1	49 O/L I Alarm	1 = 49 Overload Current Alarm (I alarm)	1515
9 / 2	49 O/L $\Theta$ Alarm	1 = 49 Thermal Overload Alarm	1516
9 / 3	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521
9 / 4	49 ht. spot Al.	1 = 49 Thermal Overload hot spot Th. Alarm	1541
9 / 5	49 ht.spot TRIP	1 = 49 Thermal Overload hot spot Th. TRIP	1542
9 / 6	49 al.rate Al.	1 = 49 Thermal Overload aging rate Alarm	1543
9 / 7	49 ag.rt. TRIP	1 = 49 Thermal Overload aging rate TRIP	1544

**2.2.1.13 Unbalanced load protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 0	46-2 picked up	1 = 46-2 picked up	5159
10 / 1	46-1 picked up	1 = 46-1 picked up	5165
10 / 2	46-TOC pickedup	1 = 46-TOC pickedup	5166
10 / 3	46 TRIP	1 = 46 TRIP	5170

**2.2.1.14 Circuit breaker failure protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 4	50BF int Pickup	1 = 50BF (internal) PICKUP	1456
10 / 5	50BF ext Pickup	1 = 50BF (external) PICKUP	1457
10 / 6	50BF-1 locTRIP	1 = 50BF-1 TRIP (local trip)	1492
10 / 7	50BF-2 busTRIP	1 = 50BF-2 TRIP (busbar trip)	1494

**2.2.1.15 Time overcurrent protection (50 1Ph)**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
11 / 0	50 1Ph Pickup	1 = 50 1Ph Picked up	5971
11 / 1	50 1Ph-1 TRIP	1 = 50 1Ph-1 TRIP	5975
11 / 2	50 1Ph-2 TRIP	1 = 50 1Ph-2 TRIP	5979

**2.2.1.16 Overexcitation protection**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
11 / 3	24 warn	1 = 24 V/f warning stage	5367
11 / 4	24-1 picked up	1 = 24-1 V/f> picked up	5370
11 / 5	24-2 picked up	1 = 24-2 V/f>> picked up	5373
11 / 6	24-2 TRIP	1 = 24-2 TRIP of V/f>> stage	5371
11 / 7	24 th.TRIP	1 = 24 TRIP of th. stage	5372

**2.2.1.17 Thermobox (7XV566)**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12 / 0	Fail: RTD	1 = Fail: RTD (broken wire/shorted)	14101
12 / 1	RTD 1 St.1 p.up	1 = RTD 1 Temperature stage 1 picked up	14112
12 / 2	RTD 1 St.2 p.up	1 = RTD 1 Temperature stage 2 picked up	14113
12 / 3	RTD 2 St.1 p.up	1 = RTD 2 Temperature stage 1 picked up	14122
12 / 4	RTD 2 St.2 p.up	1 = RTD 2 Temperature stage 2 picked up	14123
12 / 5	RTD 3 St.1 p.up	1 = RTD 3 Temperature stage 1 picked up	14132
12 / 6	RTD 3 St.2 p.up	1 = RTD 3 Temperature stage 2 picked up	14133
12 / 7	RTD 4 St.1 p.up	1 = RTD 4 Temperature stage 1 picked up	14142
13 / 0	RTD 4 St.2 p.up	1 = RTD 4 Temperature stage 2 picked up	14143
13 / 1	RTD 5 St.1 p.up	1 = RTD 5 Temperature stage 1 picked up	14152
13 / 2	RTD 5 St.2 p.up	1 = RTD 5 Temperature stage 2 picked up	14153
13 / 3	RTD 6 St.1 p.up	1 = RTD 6 Temperature stage 1 picked up	14162
13 / 4	RTD 6 St.2 p.up	1 = RTD 6 Temperature stage 2 picked up	14163

**2.2.1.18 External trip commands**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 5	Ext 1 Gen. TRIP	1 = External trip 1: General TRIP	4537
13 / 6	Ext 2 Gen. TRIP	1 = External trip 2: General TRIP	4557

**2.2.1.19 Trip coil monitor**

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
13 / 7	FAIL: Trip cir.	1 = 74TC Failure Trip Circuit	6865

## 2.2.2 Measured values

- Ref. to chap. 1.3.2 for notes regarding scaling of measured values.

### 2.2.2.1 Operational values

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
14	IA S1 =	Operat. meas. current A side 1	32767 A	721
16	IB S1 =	Operat. meas. current B side 1	32767 A	722
18	IC S1 =	Operat. meas. current C side 1	32767 A	723
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	IA S3=	Operat. meas. current A side 3	32767 A	727
28	IB S3=	Operat. meas. current B side 3	32767 A	728
30	IC S3=	Operat. meas. current C side 3	32767 A	729
32	Freq =	Frequency	327.67 Hz	644

### 2.2.2.2 Thermal measurement

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
34	$\Theta$ / $\Theta$ trip =	Temperat. rise for warning and trip	327.67 %	801
36	$\Theta$ leg a =	Hot spot temperature of leg phase a	3276.7 °C/°F <sup>1</sup>	30691
38	$\Theta$ leg b =	Hot spot temperature of leg phase b	3276.7 °C/°F <sup>1</sup>	30692
40	$\Theta$ leg c =	Hot spot temperature of leg phase c	3276.7 °C/°F <sup>1</sup>	30693
42	$\Theta$ leg a-b =	Hot spot temperature of leg phase a-b	3276.7 °C/°F <sup>1</sup>	30694
44	$\Theta$ leg b-c =	Hot spot temperature of leg phase b-c	3276.7 °C/°F <sup>1</sup>	30695
46	$\Theta$ leg c-a =	Hot spot temperature of leg phase c-a	3276.7 °C/°F <sup>1</sup>	30696
48	Ag.Rate =	Aging Rate	327.67 (dimensionless)	1063

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
50	Res-1 =	Load Reserve to Stage-1 level	327.67 %	1066
52	Res-2 =	Load Reserve to Stage-2 level	327.67 %	1067

1 ref. to parameter **Temperature unit** (parameter address = 0276)

### 2.2.2.3 Thermobox (7XV556)

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
54	⊖ RTD 1 =	Temperature of RTD 1	3276.7 °C/°F <sup>1</sup>	1068
56	⊖ RTD 2 =	Temperature of RTD 2	3276.7 °C/°F <sup>1</sup>	1069
58	⊖ RTD 3 =	Temperature of RTD 3	3276.7 °C/°F <sup>1</sup>	1070
60	⊖ RTD 4 =	Temperature of RTD 4	3276.7 °C/°F <sup>1</sup>	1071
62	⊖ RTD 5 =	Temperature of RTD 5	3276.7 °C/°F <sup>1</sup>	1072
64	⊖ RTD 6 =	Temperature of RTD 6	3276.7 °C/°F <sup>1</sup>	1073

1 ref. to parameter **Temperature unit** (parameter address = 0276)

### 2.2.3 Transformer tap position indications

- User-defined transformer tap position 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.
66	<user-defined>	not pre-allocated	-
67	<user-defined>	not pre-allocated	-

## 2.2.4 Metered measurands

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

Offset	Designation of the SIPROTEC objects	Comments	Scaling ( $2^{31}-1$ corresponds to ...)	Internal object no.
68	<user-defined>	not pre-allocated	$2^{31}-1$ impulses	-
72	<user-defined>	not pre-allocated	$2^{31}-1$ impulses	-
76	<user-defined>	not pre-allocated	$2^{31}-1$ impulses	-
80	<user-defined>	not pre-allocated	$2^{31}-1$ impulses	-



## Standard mapping 3-2

This chapter describes the data in the PROFIBUS-DP messages between the PROFIBUS-DP master and the SIPROTEC devices 7UT613, 7UT63 if standard mapping 3-2 is selected.

3.1	Message in output direction	34
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 (the value at this position is ignored)	-

#### 3.1.2 Double commands

- User-defined 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		

#### 3.1.3 Internal commands

- Ref. to chap. 1.5.2 for additional 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		-
3 / 1	Setting Group A	Activation of setting group A	
3 / 2	Setting Group B		-
3 / 3	Setting Group B	Activation of setting group B	
3 / 4	Setting Group C		-
3 / 5	Setting Group C	Activation of setting group C	

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

### 3.1.4 Single commands or taggings

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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		

## 3.2 Message in input direction

### 3.2.1 Annunciations

#### 3.2.1.1 Double-point indications

- User-defined double-point indications (e.g. checkback indications of double commands) can be routed on these position 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 or taggings

- User-defined protection annunciations, single-point indications (e.g. checkback indications of single commands) or 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.
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 A is active	-
1 / 6	Group C	1 = Setting group A is active	-
1 / 7	Group D	1 = Setting group A 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	Settings Calc.	1 = Setting calculation is running	70
2 / 3	Error Sum Alarm	1 = Error with a summary alarm ON	140
2 / 4	Alarm Sum Event	1 = Alarm summary event ON	160
2 / 5	Relay PICKUP	1 = Relay PICKUP (group signal)	501
2 / 6	Relay TRIP	1 = Relay GENERAL TRIP command	511
2 / 7	Data valid	1 = Data in the PROFIBUS-DP message are valid. (This indication is created by the PROFIBUS-DP slave; not available in DIGSI and not relocatable.)	-

### 3.2.1.5 Protection pickup indications

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
3 / 0	87 picked up	1 = 87 Differential protection picked up	5631
3 / 1	87G picked Up	1 = 87G picked up	5817
3 / 2	50(N,G) PU	1 = 50(N,G)/51(N,G) O/C PICKUP	1761
3 / 3	50/51 Ph A PU	1 = 50/51 Phase A picked up	1762
3 / 4	50/51 Ph B PU	1 = 50/51 Phase B picked up	1763
3 / 5	50/51 Ph C PU	1 = 50/51 Phase C picked up	1764
3 / 6	51 picked up	1 = 51 picked up	1820
3 / 7	50/51 PhA InrPU	1 = 50/51 Phase A InRush picked up	7565
4 / 0	50/51 PhB InrPU	1 = 50/51 Phase B InRush picked up	7566
4 / 1	50/51 PhC InrPU	1 = 50/51 Phase C InRush picked up	7567
4 / 2	50N/51N pick.up	1 = 50N/51N picked up	1766
4 / 3	51N picked up	1 = 51N picked up	1907
4 / 4	50/51N InRushPU	1 = 50/51N InRush picked up	7568
4 / 5	50G/51G pick.up	1 = 50G/51G picked up	1765
4 / 6	51G picked up	1 = 51G picked up	1837

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4 / 7	Gnd InRush PU	1 = Ground InRush picked up	7564
5 / 0	50 1Ph Pickup	1 = 50 1Ph Picked up	5971
5 / 1	49 O/L I Alarm	1 = 49 Overload Current Alarm (I alarm)	1515
5 / 2	49 O/L $\Theta$ Alarm	1 = 49 Thermal Overload Alarm	1516
5 / 3	49 ht. spot Al.	1 = 49 Thermal Overload hot spot Th. Alarm	1541
5 / 4	49 al.rate Al.	1 = 49 Thermal Overload aging rate Alarm	1543
5 / 5	46-2 picked up	1 = 46-2 picked up	5159
5 / 6	46-1 picked up	1 = 46-1 picked up	5165
5 / 7	46-TOC pickedup	1 = 46-TOC pickedup	5166
6 / 0	50BF int Pickup	1 = 50BF (internal) PICKUP	1456
6 / 1	50BF ext Pickup	1 = 50BF (external) PICKUP	1457
6 / 2	<user-defined>	not pre-allocated	-
6 / 3	<user-defined>	not pre-allocated	-
6 / 4	<user-defined>	not pre-allocated	-

**3.2.1.6 Protection trip indications**

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
6 / 5	87 TRIP	1 = 87 TRIP	5671
6 / 6	87 TRIP Phase A	1 = 87 TRIP Phase A	5672
6 / 7	87 TRIP Phase B	1 = 87 TRIP Phase B	5673
7 / 0	87 TRIP Phase C	1 = 87 TRIP Phase C	5674
7 / 1	87-1 TRIP	1 = 87 TRIP by 87-1	5691
7 / 2	87-2 TRIP	1 = 87 TRIP by 87-2	5692
7 / 3	87G TRIP	1 = 87G TRIP	5821
7 / 4	50/51(N,G) TRIP	1 = 50(N,G)/51(N,G) TRIP	1791
7 / 5	50-2 TRIP	1 = 50-2 TRIP	1805
7 / 6	50/51 TRIP	1 = 50/51 I> TRIP	1815
7 / 7	51 TRIP	1 = 51 TRIP	1825
8 / 0	50N-2 TRIP	1 = 50N-2 TRIP	1903
8 / 1	50N-1 TRIP	1 = 50N-1 TRIP	1906
8 / 2	51N TRIP	1 = 51N TRIP	1909
8 / 3	50G-2 TRIP	1 = 50G-2 TRIP	1833
8 / 4	50G-1 TRIP	1 = 50G-1 TRIP	1836

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
8 / 5	51G TRIP	1 = 51G TRIP	1839
8 / 6	50 1Ph-1 TRIP	1 = 50 1Ph-1 TRIP	5975
8 / 7	50 1Ph-2 TRIP	1 = 50 1Ph-2 TRIP	5979
9 / 0	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521
9 / 1	49 ht.spot TRIP	1 = 49 Thermal Overload hot spot Th. TRIP	1542
9 / 2	49 ag.rt. TRIP	1 = 49 Thermal Overload aging rate TRIP	1544
9 / 3	46 TRIP	1 = 46 TRIP	5170
9 / 4	50BF-1 locTRIP	1 = 50BF-1 TRIP (local trip)	1492
9 / 5	50BF-2 busTRIP	1 = 50BF-2 TRIP (busbar trip)	1494
9 / 6	Ext 1 Gen. TRIP	1 = External trip 1: General TRIP	4537
9 / 7	Ext 2 Gen. TRIP	1 = External trip 2: General TRIP	4557
10 / 0	<user-defined>	not pre-allocated	-
10 / 1	<user-defined>	not pre-allocated	-
10 / 2	<user-defined>	not pre-allocated	-

### 3.2.1.7 Thermobox (7XV566)

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10 / 3	RTD 1 St.1 p.up	1 = RTD 1 Temperature stage 1 picked up	14112
10 / 4	RTD 2 St.1 p.up	1 = RTD 2 Temperature stage 1 picked up	14122
10 / 5	RTD 3 St.1 p.up	1 = RTD 3 Temperature stage 1 picked up	14132
10 / 6	RTD 4 St.1 p.up	1 = RTD 4 Temperature stage 1 picked up	14142
10 / 7	RTD 5 St.1 p.up	1 = RTD 5 Temperature stage 1 picked up	14152
11 / 0	RTD 6 St.1 p.up	1 = RTD 6 Temperature stage 1 picked up	14162
11 / 1	Fail: RTD	1 = Fail: RTD (broken wire/shorted)	14101
11 / 2	RTD 1 St.2 p.up	1 = RTD 1 Temperature stage 2 picked up	14113
11 / 3	RTD 2 St.2 p.up	1 = RTD 2 Temperature stage 2 picked up	14123
11 / 4	RTD 3 St.2 p.up	1 = RTD 3 Temperature stage 2 picked up	14133
11 / 5	RTD 4 St.2 p.up	1 = RTD 4 Temperature stage 2 picked up	14143
11 / 6	RTD 5 St.2 p.up	1 = RTD 5 Temperature stage 2 picked up	14153
11 / 7	RTD 6 St.2 p.up	1 = RTD 6 Temperature stage 2 picked up	14163

### 3.2.2 Measured values

- Ref. to chap. 1.3.2 for notes regarding scaling of measured values.

#### 3.2.2.1 Operational values

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
12	IA S1 =	Operat. meas. current A side 1	32767 A	721
14	IB S1 =	Operat. meas. current B side 1	32767 A	722
16	IC S1 =	Operat. meas. current C side 1	32767 A	723
18	IA S2 =	Operat. meas. current A side 2	327.67 kA	724
20	IB S2 =	Operat. meas. current B side 2	327.67 kA	725
22	IC S2 =	Operat. meas. current C side 2	327.67 kA	726
24	IA S3=	Operat. meas. current A side 3	32767 A	727
26	IB S3=	Operat. meas. current B side 3	32767 A	728
28	IC S3=	Operat. meas. current C side 3	32767 A	729
30	Freq =	Frequency	327.67 Hz	644

#### 3.2.2.2 Thermal measurement

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
32	$\Theta$ / $\Theta$ trip =	Temperat. rise for warning and trip	327.67 %	801
34	$\Theta$ leg a =	Hot spot temperature of leg phase a	3276.7 °C/°F <sup>1</sup>	30691
36	$\Theta$ leg b =	Hot spot temperature of leg phase b	3276.7 °C/°F <sup>1</sup>	30692
38	$\Theta$ leg c =	Hot spot temperature of leg phase c	3276.7 °C/°F <sup>1</sup>	30693
40	$\Theta$ leg a-b =	Hot spot temperature of leg phase a-b	3276.7 °C/°F <sup>1</sup>	30694
42	$\Theta$ leg b-c =	Hot spot temperature of leg phase b-c	3276.7 °C/°F <sup>1</sup>	30695
44	$\Theta$ leg c-a =	Hot spot temperature of leg phase c-a	3276.7 °C/°F <sup>1</sup>	30696
46	Ag.Rate =	Aging Rate	327.67 (dimensionless)	1063



Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
48	Res-1 =	Load Reserve to Stage-1 level	327.67 %	1066
50	Res-2 =	Load Reserve to Stage-2 level	327.67 %	1067

1 ref. to parameter **Temperature unit** (parameter address = 0276)

### 3.2.2.3 Thermobox (7XV556)

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
52	⊖ RTD 1 =	Temperature of RTD 1	3276.7 °C/°F <sup>1</sup>	1068
54	⊖ RTD 2 =	Temperature of RTD 2	3276.7 °C/°F <sup>1</sup>	1069
56	⊖ RTD 3 =	Temperature of RTD 3	3276.7 °C/°F <sup>1</sup>	1070
58	⊖ RTD 4 =	Temperature of RTD 4	3276.7 °C/°F <sup>1</sup>	1071
60	⊖ RTD 5 =	Temperature of RTD 5	3276.7 °C/°F <sup>1</sup>	1072
62	⊖ RTD 6 =	Temperature of RTD 6	3276.7 °C/°F <sup>1</sup>	1073

1 ref. to parameter **Temperature unit** (parameter address = 0276)

### 3.2.3 Metered measurands

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

Offset	Designation of the SIPROTEC objects	Comments	Scaling (2 <sup>31</sup> -1 corresponds to ...)	Internal object no.
64	<user-defined>	not pre-allocated	2 <sup>31</sup> -1 impulses	-

### 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			

# Glossary

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

<b>TC</b>	Transformer tap change command
<b>TM</b>	Transformer tap position indication / Transformer tap message

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