



SEG

**MRA4 – Modbus RTU
HighPROTEC**

Data point list

Manual

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This manual applies to devices (version):

Build: 6656

Modbus Parameters

For the Modbus Protocol several parameters have to be set which are relevant for the communication between the control system (SCADA) and the device. The parameters and their setting possibilities or value ranges are shown in the table below.



ATTENTION!

The Parameters are described within the appendix of the device manual (chapter Modbus).

Notes for the SCADA-System

The following times have to be considered by the control system and are to be fixed adjusted in the *device* :
The dwell times (t_D) before start of a telegram must at least be set to 3.5 characters.

Examples:

3.5 characters 9600 Baud = 4 ms
3.5 characters 19200 Baud = 2 ms
3.6 3.5 characters 38400 Baud = 1 ms

Start of a new telegram is expected when the dwell time (t_D) is > 3.5 characters.

The fact that the probability of disruptions during transmission of a telegram increases with its length has to be taken into duly consideration and thus a query to the Slave should be possibly such that the response telegram is not much longer than 32 Byte.

Specific Modbus Function Codes

For reading out data from the *device* or to carry out commands, the services listed in the table, also called »Function Codes«, are supported.

Function-code	Designation	Description
3	Read Holding Registers	There are single or several data words read as from a specific data word address. Only status addresses and parameter addresses can be read.
4	Read Input Registers	There are single or several data words read as from a specific data word address. Only measuring values can be read.
5	Write single Output (Bit)	All other values are illegal and will not affect the output. Via this function code acknowledgments can be executed as well as counters reseted or blockings set.
8	Loopback Test	Test function for the communication system
16	Load Multiple Registers	There are single or several data words written as from a specific data word address.

Table 3.1: function codes

On the following pages the Modbus functions are described in detail:

Function-Code 3/4:

Query

Slave address	3/4	Register address HI	Register address LO	Register number HI	Register number LO	Check-sum HI	Check-sum LO
---------------	-----	---------------------	---------------------	--------------------	--------------------	--------------	--------------

Response

Slave address	3/4	Byte number	Register 0 HI	Register 0 LO	...	Check-sum HI	Check-sum LO
---------------	-----	-------------	---------------	---------------	-----	--------------	--------------

Register address ($HI * 256 + LO$)

The data word address from where reading should start.

Register number ($HI * 256 + LO$)

Number of data words to be read. Valid range: 1..125

Byte number

Number of subsequent Bytes containing data words.

Register

Data words read out of the device (Highbyte and Lowbyte).

Function Code 5:

Query

Slave address	5	Register address HI	Register address LO	Register data HI	Register data LO	Check-sum HI	Check-sum LO
---------------	---	---------------------	---------------------	------------------	------------------	--------------	--------------

Response

Slave address	5	Register address HI	Register address LO	Register data HI	Register data LO	Check-sum HI	Check-sum LO
---------------	---	---------------------	---------------------	------------------	------------------	--------------	--------------

Register address (HI*256 + LO)
Data word address to be written

Register data
Value of the data word to be written (Highbyte and Lowbyte).

Permitted value range :
 FF00 hex request for a single bit to be on: This often means to reset a counter, execute acknowledgments or set blockings signals.
 0000 hex request for a single bit to be off: This often means to deactivate blocking signals or to reset single bits.

Function Code 8:

Query

Slave address	8	Data Diag Code HI 0x00	Data Diag Code LO 0x00	Test data	Test data	Check-sum HI	Check-sum LO
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Response

Slave address	8	Data Diag Code HI	Data Diag Code LO	Test data	Test data	Check-sum HI	Check-sum LO
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Data Diag Code HI (high), Data Diag Code LO (Low)
Diagnostic Code (subfunction code of function code 8) for testing the communication system. The Diagnostic Code „Return Query Data“ (0x00, 0x00) is being supported.

Test Data
By using the Diagnostic Code 0x00 0x00, the transmitted data is sent back to the Master unchanged.

Function Code 16:

Query

Slave address	16	Register address HI	Register address LO	Register number HI	Register number LO	Byte number	Register 0 HI	Register 0 LO	...	Check-sum HI	Check-sum LO
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Response

Slave address	16	Register address HI	Register address LO	Register number HI	Register number LO	Check-sum HI	Check-sum LO
---------------	----	---------------------	---------------------	--------------------	--------------------	--------------	--------------

Register address ($HI * 256 + LO$)

Data word address as from where writing should start.

Register number ($HI * 256 + LO$)

Query: Number of data words to be written. Valid range: 1..123

Response: Number of data words written.

Byte number

Number of subsequent Bytes to contain data words.

Register

Data words read out of the device (Highbyte und Lowbyte).

Setting Date and Time

Date and time can be set by means of function code 16 and read with function code 3. If the device address 0 (broadcast address) is selected, the times of all devices connected to this bus are simultaneously reset. The devices do not respond to a broadcast command.

Supported MODBUS- Error Messages

Exception Response Telegrams are described within the general “Modbus RTU Protocol” specification. An exception response table with examples is shown there. For the *device* we want to supply more information on these. The table below contains just the actually used codes. In case the device has recognized an error it can react in the following way:

Exception Code	Designation	Description
1	Illegal Function	The message received includes a function code which is not supported by the Slave.
2	Illegal Data Address	Access was sought on a data word address not included in the data module.
3	Illegal Data Value	The received message contains an invalid data structure (e.g. wrong number of data bytes).
4	Slave Device Failure	An unrecoverable error occurred while the server (or slave) was attempting to perform the requested action.

The response given by the *device* in a failure case has the following format:

Slave Address	0x80 + Function Code	Exception Code	Check-sum HI	Check-sum LO
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In the second Byte of the response the Function Code is sent with the highest Bit set to 1. This is equivalent to an addition by 0x80. The third Byte holds the Exception Code of the error message.

Appendix - Data Point Lists

Signals

<i>Module</i>	<i>Subgroup Names Functions</i>	<i>Start Register Address</i>	<i>No. of Modbus Registers</i>	<i>Function Code</i>	<i>Format</i>	<i>Bit Mask / (Bit Position)</i>	<i>Unit</i>	<i>Description</i>
Prot		1	1	3	Struct			
	ExBlo1-I	1	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	1	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	active	1	1	3	Bit	0x4 (3)	-	Signal: active
	ExBlo	1	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Alarm L1	1	1	3	Bit	0x10 (5)	-	Signal: General-Alarm L1
	Alarm L2	1	1	3	Bit	0x20 (6)	-	Signal: General-Alarm L2
	Alarm L3	1	1	3	Bit	0x40 (7)	-	Signal: General-Alarm L3
	Alarm G	1	1	3	Bit	0x80 (8)	-	Signal: General-Alarm - Earth fault
	Alarm	1	1	3	Bit	0x100 (9)	-	Signal: General Alarm

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip L1 (*)	1	1	3	Bit	0x200 (10)	-	Signal: General Trip L1
	Trip L2 (*)	1	1	3	Bit	0x400 (11)	-	Signal: General Trip L2
	Trip L3 (*)	1	1	3	Bit	0x800 (12)	-	Signal: General Trip L3
	Trip G (*)	1	1	3	Bit	0x1000 (13)	-	Signal: General Trip Ground fault
	Trip (*)	1	1	3	Bit	0x2000 (14)	-	Signal: General Trip
	TripCmd (*)	1	1	3	Bit	0x4000 (15)	-	Signal: Trip Command
Prot		2	1	3	Struct			
	Blo TripCmd	2	1	3	Bit	0x1 (1)	-	Signal: Trip Command blocked
	ExBlo TripCmd-I	2	1	3	Bit	0x2 (2)	-	Module input state: External Blocking of the Trip Command
	ExBlo TripCmd	2	1	3	Bit	0x4 (3)	-	Signal: External Blocking of the Trip Command
	I dir fwd	2	1	3	Bit	0x80 (8)	-	Signal: Phase current failure forward direction
	I dir rev	2	1	3	Bit	0x100 (9)	-	Signal: Phase current failure reverse direction

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	I dir n poss	2	1	3	Bit	0x200 (10)	-	Signal: Phase fault - missing reference voltage
	IG dir fwd	2	1	3	Bit	0x400 (11)	-	Signal: Earth fault forward
	IG rev dir	2	1	3	Bit	0x800 (12)	-	Signal: Earth fault reverse direction
	IG dir n poss	2	1	3	Bit	0x1000 (13)	-	Signal: Earth fault direction detection not possible
[1]		3	1	3	Struct			
	ExBlo1-I	3	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	3	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	3	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	3	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	3	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	3	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	3	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo TripCmd	3	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	3	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	3	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush
[1]		4	1	3	Struct			
	Alarm L1	4	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	4	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	4	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	4	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	4	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	4	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	4	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	4	1	3	Bit	0x80 (8)	-	Signal: Trip

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	TripCmd (*)	4	1	3	Bit	0x100 (9)	-	Signal: Trip Command
I[2]		5	1	3	Struct			
	ExBlo1-I	5	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	5	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	5	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	5	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	5	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	5	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	5	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	5	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	5	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	5	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
I[2]		6	1	3	Struct			
	Alarm L1	6	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	6	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	6	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	6	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	6	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	6	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	6	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	6	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	6	1	3	Bit	0x100 (9)	-	Signal: Trip Command
I[3]		7	1	3	Struct			
	ExBlo1-I	7	1	3	Bit	0x1 (1)	-	Module input state: External blocking1

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo2-I	7	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	7	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	7	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	7	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	7	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	7	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	7	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	7	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	7	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush
[3]		8	1	3	Struct			
	Alarm L1	8	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	8	1	3	Bit	0x2 (2)	-	Signal: Alarm L2

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm L3	8	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	8	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	8	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	8	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	8	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	8	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	8	1	3	Bit	0x100 (9)	-	Signal: Trip Command
[4]		9	1	3	Struct			
	ExBlo1-I	9	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	9	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	9	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Inter-I	9	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	active	9	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	9	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	9	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	9	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	9	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	9	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush
[4]		10	1	3	Struct			
	Alarm L1	10	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	10	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	10	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	10	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	10	1	3	Bit	0x10 (5)	-	Signal: General Trip L1

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip L2 (*)	10	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	10	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	10	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	10	1	3	Bit	0x100 (9)	-	Signal: Trip Command
I[5]		11	1	3	Struct			
	ExBlo1-I	11	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	11	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	11	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	11	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	11	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	11	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	11	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo TripCmd	11	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	11	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	11	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush
I[5]		12	1	3	Struct			
	Alarm L1	12	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	12	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	12	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	12	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	12	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	12	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	12	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	12	1	3	Bit	0x80 (8)	-	Signal: Trip

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	TripCmd (*)	12	1	3	Bit	0x100 (9)	-	Signal: Trip Command
I[6]		13	1	3	Struct			
	ExBlo1-I	13	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	13	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	13	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	13	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	13	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	13	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	13	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	13	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	13	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IH2 Blo	13	1	3	Bit	0x200 (10)	-	Signal: Blocking the trip command by an inrush

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
I[6]		14	1	3	Struct			
	Alarm L1	14	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	14	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	14	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	14	1	3	Bit	0x8 (4)	-	Signal: Alarm
	Trip L1 (*)	14	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	14	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	14	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	14	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	14	1	3	Bit	0x100 (9)	-	Signal: Trip Command
IG[1]		15	1	3	Struct			
	ExBlo1-I	15	1	3	Bit	0x1 (1)	-	Module input state: External blocking1

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo2-I	15	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	15	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	15	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	15	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	15	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	15	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	15	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	15	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IGH2 Blo	15	1	3	Bit	0x200 (10)	-	Signal: blocked by an inrush
	Alarm	15	1	3	Bit	0x400 (11)	-	Signal: Alarm IG
	Trip (*)	15	1	3	Bit	0x800 (12)	-	Signal: Trip

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	TripCmd (*)	15	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
IG[2]		16	1	3	Struct			
	ExBlo1-I	16	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	16	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	16	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	16	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	16	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	16	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	16	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	16	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	16	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IGH2 Blo	16	1	3	Bit	0x200 (10)	-	Signal: blocked by an inrush

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm	16	1	3	Bit	0x400 (11)	-	Signal: Alarm IG
	Trip (*)	16	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	16	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
IG[3]		17	1	3	Struct			
	ExBlo1-I	17	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	17	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	17	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Interl-I	17	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	17	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	17	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	17	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	17	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd	17	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IGH2 Blo	17	1	3	Bit	0x200 (10)	-	Signal: blocked by an inrush
	Alarm	17	1	3	Bit	0x400 (11)	-	Signal: Alarm IG
	Trip (*)	17	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	17	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
IG[4]		18	1	3	Struct			
	ExBlo1-I	18	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	18	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	18	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Ex rev Inter-I	18	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	18	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	18	1	3	Bit	0x20 (6)	-	Signal: External Blocking

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Ex rev Interl	18	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	Blo TripCmd	18	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	18	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	IGH2 Blo	18	1	3	Bit	0x200 (10)	-	Signal: blocked by an inrush
	Alarm	18	1	3	Bit	0x400 (11)	-	Signal: Alarm IG
	Trip (*)	18	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	18	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
ThR		19	1	3	Struct			
	ExBlo1-I	19	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	19	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	19	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	19	1	3	Bit	0x8 (4)	-	Signal: active

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo	19	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	19	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	19	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	19	1	3	Bit	0x80 (8)	-	Signal: Alarm Thermal Overload
	Trip (*)	19	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	19	1	3	Bit	0x200 (10)	-	Signal: Trip Command
I2>[1]		20	1	3	Struct			
	ExBlo1-I	20	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	20	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	20	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	20	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	20	1	3	Bit	0x10 (5)	-	Signal: External Blocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo TripCmd	20	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	20	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	20	1	3	Bit	0x80 (8)	-	Signal: Alarm Negative Sequence
	Trip (*)	20	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	20	1	3	Bit	0x200 (10)	-	Signal: Trip Command
I2>[2]		21	1	3	Struct			
	ExBlo1-I	21	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	21	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	21	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	21	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	21	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	21	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd	21	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	21	1	3	Bit	0x80 (8)	-	Signal: Alarm Negative Sequence
	Trip (*)	21	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	21	1	3	Bit	0x200 (10)	-	Signal: Trip Command
IH2		22	1	3	Struct			
	ExBlo1-I	22	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	22	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	active	22	1	3	Bit	0x4 (3)	-	Signal: active
	ExBlo	22	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Blo L1	22	1	3	Bit	0x10 (5)	-	Signal: Blocked L1
	Blo L2	22	1	3	Bit	0x20 (6)	-	Signal: Blocked L2
	Blo L3	22	1	3	Bit	0x40 (7)	-	Signal: Blocked L3

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo IG	22	1	3	Bit	0x80 (8)	-	Signal: Blocking of the earth protection module
	3-ph Blo	22	1	3	Bit	0x100 (9)	-	Signal: Inrush was detected in at least one phase - trip command blocked.
V[1]		24	1	3	Struct			
	ExBlo1-I	24	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	24	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	24	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	24	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	24	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	24	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	24	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
V[1]		25	1	3	Struct			
	Alarm L1	25	1	3	Bit	0x1 (1)	-	Signal: Alarm L1

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm L2	25	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	25	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	25	1	3	Bit	0x8 (4)	-	Signal: Alarm voltage stage
	Trip L1 (*)	25	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	25	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	25	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	25	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	25	1	3	Bit	0x100 (9)	-	Signal: Trip Command
V[2]		26	1	3	Struct			
	ExBlo1-I	26	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	26	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	26	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	active	26	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	26	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	26	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	26	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
V[2]		27	1	3	Struct			
	Alarm L1	27	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	27	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	27	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	27	1	3	Bit	0x8 (4)	-	Signal: Alarm voltage stage
	Trip L1 (*)	27	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	27	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	27	1	3	Bit	0x40 (7)	-	Signal: General Trip L3

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip (*)	27	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	27	1	3	Bit	0x100 (9)	-	Signal: Trip Command
V[3]		28	1	3	Struct			
	ExBlo1-I	28	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	28	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	28	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	28	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	28	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	28	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	28	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
V[3]		29	1	3	Struct			
	Alarm L1	29	1	3	Bit	0x1 (1)	-	Signal: Alarm L1

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm L2	29	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	29	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	29	1	3	Bit	0x8 (4)	-	Signal: Alarm voltage stage
	Trip L1 (*)	29	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	29	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	29	1	3	Bit	0x40 (7)	-	Signal: General Trip L3
	Trip (*)	29	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	29	1	3	Bit	0x100 (9)	-	Signal: Trip Command
V[4]		30	1	3	Struct			
	ExBlo1-I	30	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	30	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	30	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	active	30	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	30	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	30	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	30	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
V[4]		31	1	3	Struct			
	Alarm L1	31	1	3	Bit	0x1 (1)	-	Signal: Alarm L1
	Alarm L2	31	1	3	Bit	0x2 (2)	-	Signal: Alarm L2
	Alarm L3	31	1	3	Bit	0x4 (3)	-	Signal: Alarm L3
	Alarm	31	1	3	Bit	0x8 (4)	-	Signal: Alarm voltage stage
	Trip L1 (*)	31	1	3	Bit	0x10 (5)	-	Signal: General Trip L1
	Trip L2 (*)	31	1	3	Bit	0x20 (6)	-	Signal: General Trip L2
	Trip L3 (*)	31	1	3	Bit	0x40 (7)	-	Signal: General Trip L3

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip (*)	31	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	31	1	3	Bit	0x100 (9)	-	Signal: Trip Command
VE[1]		32	1	3	Struct			
	ExBlo1-I	32	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	32	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	32	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	32	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	32	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	32	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	32	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	32	1	3	Bit	0x80 (8)	-	Signal: Alarm Residual Voltage Supervision-stage
	Trip (*)	32	1	3	Bit	0x100 (9)	-	Signal: Trip

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	TripCmd (*)	32	1	3	Bit	0x200 (10)	-	Signal: Trip Command
VE[2]		33	1	3	Struct			
	ExBlo1-I	33	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	33	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	33	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	33	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	33	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	33	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	33	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	33	1	3	Bit	0x80 (8)	-	Signal: Alarm Residual Voltage Supervision-stage
	Trip (*)	33	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	33	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
f[1]		34	1	3	Struct			
	ExBlo1-I	34	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	34	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	34	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	34	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	34	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	34	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	34	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	34	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[1]		35	1	3	Struct			
	Alarm f	35	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	35	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip f (*)	35	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT	35	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	35	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)
	Alarm delta phi	35	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	35	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip delta phi	35	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	35	1	3	Bit	0x100 (9)	-	Signal: Trip Command
f[2]		36	1	3	Struct			
	ExBlo1-I	36	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	36	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	36	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	36	1	3	Bit	0x8 (4)	-	Signal: active

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo	36	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	36	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	36	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	36	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[2]		37	1	3	Struct			
	Alarm f	37	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	37	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change
	Trip f (*)	37	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT	37	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	37	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)
	Alarm delta phi	37	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	37	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip delta phi	37	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	37	1	3	Bit	0x100 (9)	-	Signal: Trip Command
f[3]		38	1	3	Struct			
	ExBlo1-I	38	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	38	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	38	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	38	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	38	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	38	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	38	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	38	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[3]		39	1	3	Struct			

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm f	39	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	39	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change
	Trip f (*)	39	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT	39	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	39	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)
	Alarm delta phi	39	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	39	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip delta phi	39	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	39	1	3	Bit	0x100 (9)	-	Signal: Trip Command
f[4]		40	1	3	Struct			
	ExBlo1-I	40	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	40	1	3	Bit	0x2 (2)	-	Module input state: External blocking2

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd-I	40	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	40	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	40	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	40	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	40	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	40	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[4]		41	1	3	Struct			
	Alarm f	41	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	41	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change
	Trip f (*)	41	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT	41	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	41	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm delta phi	41	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	41	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip delta phi	41	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	41	1	3	Bit	0x100 (9)	-	Signal: Trip Command
f[5]		42	1	3	Struct			
	ExBlo1-I	42	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	42	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	42	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	42	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	42	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	42	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	42	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd	42	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[5]		43	1	3	Struct			
	Alarm f	43	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	43	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change
	Trip f (*)	43	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT	43	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	43	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)
	Alarm delta phi	43	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	43	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip delta phi	43	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	43	1	3	Bit	0x100 (9)	-	Signal: Trip Command
f[6]		44	1	3	Struct			

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo1-I	44	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	44	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	44	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	44	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	44	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	44	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	44	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	44	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
f[6]		45	1	3	Struct			
	Alarm f	45	1	3	Bit	0x1 (1)	-	Signal: Alarm Frequency Protection
	Alarm df/dt DF/DT	45	1	3	Bit	0x2 (2)	-	Alarm instantaneous or average value of the rate-of-frequency-change
	Trip f (*)	45	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip df/dt DF/DT	45	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Alarm	45	1	3	Bit	0x10 (5)	-	Signal: Alarm Frequency Protection (collective signal)
	Alarm delta phi	45	1	3	Bit	0x20 (6)	-	Signal: Alarm Vector Surge
	Trip	45	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip delta phi	45	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	45	1	3	Bit	0x100 (9)	-	Signal: Trip Command
AR		46	1	3	Struct			
	active	46	1	3	Bit	0x1 (1)	-	Signal: active
	ExBlo	46	1	3	Bit	0x2 (2)	-	Signal: External Blocking
	Abort Blo	46	1	3	Bit	0x4 (3)	-	Signal: AR - The AR was aborted or blocked by an active function of the menu "Abort"
	running	46	1	3	Bit	0x8 (4)	-	Signal: Auto Reclosing running

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	t-dead	46	1	3	Bit	0x10 (5)	-	Signal: Dead time between trip and reclosure attempt
	t-Superv	46	1	3	Bit	0x20 (6)	-	Signal: AR Supervision (blocking) time
	Service Alarm	46	1	3	Bit	0x40 (7)	-	Signal: AR - Alarm, too many switching operations
	Service Blo	46	1	3	Bit	0x80 (8)	-	Signal: AR - Service blocking - too many switching operations
	successful (*)	46	1	3	Bit	0x100 (9)	-	Signal: Auto Reclosing successful
	failed (*)	46	1	3	Bit	0x200 (10)	-	Signal: Auto Reclosing failure
	CB Pos Detect	46	1	3	Bit	0x400 (11)	-	Module input state: Criterion by which the Circuit Breaker Switch Position is to be detected.
AR		47	1	3	Struct			
	ExBlo1-I	47	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	47	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	Ex Sync running-I	47	1	3	Bit	0x4 (3)	-	Module input state: External synchronism signal

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Ready-I	47	1	3	Bit	0x8 (4)	-	Module input state: CB ready
	CB ON Cmd	47	1	3	Bit	0x10 (5)	-	Signal: CB switch ON Command
	AR Shot No.0 (*)	47	1	3	Bit	0x20 (6)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.1 (*)	47	1	3	Bit	0x40 (7)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.2 (*)	47	1	3	Bit	0x80 (8)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.3 (*)	47	1	3	Bit	0x100 (9)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.4 (*)	47	1	3	Bit	0x200 (10)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.5 (*)	47	1	3	Bit	0x400 (11)	-	Signal: Auto Reclosure Attempt No.
	AR Shot No.6 (*)	47	1	3	Bit	0x800 (12)	-	Signal: Auto Reclosure Attempt No.
AR		48	1	3	Struct			
	1.FT (*)	48	1	3	Bit	0x1 (1)	-	Signal: Fast Trip
	1.FT Cmd (*)	48	1	3	Bit	0x2 (2)	-	Signal: Trip Command for Fast Tripping

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	2.FT (*)	48	1	3	Bit	0x4 (3)	-	Signal: Fast Trip
	2.FT Cmd (*)	48	1	3	Bit	0x8 (4)	-	Signal: Trip Command for Fast Tripping
	3.FT (*)	48	1	3	Bit	0x10 (5)	-	Signal: Fast Trip
	3.FT Cmd (*)	48	1	3	Bit	0x20 (6)	-	Signal: Trip Command for Fast Tripping
	4.FT (*)	48	1	3	Bit	0x40 (7)	-	Signal: Fast Trip
	4.FT Cmd (*)	48	1	3	Bit	0x80 (8)	-	Signal: Trip Command for Fast Tripping
	5.FT (*)	48	1	3	Bit	0x100 (9)	-	Signal: Fast Trip
	5.FT Cmd (*)	48	1	3	Bit	0x200 (10)	-	Signal: Trip Command for Fast Tripping
	6.FT (*)	48	1	3	Bit	0x400 (11)	-	Signal: Fast Trip
	6.FT Cmd (*)	48	1	3	Bit	0x800 (12)	-	Signal: Trip Command for Fast Tripping
Exp[1]		49	1	3	Struct			
	ExBlo1-I	49	1	3	Bit	0x1 (1)	-	Module input state: External blocking1

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo2-I	49	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	49	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Alarm-I	49	1	3	Bit	0x8 (4)	-	Module input state: External Alarm
	Trip-I	49	1	3	Bit	0x10 (5)	-	Module input state: External Trip
	active	49	1	3	Bit	0x20 (6)	-	Signal: active
	ExBlo	49	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	49	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	49	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	49	1	3	Bit	0x200 (10)	-	Signal: External Alarm
	Trip (*)	49	1	3	Bit	0x400 (11)	-	Signal: External Trip
	TripCmd (*)	49	1	3	Bit	0x800 (12)	-	Signal: External Trip Command
Exp[2]		50	1	3	Struct			

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo1-I	50	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	50	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	50	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Alarm-I	50	1	3	Bit	0x8 (4)	-	Module input state: External Alarm
	Trip-I	50	1	3	Bit	0x10 (5)	-	Module input state: External Trip
	active	50	1	3	Bit	0x20 (6)	-	Signal: active
	ExBlo	50	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	50	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	50	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	50	1	3	Bit	0x200 (10)	-	Signal: External Alarm
	Trip (*)	50	1	3	Bit	0x400 (11)	-	Signal: External Trip

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	TripCmd (*)	50	1	3	Bit	0x800 (12)	-	Signal: External Trip Command
ExP[3]		51	1	3	Struct			
	ExBlo1-I	51	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	51	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	51	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Alarm-I	51	1	3	Bit	0x8 (4)	-	Module input state: External Alarm
	Trip-I	51	1	3	Bit	0x10 (5)	-	Module input state: External Trip
	active	51	1	3	Bit	0x20 (6)	-	Signal: active
	ExBlo	51	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	51	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	51	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	51	1	3	Bit	0x200 (10)	-	Signal: External Alarm

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip (*)	51	1	3	Bit	0x400 (11)	-	Signal: External Trip
	TripCmd (*)	51	1	3	Bit	0x800 (12)	-	Signal: External Trip Command
ExP[4]		52	1	3	Struct			
	ExBlo1-I	52	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	52	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	52	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	Alarm-I	52	1	3	Bit	0x8 (4)	-	Module input state: External Alarm
	Trip-I	52	1	3	Bit	0x10 (5)	-	Module input state: External Trip
	active	52	1	3	Bit	0x20 (6)	-	Signal: active
	ExBlo	52	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	52	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	52	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm	52	1	3	Bit	0x200 (10)	-	Signal: External Alarm
	Trip (*)	52	1	3	Bit	0x400 (11)	-	Signal: External Trip
	TripCmd (*)	52	1	3	Bit	0x800 (12)	-	Signal: External Trip Command
CBF		53	1	3	Struct			
	ExBlo1-I	53	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	53	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	active	53	1	3	Bit	0x4 (3)	-	Signal: active
	ExBlo	53	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	running	53	1	3	Bit	0x10 (5)	-	Signal: CBF-Module started
	Alarm (*)	53	1	3	Bit	0x20 (6)	-	Signal: Circuit Breaker Failure
TCS		54	1	3	Struct			
	ExBlo1-I	54	1	3	Bit	0x1 (1)	-	Module input state: External blocking1

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo2-I	54	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	active	54	1	3	Bit	0x4 (3)	-	Signal: active
	ExBlo	54	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Alarm	54	1	3	Bit	0x10 (5)	-	Signal: Alarm Trip Circuit Supervision
	CB Pos Detect-I	54	1	3	Bit	0x20 (6)	-	Module input state: Criterion by which the Circuit Breaker Switch Position is to be detected.
CTS		55	1	3	Struct			
	ExBlo1-I	55	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	55	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	active	55	1	3	Bit	0x4 (3)	-	Signal: active
	ExBlo	55	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Alarm	55	1	3	Bit	0x10 (5)	-	Signal: Alarm Current Transformer Measuring Circuit Supervision
VTS		56	1	3	Struct			

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Ex Fuse Fail VT-I	56	1	3	Bit	0x1 (1)	-	Module input state: External fuse failure voltage transformers
	Ex Fuse Fail EVT-I	56	1	3	Bit	0x2 (2)	-	Module input state: External fuse failure earth voltage transformer
	ExBlo1-I	56	1	3	Bit	0x4 (3)	-	Module input state: External blocking1
	ExBlo2-I	56	1	3	Bit	0x8 (4)	-	Module input state: External blocking2
	active	56	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	56	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Alarm ΔV	56	1	3	Bit	0x40 (7)	-	Signal: Alarm ΔV Voltage Transformer Measuring Circuit Supervision
	Alarm	56	1	3	Bit	0x80 (8)	-	Signal: Alarm Voltage Transformer Measuring Circuit Supervision
	Ex FF VT	56	1	3	Bit	0x100 (9)	-	Signal: Alarm Fuse Failure Voltage Transformers
	Ex FF EVT	56	1	3	Bit	0x200 (10)	-	Signal: Alarm Fuse Failure Earth Voltage Transformers
Prot		57	1	3	Struct			
	FaultNo	57	1	3	Bit	0x1 (1)	-	Disturbance No

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Prot		58	1	3	Struct			
	MainsFaultNo	58	1	3	Bit	0x1 (1)	-	Mains disturbance No
/AppFrame/SingleSet/SetControl		59	1	3	Struct			
	PS 1	59	1	3	Bit	0x1 (1)	-	Signal: Parameter Set 1
	PS 2	59	1	3	Bit	0x2 (2)	-	Signal: Parameter Set 2
	PS 3	59	1	3	Bit	0x4 (3)	-	Signal: Parameter Set 3
	PS 4	59	1	3	Bit	0x8 (4)	-	Signal: Parameter Set 4
	PSS manual	59	1	3	Bit	0x10 (5)	-	Signal: Manual Switch over of a Parameter Set
	PSS via Scada	59	1	3	Bit	0x20 (6)	-	Signal: Parameter Set Switch via Scada
	PSS via Inp fct	59	1	3	Bit	0x40 (7)	-	Signal: Parameter Set Switch via input function
	PS1-I	59	1	3	Bit	0x80 (8)	-	State of the module input respectively of the signal, that should activate this Parameter Setting Group.

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	PS2-I	59	1	3	Bit	0x100 (9)	-	State of the module input respectively of the signal, that should activate this Parameter Setting Group.
	PS3-I	59	1	3	Bit	0x200 (10)	-	State of the module input respectively of the signal, that should activate this Parameter Setting Group.
	PS4-I	59	1	3	Bit	0x400 (11)	-	State of the module input respectively of the signal, that should activate this Parameter Setting Group.
	min 1 param changed (*)	59	1	3	Bit	0x800 (12)	-	Signal: At least one parameter has been changed
PowerCr		60	1	3	Struct			
	Cr Overflow Wp+	60	1	3	Bit	0x1 (1)	-	Signal: Counter Overflow Wp+
	Cr Overflow Wp-	60	1	3	Bit	0x2 (2)	-	Signal: Counter Overflow Wp-
	Cr Overflow Wq+	60	1	3	Bit	0x4 (3)	-	Signal: Counter Overflow Wq+
	Cr Overflow Wq-	60	1	3	Bit	0x8 (4)	-	Signal: Counter Overflow Wq-
SOFT		65	1	3	Struct			
	ExBlo1-I	65	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	65	1	3	Bit	0x2 (2)	-	Module input state: External blocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Ext SOTF-I	65	1	3	Bit	0x4 (3)	-	Module input state: External Switch Onto Fault Alarm
	Ex rev Interl-I	65	1	3	Bit	0x8 (4)	-	Module input state: External reverse interlocking
	active	65	1	3	Bit	0x10 (5)	-	Signal: active
	ExBlo	65	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Ex rev Interl	65	1	3	Bit	0x40 (7)	-	Signal: External reverse Interlocking
	CB Pos Detect-I	65	1	3	Bit	0x100 (9)	-	Module input state: Criterion by which the Circuit Breaker Switch Position is to be detected.
	AR Blo	65	1	3	Bit	0x400 (11)	-	Signal: Blocked by AR
	enabled	65	1	3	Bit	0x800 (12)	-	Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.
	Manual ON-I (*)	65	1	3	Bit	0x1000 (13)	-	Module input state: Circuit breaker was switched on manually
	I<	65	1	3	Bit	0x2000 (14)	-	Signal: No Load Current.
DCLP		66	1	3	Struct			

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo1-I	66	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	66	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	Ex rev Interl-I	66	1	3	Bit	0x4 (3)	-	Module input state: External reverse interlocking
	active	66	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	66	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Ex rev Interl	66	1	3	Bit	0x20 (6)	-	Signal: External reverse Interlocking
	CB Pos Detect-I	66	1	3	Bit	0x80 (8)	-	Module input state: Criterion by which the Circuit Breaker Switch Position is to be detected.
	enabled	66	1	3	Bit	0x200 (10)	-	Signal: Cold Load enabled
	detected (*)	66	1	3	Bit	0x400 (11)	-	Signal: Cold Load detected
	I<	66	1	3	Bit	0x800 (12)	-	Signal: No Load Current.
	AR Blo	66	1	3	Bit	0x1000 (13)	-	Module input state: AR Blo

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
PQS [1]		67	1	3	Struct			
	ExBlo1-I	67	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	67	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	67	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	67	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	67	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	67	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	67	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	67	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	67	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	67	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PQS [2]		68	1	3	Struct			

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo1-I	68	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	68	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	68	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	68	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	68	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	68	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	68	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	68	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	68	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	68	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PQS [3]		69	1	3	Struct			
	ExBlo1-I	69	1	3	Bit	0x1 (1)	-	Module input state: External blocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo2-I	69	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	69	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	69	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	69	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	69	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	69	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	69	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	69	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	69	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PQS [4]		70	1	3	Struct			
	ExBlo1-I	70	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	70	1	3	Bit	0x2 (2)	-	Module input state: External blocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd-I	70	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	70	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	70	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	70	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	70	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	70	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	70	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	70	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PQS [5]		71	1	3	Struct			
	ExBlo1-I	71	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	71	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	71	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	active	71	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	71	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	71	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	71	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	71	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	71	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	71	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PQS [6]		72	1	3	Struct			
	ExBlo1-I	72	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	72	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	72	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	72	1	3	Bit	0x8 (4)	-	Signal: active

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo	72	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	72	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	72	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	72	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Protection
	Trip (*)	72	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	72	1	3	Bit	0x200 (10)	-	Signal: Trip Command
PF[1]		73	1	3	Struct			
	ExBlo1-I	73	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	73	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	73	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	73	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	73	1	3	Bit	0x10 (5)	-	Signal: External Blocking

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo TripCmd	73	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	73	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	73	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Factor
	Trip (*)	73	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	73	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Compensator	73	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	73	1	3	Bit	0x800 (12)	-	Signal: Alarm Power Factor Impossible
PF[2]		74	1	3	Struct			
	ExBlo1-I	74	1	3	Bit	0x1 (1)	-	Module input state: External blocking
	ExBlo2-I	74	1	3	Bit	0x2 (2)	-	Module input state: External blocking
	ExBlo TripCmd-I	74	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	74	1	3	Bit	0x8 (4)	-	Signal: active

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo	74	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	74	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	74	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	74	1	3	Bit	0x80 (8)	-	Signal: Alarm Power Factor
	Trip (*)	74	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	74	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Compensator	74	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	74	1	3	Bit	0x800 (12)	-	Signal: Alarm Power Factor Impossible
V 012 [1]		100	1	3	Struct			
	ExBlo1-I	100	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	100	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	100	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	active	100	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	100	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	100	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	100	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	100	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry
	Trip (*)	100	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	100	1	3	Bit	0x200 (10)	-	Signal: Trip Command
V 012 [2]		101	1	3	Struct			
	ExBlo1-I	101	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	101	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	101	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	101	1	3	Bit	0x8 (4)	-	Signal: active

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo	101	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	101	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	101	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	101	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry
	Trip (*)	101	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	101	1	3	Bit	0x200 (10)	-	Signal: Trip Command
V 012 [3]		102	1	3	Struct			
	ExBlo1-I	102	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	102	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	102	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	102	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	102	1	3	Bit	0x10 (5)	-	Signal: External Blocking

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Blo TripCmd	102	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	102	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	102	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry
	Trip (*)	102	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	102	1	3	Bit	0x200 (10)	-	Signal: Trip Command
V 012 [4]		103	1	3	Struct			
	ExBlo1-I	103	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	103	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	103	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	103	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	103	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	103	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	ExBlo TripCmd	103	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	103	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry
	Trip (*)	103	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	103	1	3	Bit	0x200 (10)	-	Signal: Trip Command
V 012 [5]		104	1	3	Struct			
	ExBlo1-I	104	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	104	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	104	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	104	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	104	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	104	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	104	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Alarm	104	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry
	Trip (*)	104	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	104	1	3	Bit	0x200 (10)	-	Signal: Trip Command
V 012 [6]		105	1	3	Struct			
	ExBlo1-I	105	1	3	Bit	0x1 (1)	-	Module input state: External blocking1
	ExBlo2-I	105	1	3	Bit	0x2 (2)	-	Module input state: External blocking2
	ExBlo TripCmd-I	105	1	3	Bit	0x4 (3)	-	Module input state: External Blocking of the Trip Command
	active	105	1	3	Bit	0x8 (4)	-	Signal: active
	ExBlo	105	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	105	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	105	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	105	1	3	Bit	0x80 (8)	-	Signal: Alarm voltage asymmetry

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Trip (*)	105	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	105	1	3	Bit	0x200 (10)	-	Signal: Trip Command
DI Slot X1		1000	1	3	Struct			
	DI 1	1000	1	3	Bit	0x1 (1)	-	Signal: Digital Input
	DI 2	1000	1	3	Bit	0x2 (2)	-	Signal: Digital Input
	DI 3	1000	1	3	Bit	0x4 (3)	-	Signal: Digital Input
	DI 4	1000	1	3	Bit	0x8 (4)	-	Signal: Digital Input
	DI 5	1000	1	3	Bit	0x10 (5)	-	Signal: Digital Input
	DI 6	1000	1	3	Bit	0x20 (6)	-	Signal: Digital Input
	DI 7	1000	1	3	Bit	0x40 (7)	-	Signal: Digital Input
	DI 8	1000	1	3	Bit	0x80 (8)	-	Signal: Digital Input
DI Slot X6		1001	1	3	Struct			

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	DI 1	1001	1	3	Bit	0x1 (1)	-	Signal: Digital Input
	DI 2	1001	1	3	Bit	0x2 (2)	-	Signal: Digital Input
	DI 3	1001	1	3	Bit	0x4 (3)	-	Signal: Digital Input
	DI 4	1001	1	3	Bit	0x8 (4)	-	Signal: Digital Input
	DI 5	1001	1	3	Bit	0x10 (5)	-	Signal: Digital Input
	DI 6	1001	1	3	Bit	0x20 (6)	-	Signal: Digital Input
	DI 7	1001	1	3	Bit	0x40 (7)	-	Signal: Digital Input
	DI 8	1001	1	3	Bit	0x80 (8)	-	Signal: Digital Input
BO Slot X2		1003	1	3	Struct			
	BO 1	1003	1	3	Bit	0x1 (1)	-	Signal: Binary Output Relay
	BO 2	1003	1	3	Bit	0x2 (2)	-	Signal: Binary Output Relay
	BO 3	1003	1	3	Bit	0x4 (3)	-	Signal: Binary Output Relay

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	BO 4	1003	1	3	Bit	0x8 (4)	-	Signal: Binary Output Relay
	BO 5	1003	1	3	Bit	0x10 (5)	-	Signal: Binary Output Relay
	BO 6	1003	1	3	Bit	0x20 (6)	-	Signal: Binary Output Relay
BO Slot X5		1004	1	3	Struct			
	BO 1	1004	1	3	Bit	0x1 (1)	-	Signal: Binary Output Relay
	BO 2	1004	1	3	Bit	0x2 (2)	-	Signal: Binary Output Relay
	BO 3	1004	1	3	Bit	0x4 (3)	-	Signal: Binary Output Relay
	BO 4	1004	1	3	Bit	0x8 (4)	-	Signal: Binary Output Relay
	BO 5	1004	1	3	Bit	0x10 (5)	-	Signal: Binary Output Relay
	BO 6	1004	1	3	Bit	0x20 (6)	-	Signal: Binary Output Relay
Modbus		1005	1	3	Struct			
	Scada Cmd 1	1005	1	3	Bit	0x1 (1)	-	Scada Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Scada Cmd 2	1005	1	3	Bit	0x2 (2)	-	Scada Command
	Scada Cmd 3	1005	1	3	Bit	0x4 (3)	-	Scada Command
	Scada Cmd 4	1005	1	3	Bit	0x8 (4)	-	Scada Command
	Scada Cmd 5	1005	1	3	Bit	0x10 (5)	-	Scada Command
	Scada Cmd 6	1005	1	3	Bit	0x20 (6)	-	Scada Command
	Scada Cmd 7	1005	1	3	Bit	0x40 (7)	-	Scada Command
	Scada Cmd 8	1005	1	3	Bit	0x80 (8)	-	Scada Command
	Scada Cmd 9	1005	1	3	Bit	0x100 (9)	-	Scada Command
	Scada Cmd 10	1005	1	3	Bit	0x200 (10)	-	Scada Command
	Scada Cmd 11	1005	1	3	Bit	0x400 (11)	-	Scada Command
	Scada Cmd 12	1005	1	3	Bit	0x800 (12)	-	Scada Command

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Scada Cmd 13	1005	1	3	Bit	0x1000 (13)	-	Scada Command
	Scada Cmd 14	1005	1	3	Bit	0x2000 (14)	-	Scada Command
	Scada Cmd 15	1005	1	3	Bit	0x4000 (15)	-	Scada Command
	Scada Cmd 16	1005	1	3	Bit	0x8000 (16)	-	Scada Command
Modbus		1006	1	3	Struct			
	Transmission	1006	1	3	Bit	0x1 (1)	-	Signal: SCADA active
CB		1010	1	3	Struct			
	Ready	1010	1	3	Bit	0x1 (1)	-	Signal: Circuit breaker is ready for operation.
	Pos	1010	1	3	Bit	0x2 (2)	-	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
	Pos Indeterm	1010	1	3	Bit	0x8 (4)	-	Signal: Circuit Breaker is in Indeterminate Position
	Pos OFF	1010	1	3	Bit	0x10 (5)	-	Signal: Circuit Breaker is in OFF-Position
	Pos ON	1010	1	3	Bit	0x20 (6)	-	Signal: Circuit Breaker is in ON-Position

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
	Pos Disturb	1010	1	3	Bit	0x40 (7)	-	Signal: Circuit Breaker Disturbed - Undefined Circuit Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer the Position Indicators indicate that the circuit breaker is in the ON and OFF-Position at the same time.

Legend * = These Signals have to be acknowledged by the Scada System.

Measuring values

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Date and Time		20000	6	4	Struct			
	y	20000	6	4	Short	Word 0 (1)	-	year
	m	20000	6	4	Short	Word 1 (17)	-	month
	d	20000	6	4	Short	Word 2 (33)	-	days
	h	20000	6	4	Short	Word 3 (49)	-	hours
	min	20000	6	4	Short	Word 4 (65)	-	minute
	ms	20000	6	4	Short	Word 5 (81)	-	milliseconds
Prot	TripCmd Cr	20006	2	4	Float IEE754		-	Counter: Total number of trips of the switchgear (circuit breaker, load break switch...).
/Device/Views/UserInterface/Main	Build	20008	2	4	Float IEE754		-	Build
Values	Operating hours Cr	20010	2	4	Float IEE754		h	Operating hours counter

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Measured values	IL1	20100	2	4	Float IEE754		A	Measured value: Phase current (fundamental)
Measured values	IL2	20102	2	4	Float IEE754		A	Measured value: Phase current (fundamental)
Measured values	IL3	20104	2	4	Float IEE754		A	Measured value: Phase current (fundamental)
Measured values	IG meas	20106	2	4	Float IEE754		A	Measured value (measured): IG (fundamental)
Measured values	Theta	20110	2	4	Float IEE754		%	Measured value: Theta
Measured values	t-Theta	20112	2	4	Float IEE754		s	Measured value (calculated/measured): Remaining time until the thermal overload module will trip
Measured values	I0	20114	2	4	Float IEE754		A	Measured value (calculated): Zero current (fundamental)
Measured values	I1	20116	2	4	Float IEE754		A	Measured value (calculated): Positive phase sequence current (fundamental)
Measured values	I2	20118	2	4	Float IEE754		A	Measured value (calculated): Unbalanced load current (fundamental)
Measured values	IL1 H2	20120	2	4	Float IEE754		%	Measured value: 2nd harmonic/1st harmonic of IL1

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Measured values	IL2 H2	20122	2	4	Float IEE754		%	Measured value: 2nd harmonic/1st harmonic of IL2
Measured values	IL3 H2	20124	2	4	Float IEE754		%	Measured value: 2nd harmonic/1st harmonic of IL3
Measured values	IG H2	20126	2	4	Float IEE754		%	Measured value: 2nd harmonic/1st harmonic of IG
Measured values	f	20128	2	4	Float IEE754		Hz	Measured value: Frequency
Measured values	VL12	20130	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage
Measured values	VL23	20132	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage
Measured values	VL31	20134	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage
Measured values	VL1	20136	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage
Measured values	VL2	20138	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage
Measured values	VL3	20140	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage
Measured values	VE meas	20142	2	4	Float IEE754		V	Measured value (measured): VE measured

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Measured values	V0	20146	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components Zero voltage
Measured values	V1	20148	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components positive phase sequence voltage
Measured values	V2	20150	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components negative phase sequence voltage
Measured values	cos phi	20152	2	4	Float IEE754		-	Measured value (calculated): Power factor
Measured values	P	20154	2	4	Float IEE754		W	Measured value (calculated): Active power (P+ = Fed Active Power, P- = Consumpted Active Power)
Measured values	Q	20156	2	4	Float IEE754		VAr	Measured value (calculated): Reactive power (Q+ = Fed Reactive Power, Q- = Consumpted Reactive Power)
Measured values	S	20158	2	4	Float IEE754		VA	Measured value (calculated): Apparent power (S+ = Fed Apparent Power, S- = Consumpted Apparent Power)
Measured values	IG calc	20160	2	4	Float IEE754		A	Measured value (calculated): IG (fundamental)
Measured values	VE calc	20162	2	4	Float IEE754		V	Measured value (calculated): VE
Count and RevData	Total number Cr	20164	2	4	Float IEE754		-	Total number of all executed Automatic Reclosures Attempts

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Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Count and RevData	Cr failed	20166	2	4	Float IEE754		-	Total number of unsuccessfully executed automatic reclosure attempts
Count and RevData	Cr successfl	20168	2	4	Float IEE754		-	Total number of successfully executed Automatic Reclosures
Count and RevData	AR Cr Alarm	20170	2	4	Float IEE754		-	Remaining numbers of ARs until Maintenance Alarm
Count and RevData	AR Cr Block	20172	2	4	Float IEE754		-	Remaining numbers of ARs until Maintenance Blocking
Measured values	Wp+	20174	2	4	Float IEE754		kWh	Positive Active Power (Fed Energy)
Measured values	Wp-	20176	2	4	Float IEE754		kWh	Negative Active Power is consumed active energy
Measured values	Wq+	20178	2	4	Float IEE754		kWh	Positive Reactive Power (Fed Energy)
Measured values	Wq-	20180	2	4	Float IEE754		kWh	Negative Reactive Power is consumed reactive energy
Measured values	Sum trip I L1	20182	2	4	Float IEE754		A	Summation of the tripping currents phase1
Measured values	Sum trip I L2	20184	2	4	Float IEE754		A	Summation of the tripping currents phase2
Measured values	Sum trip I L3	20186	2	4	Float IEE754		A	Summation of the tripping currents phase3

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Count and RevData	AR Shot No.	20188	2	4	Float IEE754		-	Counter - Auto Reclosure Attempts
Statistics	f avg	20200	2	4	Float IEE754		Hz	Average frequency value
Statistics	f max	20202	2	4	Float IEE754		Hz	Max. frequency value
Statistics	f min	20204	2	4	Float IEE754		Hz	Min. frequency value
Statistics	VL12 avg	20206	2	4	Float IEE754		V	VL12 average value
Statistics	VL12 max	20208	2	4	Float IEE754		V	VL12 maximum value
Statistics	VL12 min	20210	2	4	Float IEE754		V	VL12 minimum value
Statistics	VL23 avg	20212	2	4	Float IEE754		V	VL23 average value
Statistics	VL23 max	20214	2	4	Float IEE754		V	VL23 maximum value
Statistics	VL23 min	20216	2	4	Float IEE754		V	VL23 minimum value
Statistics	VL31 avg	20218	2	4	Float IEE754		V	VL31 average value

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Statistics	VL31 max	20220	2	4	Float IEE754		V	VL31 maximum value
Statistics	VL31 min	20222	2	4	Float IEE754		V	VL31 minimum value
Statistics	VL1 avg	20224	2	4	Float IEE754		V	VL1 average value
Statistics	VL1 max	20226	2	4	Float IEE754		V	VL1 maximum value
Statistics	VL1 min	20228	2	4	Float IEE754		V	VL1 minimum value
Statistics	VL2 avg	20230	2	4	Float IEE754		V	VL2 average value
Statistics	VL2 max	20232	2	4	Float IEE754		V	VL2 maximum value
Statistics	VL2 min	20234	2	4	Float IEE754		V	VL2 minimum value
Statistics	VL3 avg	20236	2	4	Float IEE754		V	VL3 average value
Statistics	VL3 max	20238	2	4	Float IEE754		V	VL3 maximum value
Statistics	VL3 min	20240	2	4	Float IEE754		V	VL3 minimum value

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Statistics	V1 avg	20242	2	4	Float IEE754		V	Average value: Symmetrical components positive phase sequence voltage
Statistics	V1 max	20244	2	4	Float IEE754		V	Maximum value: Symmetrical components positive phase sequence voltage
Statistics	V1 min	20246	2	4	Float IEE754		V	Minimum value: Symmetrical components positive phase sequence voltage
Statistics	V2 avg	20248	2	4	Float IEE754		V	Average value: Symmetrical components negative phase sequence voltage
Statistics	V2 max	20250	2	4	Float IEE754		V	Maximum value: Symmetrical components negative phase sequence voltage
Statistics	V2 min	20252	2	4	Float IEE754		V	Minimum value: Symmetrical components negative phase sequence voltage
Statistics	IL1 avg	20254	2	4	Float IEE754		A	IL1 average value (fundamental)
Statistics	IL1 max	20256	2	4	Float IEE754		A	IL1 maximum value (fundamental)
Statistics	IL1 min	20258	2	4	Float IEE754		A	IL1 minimum value (fundamental)
Statistics	IL2 avg	20260	2	4	Float IEE754		A	IL2 average value (fundamental)

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Statistics	IL2 max	20262	2	4	Float IEE754		A	IL2 maximum value (fundamental)
Statistics	IL2 min	20264	2	4	Float IEE754		A	IL2 minimum value (fundamental)
Statistics	IL3 avg	20266	2	4	Float IEE754		A	IL3 average value (fundamental)
Statistics	IL3 max	20268	2	4	Float IEE754		A	IL3 maximum value (fundamental)
Statistics	IL3 min	20270	2	4	Float IEE754		A	IL3 minimum value (fundamental)
Statistics	I1 avg	20272	2	4	Float IEE754		A	Average value positive phase sequence current (fundamental)
Statistics	I1 max	20274	2	4	Float IEE754		A	Maximum value positive phase sequence current (fundamental)
Statistics	I1 min	20276	2	4	Float IEE754		A	Minimum value positive phase sequence current (fundamental)
Statistics	I2 avg	20278	2	4	Float IEE754		A	Average value unbalanced load current (fundamental)
Statistics	I2 max	20280	2	4	Float IEE754		A	Maximum value unbalanced load (fundamental)
Statistics	I2 min	20282	2	4	Float IEE754		A	Minimum value unbalanced load current (fundamental)

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Statistics	Theta avg	20284	2	4	Float IEE754		%	Theta average value
Statistics	Theta max	20286	2	4	Float IEE754		%	Theta maximum value
Statistics	Theta min	20288	2	4	Float IEE754		%	Theta minimum value
Statistics	cos phi avg	20290	2	4	Float IEE754		-	Average of the power factor
Statistics	cos phi max	20292	2	4	Float IEE754		-	Maximum value of the power factor
Statistics	cos phi min	20294	2	4	Float IEE754		-	Minimum value of the power factor
Statistics	P avg	20296	2	4	Float IEE754		W	Average of the active power
Statistics	P max	20298	2	4	Float IEE754		W	Maximum value of the active power
Statistics	P min	20300	2	4	Float IEE754		W	Minimum value of the active power
Statistics	Q avg	20302	2	4	Float IEE754		VAr	Average of the reactive power
Statistics	Q max	20304	2	4	Float IEE754		VAr	Maximum value of the reactive power

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Statistics	Q min	20306	2	4	Float IEE754		VAr	Minimum value of the reactive power
Statistics	S avg	20308	2	4	Float IEE754		VA	Average of the apparent power
Statistics	S max	20310	2	4	Float IEE754		VA	Maximum value of the apparent power
Statistics	S min	20312	2	4	Float IEE754		VA	Minimum value of the apparent power
Statistics	MeasPointNo	20314	2	4	Float IEE754		-	Each measuring point that is taken over by the statistics increments this counter. By means of this counter, the User can check whether the statistics are alive and if data are being acquired.
Measured values	IL1 RMS	20316	2	4	Float IEE754		A	Measured value: Phase current (RMS)
Measured values	IL2 RMS	20318	2	4	Float IEE754		A	Measured value: Phase current (RMS)
Measured values	IL3 RMS	20320	2	4	Float IEE754		A	Measured value: Phase current (RMS)
Measured values	IG meas RMS	20322	2	4	Float IEE754		A	Measured value (measured): IG (RMS)
Measured values	IG calc RMS	20324	2	4	Float IEE754		A	Measured value (calculated): IG (RMS)

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Measured values	delta phi	20326	2	4	Float IEE754		°	Measured value (calculated): Vector surge
Measured values	df/dt	20328	2	4	Float IEE754		Hz/s	Measured value (calculated): Rate-of-frequency-change.
Statistics	IL1 avg RMS	20330	2	4	Float IEE754		A	IL1 average value (RMS)
Statistics	IL2 avg RMS	20332	2	4	Float IEE754		A	IL2 average value (RMS)
Statistics	IL3 avg RMS	20334	2	4	Float IEE754		A	IL3 average value (RMS)
Statistics	IL1 max RMS	20336	2	4	Float IEE754		A	IL1 maximum value (RMS)
Statistics	IL2 max RMS	20338	2	4	Float IEE754		A	IL2 maximum value (RMS)
Statistics	IL3 max RMS	20340	2	4	Float IEE754		A	IL3 maximum value (RMS)
Statistics	IL1 min RMS	20342	2	4	Float IEE754		A	IL1 minimum value (RMS)
Statistics	IL2 min RMS	20344	2	4	Float IEE754		A	IL2 minimum value (RMS)
Statistics	IL3 min RMS	20346	2	4	Float IEE754		A	IL3 minimum value (RMS)

Commands

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Acknowledge	LEDs	22000	1	5	0xFF00		-	LEDs
Acknowledge	Binary Outputs	22001	1	5	0xFF00		-	Binary Outputs
Acknowledge	Scada	22002	1	5	0xFF00		-	Scada
Acknowledge	Device	22003	1	5	0xFF00		-	Device
Acknowledge	Ack TripCmd	22005	1	5	0xFF00		-	Signal: Acknow TripCmd
Reset	Modbus diagnosis counter	22006	1	5	0xFF00		-	Modbus diagnosis counter
Reset	Wp+ Reset Cr	22007	1	5	Short		-	Wp+ Reset Counter
Reset	Wp- Reset Cr	22008	1	5	Short		-	Wp- Reset Counter
Reset	Wq+ Reset Cr	22009	1	5	Short		-	Wq+ Reset Counter
Reset	Wq- Reset Cr	22010	1	5	Short		-	Wq- Reset Counter

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Reset	Res all Energy Cr	22011	1	5	Short		-	Reset of all Energy Counters
Reset	Res Sum trip	22012	1	5	Short		-	Reset summation of the tripping currents
Scada Cmd	Assbl Scada Cmd 1	22020	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 2	22021	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 3	22022	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 4	22023	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 5	22024	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 6	22025	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 7	22026	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 8	22027	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 9	22028	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
Scada Cmd	Assbl Scada Cmd 10	22029	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 11	22030	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 12	22031	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 13	22032	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 14	22033	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 15	22034	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
Scada Cmd	Assbl Scada Cmd 16	22035	1	5	0xFF00=On 0x0000=Off		-	Assignable Scada Command
/AppFrame/SingleSet/ParameterSet	Scada PS1	22050	1	5	0xFF00		-	Scada Setting Group1
/AppFrame/SingleSet/ParameterSet	Scada PS2	22051	1	5	0xFF00		-	Scada Setting Group2
/AppFrame/SingleSet/ParameterSet	Scada PS3	22052	1	5	0xFF00		-	Scada Setting Group3

Appendix - Data Point Lists

Module	Subgroup Names Functions	Start Register Address	No. of Modbus Registers	Function Code	Format	Bit Mask / (Bit Position)	Unit	Description
/AppFrame/SingleSet/ParameterSet	Scada PS4	22053	1	5	0xFF00		-	Scada Setting Group4

Settings

<i>Module</i>	<i>Subgroup Names Functions</i>	<i>Start Register Address</i>	<i>No. of Modbus Registers</i>	<i>Function Code</i>	<i>Format</i>	<i>Bit Mask / (Bit Position)</i>	<i>Unit</i>	<i>Description</i>
Date and Time		32500	6	3 16	Struct			
	y	32500	6	3 16	Short	Word 0 (1)	-	year
	m	32500	6	3 16	Short	Word 1 (17)	-	month
	d	32500	6	3 16	Short	Word 2 (33)	-	days
	h	32500	6	3 16	Short	Word 3 (49)	-	hours
	min	32500	6	3 16	Short	Word 4 (65)	-	minute
	ms	32500	6	3 16	Short	Word 5 (81)	-	milliseconds

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