SIPROTEC

Power Supply Transfer Device

7VU68

Communication module

Modbus
Bus mapping

Edition: Apr, 2014

C53000-L2240-C556-1

Siemens Aktiengesellschaft
C53000-L2240-C556-1

Preface

Purpose of this manual

The manual describes the register map organization of the Modbus slave of the SIPROTEC device 7VU683 and is divided into the following topics:

- Modbus register map ? Chapter 1.

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.

Modbus communication profile documentation

The following additional manual informs you about the data types, bus specific parameters and hardware interface of the Modbus slave module of the SIPROTEC devices:

Manual	Order number
SIPROTEC Communication module, Modbus - Communication profile	C53000-L1840-C001-03

Modbus specification

The Modbus specification with a detailed explanation of the Modbus protocol is contained in:

- Modbus over Serial Line
  Specification & Implementation guide
  http://www.modbus.org
- Modbus Application Protocol Specification
  http://www.modbus.org

Validity

This manual is valid for the SIPROTEC devices:

- 7VU681 (firmware version 4.60 or higher),
- 7VU683 (firmware version 4.70 or higher),

with

- Modbus communication module version 03.00.05 or higher.

For device parameterization have to be used:

- DIGSI 4.83 or higher,
- Modbus standard mapping 3-1.

Additional Support

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

Training courses

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

Target audience

Protection engineers, commissioning engineers, personnel concerned with adjustment, checking and service of selective protective equipment, automatic and control facilities and personnel of electrical facilities and power plants.

Warning!

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

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

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

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

QUALIFIED PERSONNEL

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

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

Typographic and graphical conventions

The following text formats are used to identify concepts giving device information described by the text flow:

`Parameter names`, or identifiers for configuration or function parameters that appear in the device display or on the screen of a PC (with DIGSI) are shown in mono-script (same point size) bold text. This also applies to header bars for selection menus.

`Parameter conditions`, or possible settings of parameters that appear in the device display or on the screen of a PC (with DIGSI), are additionally shown in italic style. This also applies to selection items for selection menus.

„`Annunciations`“, or identifiers for information produced by the device or required by other devices or from the switchgear is shown in mono-script (same point size) and placed into quotation marks.

For diagrams in which the identifier type results from the representation itself, text conventions may differ from the above-mentioned.

Revision index

Listing of the changes between the editions of this manual:

Modified chapters / pages	Edition	Reasons of modification
ALL	V00.10	First edition, Doc.-No.: C53000-L2240-C556-1 April, 13th, 2011
Chap. 1.4 Preface general	V00.20	Edit the Input register, and add the Chinese description for the e information list , Doc.-No.: C53000-L2240-C556-1 May5th, 2011
ALL	V01.00	Add all information increased in 7VU683 V4.70. Doc.-No.: C53000-L2240-C556-1 April, 30th, 2014

Table of contents

Modbus register map

1

This chapter describes the register map organization of the Modbus slave of the SIPROTEC device 7VU68x.

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 register mapping.

Chapters Coil Status registers (0X references) to Holding registers (4X references) define the mapping of the data objects of the SIPROTEC device 7VU681,7VU683 to the associated Modbus registers.

The columns "Designation of the SIPROTEC objects" contain the texts of the SIPROTEC objects for `"US English"` device language.

The listed SIPROTEC data objects are *sorted by register numbers* (starting with 1), e.g.:

Register	Designation of the SIPROTEC objects	Comments	Scaling (32767corresponds to...)	Internal object no.
30001	f_bus1=	Frequency of busbar 1=	32767Hz	17570

The measured value `"f_bus1="` is assigned to register 30001 (Input register).

Register	Designation of the SIPROTEC objects	Comments	Internal object no.
100097	CommandOpenCB1	1 = Command:Open CB1	17760

The single-point indication "CommandOpenCB1" is assigned to the Input Status register 10097.

Note:

- The description of the standard mappings 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, Modbus - Communication profile" (ref. to page 3).
- The definition of the data types (single-point indication, measured value etc.) are contained in the manual "SIPROTEC Communication module, Modbus - Communication profile" (ref. to page 3).

1.2 Coil Status registers (0X references)

The Coil Status register block allows the Modbus master:

- command outputs through the output relays of the SIPROTEC device (external commands),
- manipulation of taggings (internal commands),
- reading the checkback indication and/or the status of output relays as well as taggings.

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 Modbus registers) available in the SIPROTEC device.

1.2.1 Registers 00017 to 00022: Internal Commands

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
00017	Command: Setting Group A	0 = not permitted 1 = Activation of setting group A	控制方向 : 切换至定值组 A	-
	Indication: Setting Group A	0 = Setting group A is not active 1 = Setting group A is active	反馈信息 : 定值组 A 有效	
00018	Command: Setting Group B	0 = not permitted 1 = Activation of setting group B	控制方向 : 切换至定值组 B	-
	Indication: Setting Group B	0 = Setting group B is not active 1 = Setting group B is active	反馈信息 : 定值组 B 有效	
00019	Command: Setting Group C	0 = not permitted 1 = Activation of setting group C	控制方向 : 切换至定值组 C	-
	Indication: Setting Group C	0 = Setting group Cis not active 1 = Setting group Cis active	反馈信息 : 定值组 C 有效	
00020	Command: Setting Group D	0 = not permitted 1 = Activation of setting group D	控制方向 : 切换至定值组 D	
	Indication: Setting Group D	0 = Setting group D is not active 1 = Setting group D is active	反馈信息 : 定值组 D 有效	
00022	Command: Mode Remote	0 = Set to Locked 1 = Set to Unlocked	控制方向 :0= 远方被闭锁 1= 远方解锁	
	Indication: Mode Remote	0 = Locked 1 = Unlocked	控制方向 :0= 远方被闭锁 1= 远方解锁	

Changing the setting group:

- In order to change the setting group, the value "1" = ON must be transmitted to the corresponding register.
- Switching ON one setting group automatically switches OFF the current active setting group.
- Transmission of the value "0" = 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 Modbus if the parameter **`Change to Another Setting Group`** (parameter address = 302) has the value ***`Protocol`***.

1.2.2 Registers 00008 to 00032: Single commands and taggings

- Single commands and taggings can be routed on these positions as “Source/Destination system interface” using the **`DIGSI Configuration matrix`**.

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
00008	HSBT ON/OFF(Only for 7VU683)	HSBT ON/OFF	快切投退	-
00009	ATS ON/OFF(Only for 7VU681)	AST ON/OFF	备自投投退	-
00010	Prot. ON/OFF	Protection ON/OFF	保护投退	-
00011	Remote Op. CB1(Only for 7VU683)	Remote Op. CB1	远方分 CB1	-
00012	Remote Op. CB2(Only for 7VU683)	Remote Op. CB2	远方分 CB2	-
00013	<user-defined>	not pre-allocated	自定义	-
00014	<user-defined>	not pre-allocated	自定义	-
00015	Remote Op. CB3(Only for 7VU683)	Remote Op. CB3	远方分 CB3	-
00016	<user-defined>	not pre-allocated	自定义	-
00017	<user-defined>	not pre-allocated	自定义	-
00018	<user-defined>	not pre-allocated	自定义	-
00019-00032	<user-defined>	not pre-allocated	自定义	-

1.2.3 Registers 00001 to 00004: Double commands

- Double commands and associated checkback indications as double-point indications can be routed on these positions as “Source/Destination system interface” using the **`DIGSI Configuration matrix`**.

- Please ref. to chap. “Double command / Double-point indication” in the manual “SIPROTEC Communication module, Modbus - Communication profile” for additional notes.

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
00001	<user-defined> ON	not pre-allocated	自定义	-
00002	<user-defined> OFF			
00003	<user-defined> ON	not pre-allocated	自定义	-
00004	<user-defined> OFF			

1.2.4 Registers 00257 to 00264: Exception Flags

- Registers are write-protected.[1]
- The contents of these registers are also readable using function "Read Exception Status" (function code 7).
- Installation-specific SIPROTEC objects can be routed on these register positions using parameterization system DIGSI.

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
00257	<user-defined>	not pre-allocated	自定义	-
00258	<user-defined>	not pre-allocated	自定义	-
00259	<user-defined>	not pre-allocated	自定义	-
00260	<user-defined>	not pre-allocated	自定义	-
00261	<user-defined>	not pre-allocated	自定义	-
00262	<user-defined>	not pre-allocated	自定义	-
00263	<user-defined>	not pre-allocated	自定义	-
00264	<user-defined>	not pre-allocated	自定义	-

1. A write access is rejected with exception code 03 (ILLEGAL_DATA_VALUE).

1.3 Input Status registers (1X references)

The Input Status register block allows the Modbus master to scan the current status of the input channels as well as the annunciations generated in the SIPROTEC device (e.g. protection annunciations, status 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 Modbus registers) may be available in the SIPROTEC device.

1.3.1 User-defined annunciations

- Protection annunciations, single-point indications or taggings can be routed on these register positions as “Destination system interface” using the **`DIGSI Configuration matrix`**.

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
10001-10075	<user-defined>	not pre-allocated	自定义	-
10091-10095	<user-defined>	not pre-allocated	自定义	-
10141	<user-defined>	not pre-allocated	自定义	-
10143	<user-defined>	not pre-allocated	自定义	-
10145	<user-defined>	not pre-allocated	自定义	-
10147	<user-defined>	not pre-allocated	自定义	-
10149	<user-defined>	not pre-allocated	自定义	-
10150	<user-defined>	not pre-allocated	自定义	-
10153	<user-defined>	not pre-allocated	自定义	-
10155	<user-defined>	not pre-allocated	自定义	-
10157	<user-defined>	not pre-allocated	自定义	-
10168-10172	<user-defined>	not pre-allocated	自定义	-
10193-10208	<user-defined>	not pre-allocated	自定义	-

1.3.2 P.System Data 1

Register	Designation of the SIPROTEC objects	Comments	描述	Internal Object no.
10097	CommandOpenCB1	1 = Command: Open CB1	跳断路器 1	17760
10098	CommandOpenCB2	1 = Command: Open CB2	跳断路器 2	17761
10099	CommandOpenCB3	1 = Command: Open CB3	跳断路器 3	17762
10102*	CommandOpenCB6 (Only for 7VU681)	1 = Command: Open CB6	跳断路器 6	17765
10104	CommandCloseCB1	1 = Command: Close CB1	合断路器 1	17767
10105	CommandCloseCB2	1 = Command: Close CB2	合断路器 2	17768
10106	CommandCloseCB3	1 = Command: Close CB3	合断路器 3	17769
10107*	CommandCloseCB4 (Only for 7VU681)	1 = Command: Close CB4	合断路器 4	17770
10108*	CommandCloseCB5 (Only for 7VU681)	1 = Command: Close CB5	合断路器 5	17771
10110*	CommandCloseCB7 (Only for 7VU681)	1 = Command: Close CB7	合断路器 7	17773
10159*	HSBT ON/OFF(Only for 7VU683)	1 = HSBT ON/OFF	快切投退	17960
10160*	ATS ON/OFF(Only for 7VU681)	1 = ATS ON/OFF	备自投投退	17961
10161	Prot. ON/OFF	1 = Protections ON/OFF	保护投退	17962

1.3.3 Protections

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
10140	I>Trip	1=Phase Over-current I> Trip	相过流保护一段跳闸	17828
10142	I> >Trip	1=Phase Over-current I>> Trip	相过流保护二段跳闸	17830
10144	Ie>Trip	1=Earth Over-current I> Trip	零序过流保护一段跳闸	17837
10146	Ie> >Trip	1=Earth Over-current I>> Trip	零序过流保护二段跳闸	17839
10150	I> SOF Trip	1=Phase O/C I> Switch-Onto-Fault Trip	相电流充电保护一段跳闸	17929
10152	I>> SOF Trip	1=Phase O/C I>> Switch-Onto-Fault Trip	相电流充电保护二段跳闸	17931
10154	Ie> SOF Trip	1=Earth O/C I> Switch-Onto-Fault Trip	零序电流充电保护一段跳闸	17933
10156	Ie>> SOF Trip	1=Earth O/C I>> Switch-Onto-Fault Trip	零序电流充电保护二段跳闸	17935
10181	Phase O/C On/Off	1=Phase Over-current Protection ON	相过流保护投退	17981
10182	Earth O/C On/Off	1=Earth Over-current Protection ON	零序过流保护投退	17982
10183	PhO/C SOF On/Off	1=Phase O/C Switch-Onto-Fault ON	相电流充电保护投退	17983
10184	EaO/C SOF On/Off	1=Earth O/C Switch-Onto-Fault ON	零序电流充电保护投退	17984

1.3.4 HSBT(Only for 7VU683)

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
10111	L1->L2 Succ.	1 = Line1->Line2 Succeeded	进线 1-> 进线 2 切换成功	17871
10112	L2->L1 Succ.	1 = Line2->Line1 Succeeded	进线 2-> 进线 1 切换成功	17872
10113	B1->B2 Succ.	1 = Busbar1->Busbar2 Succeeded	母线 1-> 母线 2 切换成功	17873
10114	B2->B1 Succ.	1 = Busbar2->Busbar1 Succeeded	母线 2-> 母线 1 切换成功	17874
10115	B1->L1 Succ.	1 = Busbar1->Line1 Succeeded	母线 1-> 进线 1 切换成功	17875
10116	B2->L2 Succ.	1 = Busbar2->Line2 Succeeded	母线 2-> 进线 2 切换成功	17876
10117	L1->L2 Failed	1 = Line1->Line2 Failed	进线 1-> 进线 2 切换失败	17916
10118	L2->L1 Failed	1 = Line2->Line1 Failed	进线 2-> 进线 1 切换失败	17917
10119	B1->B2 Failed	1 = Busbar1->Busbar2 Failed	母线 1-> 母线 2 切换失败	17918
10120	B2->B1 Failed	1 = Busbar2->Busbar1 Failed	母线 2-> 母线 1 切换失败	17919
10121	B1->L1 Failed	1 = Busbar1->Line1 Failed	母线 1-> 进线 1 切换失败	17920
10122	B2->L2 Failed	1 = Busbar2->Line2 Failed	母线 2-> 进线 2 切换失败	17921
10187	HSBT Succeed	1 = HSBT Succeed	快切成功	17948
10188	HSBT Failed	1 = HSBT Failed	快切失败	17949
10189	HSBT is Ready	1 = HSBT is Ready	快切充电完成	18012
10162	L1->L2 ON/OFF	1 = Line1->Line2 ON/OFF	进线 1-> 进线 2 投退	17963
10163	L2->L1 ON/OFF	1 = Line2->Line1 ON/OFF	进线 2-> 进线 1 投退	17964
10164	B1->B2 ON/OFF	1 = B1->B2 ON/OFF	母线 1-> 母线 2 投退	17965
10165	B1->L1 ON/OFF	1 = B1->L1 ON/OFF	母线 1-> 进线 1 投退	17966
10166	B2->B1 ON/OFF	1 = B2->B1 ON/OFF	母线 2-> 母线 1 投退	17967
10167	B2->L2 ON/OFF	1 = B2->L2 ON/OFF	母线 2-> 进线 2 投退	17968
10223	LVLSH Trip	1 = LVLSH Trip	母线低压减载跳闸	30410
10224	B1 LVLSH Trip	1 =B1 LVLSH Trip	一母低压减载跳闸	30412
10225	B2 LVLSH Trip	1 =B2 LVLSH Trip	二母低压减载跳闸	30414
10226	L1->L3 Succeed	1 =L1->L3 Succeed	进线 1-> 进线 3 切换成功	30419
10227	L1->L3 Failed	1 =L1->L3 Failed	进线 1-> 进线 3 切换失败	30421
10228	L2->L3 Succeed	1 =L2->L3 Succeed	进线 2-> 进线 3 切换成功	30425
10229	L2->L3 Failed	1 =L2->L3 Failed	进线 2-> 进线 3 切换失败	30427
10230	L3->L1 Succeed	1 =L3->L1 Succeed	进线 3-> 进线 1 切换成功	30431
10231	L3->L1 Failed	1 =L3->L1 Failed	进线 3-> 进线 1 切换失败	30433
10232	L3->L2 Succeed	1 =L3->L2 Succeed	进线 3-> 进线 2 切换成功	30437
10233	L3->L2 Failed	1 =L3->L2 Failed	进线 3-> 进线 2 切换失败	30439
10234	L1->L3 ON/OFF	1 =L1->L3 ON/OFF	进线 1-> 进线 3 投退	30440
10235	L2->L3 ON/OFF	1 =L2->L3 ON/OFF	进线 2-> 进线 3 投退	30441

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
10236	L3->L1 ON/OFF	1 =L3->L1 ON/OFF	进线 3-> 进线 1 投退	30442
10237	L3->L2 ON/OFF	1 =L3->L2 ON/OFF	进线 3-> 进线 2 投退	30443

1.3.5 ATS(Only for 7VU681)

Register	Designation of the SIPROTEC objects	Comments	描述	Internal object no.
10125	L1->L2 Succ.	1 = Line1->Line2 Succeeded	进线 1-> 进线 2 切换成功	17798
10126	L2->L1 Succ.	1 = Line2->Line1 Succeeded	进线 2-> 进线 1 切换成功	17799
10127	B1->B2 Succ.	1 = Busbar1->Busbar2 Succeeded	母线 1-> 母线 2 切换成功	17800
10128	B2->B1 Succ.	1 = Busbar2->Busbar1 Succeeded	母线 2-> 母线 1 切换成功	17801
10129	T1->T2 Succ.	1 = Transformer1-> Transformer 2 Succeeded	主变 1-> 主变 2 切换成功	17802
10130	T2->T1 Succ.	1 = Transformer2-> Transformer 1 Succeeded	主变 2-> 主变 1 切换成功	17803
10131	L1->L2 Failed	1 = Line1->Line2 Failed	进线 1-> 进线 2 切换失败	17910
10132	L2->L1 Failed	1 = Line2->Line1 Failed	进线 2-> 进线 1 切换失败	17911
10133	B1->B2 Failed	1 = Busbar1->Busbar2 Failed	母线 1-> 母线 2 切换失败	17912
10134	B2->B1 Failed	1 = Busbar2->Busbar1 Failed	母线 2-> 母线 1 切换失败	17913
10135	T1->T2 Failed	1 = Transformer1-> Transformer 2 Failed	主变 1-> 主变 2 切换失败	17914
10136	T2->T1 Failed	1 = Transformer2-> Transformer1 Failed	主变 2-> 主变 1 切换失败	17915
10137	LVLSH-1 Trip	1 = Low Voltage Load-Shedding1 Trip	低压减载一段跳闸	17734
10138	LVLSH-2 Trip	1 = Low Voltage Load-Shedding2 Trip	低压减载二段跳闸	17735
10190	ATS is ready	1 = ATS is ready	备自投充电完成	18013
10173	L1->L2 ON/OFF	1 = Line1->Line2 ON/OFF	进线 1-> 进线 2 投退	17974
10174	L2->L1 ON/OFF	1 = Line2->Line1 ON/OFF	进线 2-> 进线 1 投退	17975
10175	B1->B2 ON/OFF	1 = B1->B2 ON/OFF	母线 1-> 母线 2 投退	17976
10176	B2->B1 ON/OFF	1 = B2->B1 ON/OFF	母线 1-> 进线 1 投退	17977
10177	T1->T2 ON/OFF	1 = T1->T2 ON/OFF	主变 1-> 主变 2 投退	17978
10178	T2->T1 ON/OFF	1 = T2->T1 ON/OFF	主变 2-> 主变 1 投退	17979
10179	B1->B2 LS ON/OFF	1 = B1->B2 LS ON/OFF	母线 1-> 母线 2 负荷减载 投退	17980
10180	B2->B1 LS ON/OFF	1 = B2->B1 LS ON/OFF	母线 2-> 母线 1 负荷减载 投退	18000

1.4 Input registers (3X references)

The Input register block allows the Modbus master to read the values of the analog inputs of the SIPROTEC device.

Note:

- Depending on the device composition not all of the indicated analog inputs (and corresponding Modbus registers) 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 are possible in adaptation to the concrete installation environment.
  You find information about this in the manual "SIPROTEC Communication module, Modbus - Communication profile" (ref. to page 3).
- Registers 30023 to 30033 are available with 7VU68x mapping from V01.01.

This is for 7VU683 with the primary diagram as Segmented Single Bus and 7VU681.

Register	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
30009	Uab_B1=	Uab_Bus1=	32767 kV	17581
30010	Ubc_B1 =	Ubc_bus1=	32767 kV	17582
30011	Uca_B1 =	Uca_bus1=	32767 kV	17583
30012	Uab_B2 =	Uab_bus2=	32767 kV	17588
30013	Ubc_B2 =	Ubc_bus2=	32767 kV	17589
30014	Uca_B2 =	Uca_bus2=	32767 kV	17590
30015	Ux_L1 =	Ux_L1=	32767 kV	17592
30016	Ux_L2 =	Ux_L2=	32767 kA	17593
30017	Ia_B =	Ia_bus=	32767 kA	17601
30018	Ib_B =	Ib_bus=	32767 kA	17602
30019	Ic_B =	Ic_bus=	32767 kA	17603
30020	Ie_B =	Ie_bus=	32767 kA	17604
30021	Ix_L1=	Ix_Line1=	32767 kA	17605
30022	Ix_L2=	Ix_Line2=	32767 kV	17607

This is just for 7VU683 with the primary diagram as Single Bus.

Register	Designation of the SIPROTEC objects	Comments	Scaling (32767 corresponds to ...)	Internal object no.
30006	Uab_B=	Uab_Bus=	32767 kV	17597
30007	Ubc_B=	Ubc_Bus=	32767 kV	17598
30008	Uca_B=	Uca_Bus=	32767 kV	17599
30015	Ux_L1 =	Ux_L1=	32767 kV	17592
30016	Ux_L2 =	Ux_L2=	32767 kV	17593
30021	Ix_L1=	Ix_Line1=	32767 kA	17605
30022	Ix_L2=	Ix_Line2=	32767 kA	17607
30023	Ux_L3 =	Ux_L3=	32767 kV	30448
30024	Ix_L3=	Ix_Line3=	32767 kA	30449

1.5 Holding registers (4X references)

The Holding register block allows the Modbus master to read metered measurands, system and diagnostic information as well as execute time synchronization of the SIPROTEC device.

1.5.1 Registers 40001 to 40036: System information

- Registers are write-protected.[1]

Register	Designation of the SIPROTEC objects	Comments
40001 - 40008	Hardware designation of the communication module (string, max. 16 characters)	"AME-GEN" for AME module, "AMO-GEN" for AMO module
40009 - 40010	Communication module software revision	Example: Register 40009 = 0001H, register 40010 = 0205H → Revision 1.2.5
40011 - 40026	MLFB (order number) of the SIPROTEC device (string, max. 32 characters)	Example: "7VU6831EW011BA0----0D----------"
40027 - 40034	Date and time of mapping data generation (string, max. 16 characters)	Example: "140202095747330" corresponds to → Date: Feb. 14th, 2002 → Time: 09 hours, 57 min., 47 sec. and 330 milliseconds
40035 - 40036	Number of selected standard mapping, Revision of mapping data	MSB of register 40035: → Number of selected standard mapping LSB of register 40035 and value of register 40036: → Revision of mapping data Example: Register 40035 = 3102H, register 40036 = 0304H → Standard mapping 3-1, Revision 2.3.4

1. A write access is rejected with exception code 03 (ILLEGAL_DATA_VALUE).

1.5.2 Registers 40065 to 40069: Time synchronization

- Ref. to chap. “Time synchronization” in the manual “SIPROTEC Communication module, Modbus - Communication profile” for additional notes regarding methods of time synchronization and Time/Date data type.

Register	Designation of the SIPROTEC objects	Comments
40065	Milliseconds	Time/Date transfer registers
40066	Hours / Minutes	
40067	Month / Day	
40068	Time/Date status byte / Year	
40069	“Set Time and Date”	available only, if time synchronization is configured with use of the “Set Time and Date” register

1.5.3 Register 40129: Diagnosis

- Registers are write-protected.[1]
- The contents of these registers are also readable using function "Diagnostics" (function code 7), subfunction "Return Diagnostic Register" (subfunction code 2).
- Ref. to chap. “Bus specific parameters” in the manual “SIPROTEC Communication module, Modbus - Communication profile” regarding signalization of “Data invalid” (register 40129/2^{15}).

Register	Designation of the SIPROTEC objects	Comments	Internal object no.
40129/2^0	<user-defined>	not pre-allocated	-
40129/2^1	<user-defined>	not pre-allocated	-
40129/2^2	<user-defined>	not pre-allocated	-
40129/2^3	<user-defined>	not pre-allocated	-
40129/2^4	<user-defined>	not pre-allocated	-
40129/2^5	Relay PICKUP	1 = Relay PICKUP (group signal)	501
40129/2^6	Relay TRIP	1 = Relay GENERAL TRIP command	511
40129/2^7	<user-defined>	not pre-allocated	-
40129/2^8	<user-defined>	not pre-allocated	-
40129/2^9	<user-defined>	not pre-allocated	-
40129/2^{10}	<user-defined>	not pre-allocated	-
40129/2^{11}	<user-defined>	not pre-allocated	-
40129/2^{12}	<user-defined>	not pre-allocated	-
40129/2^{13}	<user-defined>	not pre-allocated	-
40129/2^{14}	<user-defined>	not pre-allocated	-
40129/2^{15}	Data valid	1 = Data in the Modbus message are valid. (This indication is created by the Modbus slave; not available in DIGSI and not relocatable.)	-

1. A write access is rejected with exception code 03 (ILLEGAL_DATA_VALUE).

1.5.4 Registers 40301 to 40316: Statistic values

- Registers are write-protected.[1]
- Installation-specific values can be routed on these register positions as “Destination system interface” using the **DIGSI Configuration matrix**.

Register	Designation of the SIPROTEC objects	Comments	Internal object no.
40301 - 40302	<user-defined>	not pre-allocated	-
40303 - 40304	<user-defined>	not pre-allocated	-
40305 - 40306	<user-defined>	not pre-allocated	-
40307 - 40308	<user-defined>	not pre-allocated	-
40309 - 40310	<user-defined>	not pre-allocated	-
40311 - 40312	<user-defined>	not pre-allocated	-
40313 - 40314	<user-defined>	not pre-allocated	-
40315 - 40316	<user-defined>	not pre-allocated	-

1. A write access is rejected with exception code 03 (ILLEGAL_DATA_VALUE).

Glossary

AME	Universal asynchronous communication module with (electrical) isolated RS485 interface for the SIPROTEC devices from Siemens.
AMO	Universal asynchronous communication module with fibre-optical interface for the SIPROTEC devices from Siemens.
CFC	Continuous Function Chart
CRC	Cyclical Redundancy Check
DC	Double Command
DIGSI	Parameterization system / parameterization software for SIPROTEC devices
DP	Double-point indication
Input data / Input direction	Data from the Modbus slave to the Modbus master.
LRC	Longitudinal Redundancy Check
LSB	Least Significant Byte
Mapping	Allocation of the SIPROTEC data objects to the positions in the Modbus register map.
MSB	Most Significant Byte
Output data / Output direction	Data from the Modbus master to the Modbus slave.
SC	Single command
SP	Single-point indication

Index