

SIPROTEC4

Multifunctional machine protection 7UM61

Communication module

PROFIBUS-DP
Bus mapping

Preface

Data in the PROFIBUS-DP messages 1

Message in output direction: PROFIBUS-DP master to the 7UM61 2

Message in input direction: 7UM61 to the PROFIBUS-DP master 3

Glossary

Index

Revision: 1.1

Edition: September 2001

C53000-L1840-B005-02

Non-liability clause

Although we have checked the contents of this publication for conformance with the hardware and software described we cannot guarantee complete conformance since differences cannot be ruled out.

The information in this manual is checked at regular intervals, and necessary corrections are included in the next releases.

Your suggestions are welcome.

Subject to change without prior notice.

Copyright

Copyright © Siemens AG 2001. All rights reserved.

Passing on or reproduction of this document, utilization and revelation of its contents is not permitted without express permission.

Violations shall be cause for damage claims.

All rights reserved, in particular when a patent is issued or a general model registered.

Registered trademarks

SIPROTEC® und DIGSI® are registered trademarks of Siemens AG. Other designations in this manual may be trademarks that if used by third parties for their own purposes may violate the rights of the owner.

Preface

Contents of this manual

The manual is divided into the following topics:

- Data in the PROFIBUS-DP messages
- Message in output direction: PROFIBUS-DP master to the 7UM61
- Message in input direction: 7UM61 to the PROFIBUS-DP master

Additional literature

This manual describes the data in the PROFIBUS-DP messages of the SIPROTEC devices 7UM61.

The following additional manuals inform you about the data types, bus specific parameters and hardware of the PROFIBUS-DP slave modul and the function, operation, assembly and commissioning of the SIPROTEC device 7UM61:

<i>Manual</i>	<i>Contents</i>	<i>Order number</i>
Multifunctional machine protection SIPROTEC 7UM61	Function, operation, assembly and commissioning of the SIPROTEC device 7UM61	C53000-G1140-C127-1
7SJ61...7SJ63, 7SJ65, 7UM61, 6MD63 PROFIBUS-DP - Communication profile	Data types, bus specific parameters and hardware description of the PROFIBUS-DP slave modul of the SIPROTEC devices	C53000-L1840-B001-02

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
Edition 1.0, May 1998
PROFIBUS Nutzerorganisation e.V.
Order-No. 0.032 or 0.042 on CD ROM

Notes to this manual

This manual provides you with the following aids to make it easier to locate the information you are looking for:

- At the beginning of this manual you will find a complete table of contents plus separate lists of figures and tables contained in this manual.
- In the individual chapters, you will find information in the left margin of each page which will give you an overview of the contents of that particular paragraph.
- Following the last chapter of this manual, you will find a glossary containing definitions of technical terms and abbreviations used in this manual.
- At the end of this manual, you will find a comprehensive index for fast access to the information you need.

Validity

This manual is valid for

- SIPROTEC devices 7UM61 with:
 - firmware version 4.0 or higher and
 - PROFIBUS-DP communication module version 01.03.01 or higher.

For device parameterization **DIGSI version 4.2 or higher** has to be used.

Training courses

See our catalog of courses for a list of available courses or contact our Training center in Nuremberg.

Questions

If you have questions to the SIPROTEC devices, contact your Siemens representative.

Revision index

<i>Modified chapters / pages</i>	<i>Edition</i>	<i>Reasons of modification</i>
	1.0	First edition, Doc.-No.: C53000-L1840-B005-02 Oct 25 th , 2000
Chap. 1.2	1.1	Parameterization of the PROFIBUS-DP master: Order numbers of the modules in output direction corrected Sept 5 th , 2001

Table of contents

1	Data in the PROFIBUS-DP messages.....	1-1
1.1	Explanation.....	1-1
1.2	Configuration data of the standard mappings for the 7UM61	1-3
2	Message in output direction: PROFIBUS-DP master to the 7UM61.....	2-1
2.1	Application logic CFC	2-1
2.2	Internal commands.....	2-2
2.3	Measured values	2-4
3	Message in input direction: 7UM61 to the PROFIBUS-DP master	3-5
3.1	Annunciations.....	3-5
3.1.1	Application logic CFC	3-5
3.1.2	Diagnosis.....	3-2
3.1.3	Overcurrent time protection I>.....	3-2
3.1.4	Overcurrent time protection I>>	3-3
3.1.5	Inverse overcurrent time protection.....	3-3
3.1.6	Thermal overload protection	3-3
3.1.7	Negative sequence protection.....	3-3
3.1.8	Sensitive overcurrent protection.....	3-4
3.1.9	Stator ground fault protection	3-4
3.1.10	Stator ground fault protection with 3 rd harmonic.....	3-4
3.1.11	Overvoltage protection	3-4
3.1.12	Undervoltage protection	3-5
3.1.13	Over/Underfrequency protection	3-5
3.1.14	Overexcitation protection.....	3-5
3.1.15	Reverse power protection	3-5
3.1.16	Forward power supervision	3-6
3.1.17	Fuse Failure Monitor	3-6
3.1.18	Underexcitation protection.....	3-6
3.1.19	Breaker failure protection	3-6
3.1.20	Impedance protection.....	3-6
3.1.21	External trip functions.....	3-7
3.1.22	Inadvertent energisation protection	3-7
3.1.23	Trip coil monitor.....	3-7
3.2	Measured values	3-8
3.3	Metered measurands	3-9

4	Glossary	4-1
5	Index	5-1

Data in the PROFIBUS-DP messages

1

1.1 Explanation



Note

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

The chapters 2 and 3 define the data area of the PROFIBUS-DP messages for data transfer between the PROFIBUS-DP slave of the SIPROTEC device 7UM61 and the PROFIBUS-DP master.

The listed SIPROTEC objects in the PROFIBUS-DP message 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.:

<i>Offset</i>	<i>Designation of the SIPROTEC objects</i>	<i>Comments</i>	<i>Scaling (32767 corresponds to ...)</i>	<i>Internal object no.</i>
14	la	Current in phase A	327,67%	601

The measured value "la" 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	CFC-Incoming annunciation 1 (UsCfcSpl1) OFF	Tagging ON/OFF, released as CFC input	-
0/1	CFC-Incoming annunciation 1 (UsCfcSpl1) ON		
12/6	FAIL: Trip cir.	1 = 74TC Failure Trip Circuit	6865

The control of the "CFC-Incoming annunciation 1" (control using two bits of the PROFIBUS-DP output message) is carried out via data byte 0, bit positions 2^0 (bit 0) and 2^1 (bit 1).

The single-point indication " FAIL: Trip cir." is located in byte 12, bit position 2^6 .



The definitions of data types (single-point indication, measured value etc.) are contained in the manual "7SJ61...7SJ63, 7SJ65, 7UM61, 6MD63 PROFIBUS-DP - Communication profile" (ref. to page i).

1.2 Configuration data of the standard mappings for the 7UM61

There are three standard mappings (standard mapping 2-1 to standard mapping 2-3) available for the SIPROTEC device 7UM61 which differ in the available data size in the PROFIBUS-DP messages.



The description of the standard mappings contains the pre-allocation of the mapping files at delivery or 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 "7SJ61...7SJ63, 7SJ65, 7UM61, 6MD63 PROFIBUS-DP - Communication profile" (ref. to page i).

Standard mapping 2-1

The *standard mapping 2-1* contains:

- all annunciations, commands, measured values and metered measurands listed in chap. 2 and 3.

Standard mapping 2-2

The *standard mapping 2-2* contains:

- output direction: commands/annunciations,
- input direction: annunciations and measured values.

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

Standard mapping 2-3

The *standard mapping 2-3* contains:

- exclusively annunciations.

Unlike the standard mapping 2-1 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 2-3.

PROFIBUS-DP configuration data

Standard mapping 2-1: **1FH 1FH 1FH 13H 27H**

(52 bytes input-, 8 bytes output direction)

Standard mapping 2-2: **1FH 1FH 13H 24H**

(36 bytes input-, 5 bytes output direction)

Standard mapping 2-3: **1CH 24H**

(13 bytes input-, 5 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 7UM61 standard mappings and to allocate associated addresses in the I/O addressing range of the PROFIBUS-DP master:

Standard mapping 2-1:

<i>Module</i>	<i>Order number</i>	<i>Input address</i>	<i>Output address</i>
0	Input – 16 Bytes	Adr_lx	
1	Input – 16 Bytes	Adr_lx+16	
2	Input – 16 Bytes	Adr_lx+32	
3	Input – 4 Bytes	Adr_lx+48	
4	Output – 8 Bytes		Adr_Ox

Standard mapping 2-2:

<i>Module</i>	<i>Order number</i>	<i>Input address</i>	<i>Output address</i>
0	Input – 16 Bytes	Adr_lx	
1	Input – 16 Bytes	Adr_lx+16	
2	Input – 4 Bytes	Adr_lx+32	
3	Output – 5 Bytes		Adr_Ox

Standard mapping 2-3:

<i>Module</i>	<i>Order number</i>	<i>Input address</i>	<i>Output address</i>
0	Input – 13 Bytes	Adr_lx	
1	Output – 5 Bytes		Adr_Ox

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

Adr_lx (base address of the inputs) is identical with offset 0 of the PROFIBUS-DP message data of the SIPROTEC device in input direction (ref. to chap. 3).

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).

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. 3.3) can be correctly carried out in the PROFIBUS-DP master.

Message in output direction: PROFIBUS-DP master to the 7UM61

2

The messages in PROFIBUS-DP output direction allow:

- manipulation of taggings (internal commands), which can be changed via PROFIBUS-DP and manipulation of CFC-Incoming annunciations for further logical data processing,
- transmission of measured values to the SIPROTEC device.

2.1 Application logic CFC

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
0/0	CFC-Incoming annunciation 1 (UsCfcSpl1) OFF	Tagging ON/OFF, released as CFC input	–
0/1	CFC-Incoming annunciation 1 (UsCfcSpl1) ON		
0/2	CFC-Incoming annunciation 2 (UsCfcSpl2) OFF	Tagging ON/OFF, released as CFC input	–
0/3	CFC-Incoming annunciation 2 (UsCfcSpl2) ON		
0/4	CFC-Incoming annunciation 3 (UsCfcSpl3) OFF	Tagging ON/OFF, released as CFC input	–
0/5	CFC-Incoming annunciation 3 (UsCfcSpl3) ON		
0/6	CFC-Incoming annunciation 4 (UsCfcSpl4) OFF	Tagging ON/OFF, released as CFC input	–
0/7	CFC-Incoming annunciation 4 (UsCfcSpl4) ON		
1/0	CFC-Incoming annunciation 5 (UsCfcSpl5) OFF	Tagging ON/OFF, released as CFC input	–
1/1	CFC-Incoming annunciation 5 (UsCfcSpl5) ON		
1/2	CFC-Incoming annunciation 6 (UsCfcSpl6) OFF	Tagging ON/OFF, released as CFC input	–
1/3	CFC-Incoming annunciation 6 (UsCfcSpl6) ON		
1/4	CFC-Incoming annunciation 7 (UsCfcSpl7) OFF	Tagging ON/OFF, released as CFC input	–
1/5	CFC-Incoming annunciation 7 (UsCfcSpl7) ON		
1/6	CFC-Incoming annunciation 8 (UsCfcSpl8) OFF	Tagging ON/OFF, released as CFC input	–
1/7	CFC-Incoming annunciation 8 (UsCfcSpl8) ON		
2/0	CFC-Incoming annunciation 9 (UsCfcSpl9) OFF	Tagging ON/OFF, released as CFC input	–
2/1	CFC-Incoming annunciation 9 (UsCfcSpl9) ON		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
2/2	CFC-Incoming annunciation 10 (UsCfcSpl10) OFF	Tagging ON/OFF, released as CFC input	-
2/3	CFC-Incoming annunciation 10 (UsCfcSpl10) ON		
2/4	CFC-Incoming annunciation 11 (UsCfcSpl11) OFF	Tagging ON/OFF, released as CFC input	-
2/5	CFC-Incoming annunciation 11 (UsCfcSpl11) ON		
2/6	CFC-Incoming annunciation 12 (UsCfcSpl12) OFF	Tagging ON/OFF, released as CFC input	-
2/7	CFC-Incoming annunciation 12 (UsCfcSpl12) ON		
3/0	CFC-Incoming annunciation 13 (UsCfcSpl13) OFF	Tagging ON/OFF, released as CFC input	-
3/1	CFC-Incoming annunciation 13 (UsCfcSpl13) ON		
3/2	CFC-Incoming annunciation 14 (UsCfcSpl14) OFF	Tagging ON/OFF, released as CFC input	-
3/3	CFC-Incoming annunciation 14 (UsCfcSpl14) ON		
3/4	CFC-Incoming annunciation 15 (UsCfcSpl15) OFF	Tagging ON/OFF, released as CFC input	-
3/5	CFC-Incoming annunciation 15 (UsCfcSpl15) ON		
3/6	CFC-Incoming annunciation 16 (UsCfcSpl16) OFF	Tagging ON/OFF, released as CFC input	-
3/7	CFC-Incoming annunciation 16 (UsCfcSpl16) ON		

Note



The CFC-Incoming annunciations allow routing of further protection annunciations on PROFIBUS-DP, which are not contained in the standard mapping (e.g. ">Reverse Rot.", internal object number = 5145 or ">BLOCK 81-1", internal object number = 5206).

You find information about this in the manual "7SJ61...7SJ63, 7SJ65, 7UM61, 6MD63 PROFIBUS-DP - Communication profile" (ref. to page i) in the chapter "PROFIBUS-DP – Parameterization in DIGSI, Customization of the allocations".

2.2 Internal commands

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4/0	Setting group A	Activation of setting group A	53
4/1	Setting group A		
4/2	Setting group B	Activation of setting group B	54
4/3	Setting group B		
4/4	<reserved>		-
4/5	<reserved>		

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
4/6	<reserved>		-
4/7	<reserved>		
5/0	<reserved>		-
5/1	<reserved>		
5/2	<reserved>		-
5/3	<reserved>		
5/4	<reserved>		-
5/5	<reserved>		
5/6	<reserved>		-
5/7	<reserved>		



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".

2.3 Measured values



Note

Measured values in output direction are only available at use of standard mapping 2-1 (ref. to chap. 1.2).

Offset	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no..
6	AMB.TEMP=	Cooling medium temperature	327,67%	–



Note

- The cooling medium temperature will be transferred in per cent (%) to the 7UM61. The protection device must be informed about the 100 % corresponding temperature using parameter **TEMPERATURE OF SCALING** (function "Thermal overload protection", parameter address = 1608).
 - The temperature value via PROFIBUS-DP is only taken into account and shown at the SIPROTEC device if the parameter **TEMPERATURE INPUT** (function "Thermal overload protection", parameter address = 1607) has the value "Profibus DP".
 - Unlike measured values in input direction the identification "Overflow" or "Invalid" is not carried out with the value –32768 (ref. to manual "7SJ61...7SJ63, 7SJ65, 7UM61, 6MD63 PROFIBUS-DP - Communication profile". If an evaluation of the measurement status of the cooling medium temperature is required then the indication **>FAIL. TEMP.INP** ("Failure: Temperature input", internal object no. = 1508), routed via a CFC incoming annunciation (ref. to chap. 2.1), is to use separately to the measured value.
-

Message in input direction: 7UM61 to the PROFIBUS-DP master

3

The messages in PROFIBUS-DP input direction allow:

- transmission of annunciations, measured values and metered measurands to the PROFIBUS-DP master.

3.1 Annunciations



Note

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

3.1.1 Application logic CFC

<i>Offset</i>	<i>Designation of the SIPROTEC objects</i>	<i>Comments</i>	<i>Internal object no.</i>
0/0	CFC-Output indication 1 (UsCfcSp01)	Single-point indication ON/OFF, released as CFC output	–
0/1	CFC-Output indication 2 (UsCfcSp02)	Single-point indication ON/OFF, released as CFC output	–
0/2	CFC-Output indication 3 (UsCfcSp03)	Single-point indication ON/OFF, released as CFC output	–
0/3	CFC-Output indication 4 (UsCfcSp04)	Single-point indication ON/OFF, released as CFC output	–
0/4	CFC-Output indication 5 (UsCfcSp05)	Single-point indication ON/OFF, released as CFC output	–
0/5	CFC-Output indication 6 (UsCfcSp06)	Single-point indication ON/OFF, released as CFC output	–
0/6	CFC-Output indication 7 (UsCfcSp07)	Single-point indication ON/OFF, released as CFC output	–
0/7	CFC-Output indication 8 (UsCfcSp08)	Single-point indication ON/OFF, released as CFC output	–



Note

The CFC-Output indications allow configuration of further protection annunciations with PROFIBUS-DP, which are not contained in the standard mapping.

3.1.2 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 (summary alarm)	501
1/5	Relay TRIP	1 = Relay GENERAL TRIP command (summary alarm)	511
1/6	Operat. Cond	1 = Suitable measured quantities 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	<reserved>		–



Error with a summary alarm

The "Error with a summary alarm" is ON if at least one of the following internal alarms assumes the value ON:

- "Error: A/D converter", "Error: 1A/5A wrong", "Error: Neutral CT different from MLFB", "Error Board 0", "Error Board 1", "Error Board 2", "Error Board 3", "Error Board 4", "Error Board 5", "Error Board 6", "Error Board 7".



Alarm summary event

The "Alarm summary event" is indicated if at least one of the following internal alarms assumes the ON status:

- "Failure: Current supervision", "Failure: Voltage supervision", "VT Fuse Failure", "Failure: Phase sequence", "Alarm: No calibration data available", "Error: Offset", "Error: Power supply", "Failure: Battery empty".

3.1.3 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	I V< seal in	1 = 50/51-1 undervoltage seal-in	1970
2/4	50/51 TRIP	1 = 50/51 I> TRIP	1815

3.1.4 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

3.1.5 Inverse overcurrent time 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 B picked up	1898
3/6	51/51V TRIP	1 = 51/51V TRIP	1900
3/7	<reserved>		–

3.1.6 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 ⊖ Alarm	1 = 49 Thermal Overload Alarm	1516
4/2	49 Th O/L TRIP	1 = 49 Thermal Overload TRIP	1521

3.1.7 Negative sequence 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

3.1.8 Sensitive overcurrent protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5/0	Fail. REF lee<	1 = Failure R/E/F protection lee<	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

3.1.9 Stator ground fault protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
5/5	59/67 V0 PU	1 = 59N/67GN U0 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 U0 stage TRIP	5187
6/0	59N/67GN TRIP	1 = 59N/67GN TRIP	5193

3.1.10 Stator ground fault protection with 3rd harmonic

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

3.1.11 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

3.1.12 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

3.1.13 Over/Underfrequency 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

3.1.14 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 th. stage	5372
8/7	24-2 TRIP	1 = 24-2 TRIP of V/f>> stage	5371

3.1.15 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

3.1.16 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

3.1.17 Fuse Failure Monitor

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

3.1.18 Underexcitation protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10/0	40 Vexc failure	1 = 40 Excitation 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

3.1.19 Breaker failure protection

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
10/6	50BF pickup	1 = 50BF picked up	1445
10/7	50BF TRIP	1 = 50BF TRIP	1471

3.1.20 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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
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

3.1.21 External trip functions

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

3.1.22 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

3.1.23 Trip coil monitor

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

Offset	Designation of the SIPROTEC objects	Comments	Internal object no.
12/7	<reserved>		-
13/0 - 13/7	<reserved>		-

3.2 Measured values



Note

- Measured values in input direction are only available at use of standard mapping 2-1 or standard mapping 2-2 (ref. to chap. 1.2).
 - Depending on the device composition and the existing protection packages 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.
-

<i>Offset</i>	<i>Designation of the SIPROTEC objects</i>	<i>Comments</i>	<i>Scaling (32767 corresponds to ...)</i>	<i>Internal object no.</i>
14	Ia =	Ia	327.67 %	601
16	Ib =	Ib	327.67 %	602
18	Ic =	Ic	327.67 %	603
20	Va-b =	Va-b	327.67 %	624
22	Vb-c =	Vb-c	327.67 %	625
24	Vc-a =	Vc-a	327.67 %	626
26	P =	P (active power)	327.67 %	641
28	Q =	Q (reactive power)	327.67 %	642
30	Freq =	Frequency	327.67 Hz	644
32	I2 =	I2 (negative sequence)	327.67 %	606
34	⊖ / ⊕ trip	Temperature rise	327.67 %	801

3.3 Metered measurands



Note

Metered measurands are only available at use of standard mapping 2-1 (ref. to chap. 1.2).

Scaling

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

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

V_{nom} = **NOMINAL OPERATING VOLTAGE OF PRIMARY EQUIPMENT**
(parameter address = 1101)

I_{nom} = **NOMINAL OPERATING CURRENT OF PRIMARY EQUIPMENT**
(parameter address = 1102)

Example

In the parameter set is configured:

$I_{nom} = 483 \text{ A}$ und $V_{nom} = 6.3 \text{ kV}$,

60000 impulses correspond so that:

$1 \text{ h} * 483 \text{ A} * 6.3 \text{ kV} * \sqrt{3} = 5270.46 \text{ kWh}$



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.

Offset	Designation of the SIPROTEC objects	Comments	Scaling ($2^{31}-1$ of the unsigned long-value corresponds to...)	Internal object no.
36	Wp+=	Wp Forward (metered measurand derived from measured value)	$2^{31}-1$ impulses	924
40	Wq+=	Wq Forward (metered measurand derived from measured value)	$2^{31}-1$ impulses	925
44	Wp-=	Wp Reverse (metered measurand derived from measured value)	$2^{31}-1$ impulses	928
48	Wq-=	Wq Reverse (metered measurand derived fom measured value)	$2^{31}-1$ impulses	929

Glossary

CFC	C ontinuous F unction C hart
DDB file / GSD file	The DDB file contains the D evice D ata B ase (technical characteristics) of the PROFIBUS-DP communication module (PROFIBUS-DP slave). This file is required for configuration and is supplied together with the SIPROTEC device.
DIGSI	Parameterization system for SIPROTEC devices
Input data/ input direction	Data from the PROFIBUS-DP slave to the PROFIBUS-DP master .
Mapping	Allocation of the SIPROTEC data objects to the positions in the PROFIBUS-DP messages.
Octet	Term from EN 50170, one octet corresponds to 8 bits.
OLM	O ptical L ink M odule
Output data/ output direction	Data from the PROFIBUS-DP master to the PROFIBUS-DP slave .
PNO	P ROFIBUS N utzerorganisation
PROFIBUS-DP	P ROFIBUS - D ecentralized P eripherals
PSE	P ROFIBUS interface module with (e lectrical) isolated RS485 interface for the SIPROTEC devices from Siemens.
PSO	P ROFIBUS interface module with o ptical interface for the SIPROTEC devices from Siemens.
SC	S ingle C ommand
SP	S ingle- p oint I ndication

Index

Numerics

21	3-6
24	3-5
27	3-5
27TN/59TN	3-4
32F	3-6
32R	3-5
40	3-6
46	3-3
49 O/L	3-3
50/27	3-7
50/51	3-2
50BF	3-6
50Ns	3-4
51V	3-3
59	3-4
59/67	3-4
67	3-3
74TC	3-7
81	3-5

A

Additional literature	i
Alarm summary event	3-2
annunciations	3-5

B

Breaker failure protection	3-6
----------------------------------	-----

C

CFC-Incoming annunciations	2-2
CFC-Output indication	3-5
change of the setting group	2-3
configuration data	1-3

E

Error with a summary alarm	3-2
----------------------------------	-----

F

Forward power supervision	3-6
Fuse Failure Monitor	3-6

I

Impedance protection	3-6
Inadvertent energisation protection	3-7
Inverse overcurrent time protection	3-3

M

Measured values	3-8
Metered measurands	3-9

N

Negative sequence protection	3-3
------------------------------------	-----

O

Over/Underfrequency protection	3-5
Overcurrent time protection	3-2
Overvoltage protection	3-4
Overexcitation protection	3-5

R

Reverse power protection	3-5
--------------------------------	-----

S

Sensitive overcurrent protection	3-4
setting group	2-3
Stator ground fault protection	3-4

T

Thermal overload protection	3-3
Trip coil monitor	3-7

U

Underexcitation protection	3-6
Undervoltage protection	3-5

V

Validity	ii
----------------	----

