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1 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 tables below.

NOTICE!



The Parameters are described within the Reference Manual of the device (separate document).

1.1 Notes for the SCADA-System

When using Modbus RTU the following times have to be considered by the control system and are fixed within the device:

The dwell times (t_D) before start of a telegram must be set at least to 3.5 characters.

Examples:

- 3.5 characters 9600 Baud = 4 ms
- 3.5 characters 19200 Baud = 2 ms
- 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 Bytes.

2 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.

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

2.1 Function Code 3/4

Query

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

Response

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

2.2 Function Code 5

Query

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

Response

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

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

Register data — Value of the data word to be written (High-byte and Low-byte).

Permitted value range:

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

2.3 Function Code 8

Query

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

Response

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

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.

2.4 Function Code 16

Query

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

Response

Slave address	16	Register address	Register address	Register number	Register number	Check-sum	Check-sum
		HI	LO	HI	LO	HI	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 (High-byte and Low-byte).

2.5 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.

NOTICE!



The devices do not respond to a broadcast command.

2.6 Supported MODBUS Error Messages

Exception Response Telegrams are described within the general "Modbus Application Protocol Specification". An exception response table with examples is shown there. The table below contains just the actually used codes. In case the device has recognized an error it will 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 case of a failure has the following format:

Slave Address	0x80	Exception Code	Check-sum	Check-sum
	+ Function Code		HI	LO

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.

3 Appendix - Register Maps

3.1 Signals

Legend: (*) = These signals have to be acknowledged by the Scada System.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
/SG1		256	1	3	Struct			
	CES SG removed	256	1	3	Bit	0x2 (2)	-	Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.
27A[1] - Undervoltage		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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd	32	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	32	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	32	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	32	1	3	Bit	0x200 (10)	-	Signal: Trip Command
27A[2] - Undervoltage		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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd	33	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	33	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	33	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	33	1	3	Bit	0x200 (10)	-	Signal: Trip Command
27M[1] - Undervoltage		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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd	24	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
27M[1] - Undervoltage		25	1	3	Struct			
	Pickup Phase A	25	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	25	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	25	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	25	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element
	Trip (*)	25	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	25	1	3	Bit	0x100 (9)	-	Signal: Trip Command
	Imin release active	25	1	3	Bit	0x200 (10)	-	Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.
27M[2] - Undervoltage		26	1	3	Struct			
	ExBlo1-I	26	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	26	1	3	Bit	0x2	-	Module Input State: External Blocking2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	ExBlo TripCmd-I	26	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	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
27M[2] - Undervoltage		27	1	3	Struct			
	Pickup Phase A	27	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	27	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	27	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	27	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element
	Trip (*)	27	1	3	Bit	0x80	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	TripCmd (*)	27	1	3	Bit	0x100 (9)	-	Signal: Trip Command
	Imin release active	27	1	3	Bit	0x200 (10)	-	Signal that the Imin release (minimum current) check is enabled and does not block the undervoltage detection at the moment.
32V[1] - Vars		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
	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
	Pickup	70	1	3	Bit	0x80	-	Signal: Pickup Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	Trip (*)	70	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	70	1	3	Bit	0x200 (10)	-	Signal: Trip Command
32V[2] - Vars		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
	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
	Pickup	71	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	71	1	3	Bit	0x100 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	71	1	3	Bit	0x200 (10)	-	Signal: Trip Command
32V[3] - Vars		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
	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
	Pickup	72	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Protection
	Trip (*)	72	1	3	Bit	0x100	-	Signal: Trip Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	72	1	3	Bit	0x200 (10)	-	Signal: Trip Command
32[1] - Real Power		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
	Pickup	67	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Protection
	Trip (*)	67	1	3	Bit	0x100	-	Signal: Trip Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	67	1	3	Bit	0x200 (10)	-	Signal: Trip Command
32[2] - Real Power		68	1	3	Struct			
	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
	Pickup	68	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Protection
	Trip (*)	68	1	3	Bit	0x100	-	Signal: Trip Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	68	1	3	Bit	0x200 (10)	-	Signal: Trip Command
32[3] - Real Power		69	1	3	Struct			
	ExBlo1-I	69	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	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
	Pickup	69	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Protection
	Trip (*)	69	1	3	Bit	0x100	-	Signal: Trip Power Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	69	1	3	Bit	0x200 (10)	-	Signal: Trip Command
37[1] - Underload		167	1	3	Struct			
	ExBlo1-I	167	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	167	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	167	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	167	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	167	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo TripCmd	167	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	167	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
	Pickup	167	1	3	Bit	0x200 (10)	-	Signal: Pickup
	Trip (*)	167	1	3	Bit	0x400	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(11)		
	TripCmd (*)	167	1	3	Bit	0x800 (12)	-	Signal: Trip Command
37[2] - Underload		168	1	3	Struct			
	ExBlo1-I	168	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	168	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	168	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	168	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	168	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo TripCmd	168	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	168	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
	Pickup	168	1	3	Bit	0x200 (10)	-	Signal: Pickup
	Trip (*)	168	1	3	Bit	0x400	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(11)		
	TripCmd (*)	168	1	3	Bit	0x800 (12)	-	Signal: Trip Command
37[3] - Underload		169	1	3	Struct			
	ExBlo1-I	169	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	169	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	169	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	169	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	169	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo TripCmd	169	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	169	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
	Pickup	169	1	3	Bit	0x200 (10)	-	Signal: Pickup
	Trip (*)	169	1	3	Bit	0x400	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(11)		
	TripCmd (*)	169	1	3	Bit	0x800 (12)	-	Signal: Trip Command
46[1] - I.Unbalance		82	1	3	Struct			
	ExBlo1-I	82	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	82	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	82	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	82	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	82	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	82	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	82	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	82	1	3	Bit	0x80 (8)	-	Signal: Pickup Negative Sequence
	Trip (*)	82	1	3	Bit	0x100	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	82	1	3	Bit	0x200 (10)	-	Signal: Trip Command
46[2] - I.Unbalance		83	1	3	Struct			
	ExBlo1-I	83	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	83	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	83	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	83	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	83	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	83	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	83	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	83	1	3	Bit	0x80 (8)	-	Signal: Pickup Negative Sequence
	Trip (*)	83	1	3	Bit	0x100	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	83	1	3	Bit	0x200 (10)	-	Signal: Trip Command
47[1] - V.Unbalance		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
	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
	Pickup	100	1	3	Bit	0x80 (8)	-	Signal: Pickup Voltage Asymmetry
	Trip (*)	100	1	3	Bit	0x100	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	100	1	3	Bit	0x200 (10)	-	Signal: Trip Command
47[2] - V.Unbalance		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
	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
	Pickup	101	1	3	Bit	0x80 (8)	-	Signal: Pickup Voltage Asymmetry
	Trip (*)	101	1	3	Bit	0x100	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	101	1	3	Bit	0x200 (10)	-	Signal: Trip Command
49 - Thermal Model		164	1	3	Struct			
	ExBlo1-I	164	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	ExBlo2-I	164	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	ExBlo TripCmd-I	164	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	164	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	164	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	164	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	164	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	164	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	164	1	3	Bit	0x100	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	TripCmd (*)	164	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Alarm Pickup	164	1	3	Bit	0x400 (11)	-	Signal: Alarm Pickup
	Alarm Timeout	164	1	3	Bit	0x800 (12)	-	Signal: Alarm Timeout
	Load above SF	164	1	3	Bit	0x1000 (13)	-	“Load above Service Factor”: If the current exceeds the set value of “UTC” (“Ultimate trip threshold”) then the used thermal capacity counts up and the state “Load above SF” is becoming true. If the current is below the “UTC” value this state is false.
	RTD effective	164	1	3	Bit	0x2000 (14)	-	This state becomes true if the following conditions are all fulfilled: <ul style="list-style-type: none"> - the state “Load above SF” is true, - the Winding Temperature Trip has been activated in the RTD module, - for at least one temperature a valid value above 0°C (32°F) is being displayed.
50J[1] - Jam-Stall		165	1	3	Struct			
	ExBlo1-I	165	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	165	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd-I	165	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	165	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	165	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo TripCmd	165	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	165	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
	Pickup	165	1	3	Bit	0x200 (10)	-	Signal: Pickup
	Trip (*)	165	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	165	1	3	Bit	0x800 (12)	-	Signal: Trip Command
50J[2] - Jam-Stall		166	1	3	Struct			
	ExBlo1-I	166	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	166	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd-I	166	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	166	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	166	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo TripCmd	166	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	166	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
	Pickup	166	1	3	Bit	0x200 (10)	-	Signal: Pickup
	Trip (*)	166	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	166	1	3	Bit	0x800 (12)	-	Signal: Trip Command
50P[1] - Phase Inst. OC		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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd-I	3	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	3	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	3	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	3	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	3	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
50P[1] - Phase Inst. OC		4	1	3	Struct			
	Pickup IA	4	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	4	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	4	1	3	Bit	0x4 (3)	-	Signal: Pickup IC

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup	4	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	4	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	4	1	3	Bit	0x100 (9)	-	Signal: Trip Command
50P[2] - Phase Inst. OC		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
	Rvs Blo-I	5	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	5	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	5	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	5	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
50P[2] - Phase Inst. OC		6	1	3	Struct			
	Pickup IA	6	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	6	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	6	1	3	Bit	0x4 (3)	-	Signal: Pickup IC
	Pickup	6	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	6	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	6	1	3	Bit	0x100 (9)	-	Signal: Trip Command
50P[3] - Phase Inst. OC		7	1	3	Struct			
	ExBlo1-I	7	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	7	1	3	Bit	0x2	-	Module Input State: External Blocking2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	ExBlo TripCmd-I	7	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	7	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	7	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	7	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	7	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
50P[3] - Phase Inst. OC		8	1	3	Struct			
	Pickup IA	8	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	8	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	8	1	3	Bit	0x4	-	Signal: Pickup IC

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	Pickup	8	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	8	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	8	1	3	Bit	0x100 (9)	-	Signal: Trip Command
50R[1] - Residual Inst. OC		61	1	3	Struct			
	ExBlo1-I	61	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	61	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	61	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	61	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	61	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	61	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	61	1	3	Bit	0x40	-	Signal: Reverse Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(7)		
	Blo TripCmd	61	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	61	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	61	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	61	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	61	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
50R[2] - Residual Inst. OC		62	1	3	Struct			
	ExBlo1-I	62	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	62	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	62	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	62	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	62	1	3	Bit	0x10	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(5)		
	ExBlo	62	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	62	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	62	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	62	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	62	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	62	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	62	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
50X[1] - Meas. Inst. OC		15	1	3	Struct			
	ExBlo1-I	15	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	15	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	15	1	3	Bit	0x4	-	Module Input State: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	Rvs Blo-I	15	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	15	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	15	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	15	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
	Pickup	15	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	15	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	15	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
50X[2] - Meas. Inst. OC		16	1	3	Struct			
	ExBlo1-I	16	1	3	Bit	0x1	-	Module Input State: External Blocking1

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		
	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
	Rvs Blo-I	16	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	16	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	16	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	16	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
	Pickup	16	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	16	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	16	1	3	Bit	0x1000	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(13)		
51P[1] - Phase Time OC		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
	Rvs Blo-I	9	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	9	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	9	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	9	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
51P[1] - Phase Time OC		10	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup IA	10	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	10	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	10	1	3	Bit	0x4 (3)	-	Signal: Pickup IC
	Pickup	10	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	10	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	10	1	3	Bit	0x100 (9)	-	Signal: Trip Command
51P[2] - Phase Time OC		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
	Rvs Blo-I	11	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Active	11	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	11	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	11	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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
51P[2] - Phase Time OC		12	1	3	Struct			
	Pickup IA	12	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	12	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	12	1	3	Bit	0x4 (3)	-	Signal: Pickup IC
	Pickup	12	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	12	1	3	Bit	0x80 (8)	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	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
51P[3] - Phase Time OC		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
	Rvs Blo-I	13	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	13	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	13	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	13	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
51P[3] - Phase Time OC		14	1	3	Struct			
	Pickup IA	14	1	3	Bit	0x1 (1)	-	Signal: Pickup IA
	Pickup IB	14	1	3	Bit	0x2 (2)	-	Signal: Pickup IB
	Pickup IC	14	1	3	Bit	0x4 (3)	-	Signal: Pickup IC
	Pickup	14	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	14	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	14	1	3	Bit	0x100 (9)	-	Signal: Trip Command
51R[1] - Residual Time OC		63	1	3	Struct			
	ExBlo1-I	63	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	63	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	63	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Rvs Blo-I	63	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	63	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	63	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	63	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	63	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	63	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	63	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	63	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	63	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
51R[2] - Residual Time OC		64	1	3	Struct			
	ExBlo1-I	64	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo2-I	64	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	64	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	64	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	64	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	64	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	64	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	64	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	64	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	64	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	64	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	64	1	3	Bit	0x1000	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(13)		
51X[1] - Meas. Time OC		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
	Rvs Blo-I	17	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	17	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	17	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	17	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	17	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	17	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	17	1	3	Bit	0x400	-	Signal: The pickup value has been exceeded.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(11)		
	Trip (*)	17	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	17	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
51X[2] – Meas. Time OC		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
	Rvs Blo-I	18	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	18	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	18	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	18	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	18	1	3	Bit	0x80	-	Signal: Trip Command blocked

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	ExBlo TripCmd	18	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Pickup	18	1	3	Bit	0x400 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	18	1	3	Bit	0x800 (12)	-	Signal: Trip
	TripCmd (*)	18	1	3	Bit	0x1000 (13)	-	Signal: Trip Command
59A[1] - Overvoltage		77	1	3	Struct			
	ExBlo1-I	77	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	77	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	77	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	77	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	77	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	77	1	3	Bit	0x20	-	Signal: Trip Command blocked

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	ExBlo TripCmd	77	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	77	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	77	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	77	1	3	Bit	0x200 (10)	-	Signal: Trip Command
59A[2] - Overvoltage		78	1	3	Struct			
	ExBlo1-I	78	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	78	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	78	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	78	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	78	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	78	1	3	Bit	0x20	-	Signal: Trip Command blocked

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	ExBlo TripCmd	78	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	78	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	78	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	78	1	3	Bit	0x200 (10)	-	Signal: Trip Command
59M[1] - Overvoltage		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	-	Signal: Trip Command blocked

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	ExBlo TripCmd	28	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
59M[1] - Overvoltage		29	1	3	Struct			
	Pickup Phase A	29	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	29	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	29	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	29	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element
	Trip (*)	29	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	29	1	3	Bit	0x100 (9)	-	Signal: Trip Command
59M[2] - Overvoltage		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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd-I	30	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	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
59M[2] - Overvoltage		31	1	3	Struct			
	Pickup Phase A	31	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	31	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	31	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	31	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element
	Trip (*)	31	1	3	Bit	0x80 (8)	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	TripCmd (*)	31	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[1] - Frequency		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
81[1] - Frequency		35	1	3	Struct			
	Pickup 81	35	1	3	Bit	0x1	-	Signal: Pickup Frequency Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		
	Pickup df/dt DF/DT	35	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	Trip 81 (*)	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
	Pickup	35	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	Pickup Vector Surge	35	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	35	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip Vector Surge (*)	35	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	35	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[2] - Frequency		36	1	3	Struct			
	ExBlo1-I	36	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	36	1	3	Bit	0x2	-	Module Input State: External Blocking2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	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
	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
81[2] - Frequency		37	1	3	Struct			
	Pickup 81	37	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	Pickup df/dt DF/DT	37	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	Trip 81 (*)	37	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT (*)	37	1	3	Bit	0x8	-	Signal: Trip df/dt or DF/DT

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(4)		
	Pickup	37	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	Pickup Vector Surge	37	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	37	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip Vector Surge (*)	37	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	37	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[3] - Frequency		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	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(5)		
	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
81[3] - Frequency		39	1	3	Struct			
	Pickup 81	39	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	Pickup df/dt DF/DT	39	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	Trip 81 (*)	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
	Pickup	39	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	Pickup Vector Surge	39	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	39	1	3	Bit	0x40	-	Signal: Trip Frequency Protection (collective signal)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(7)		
	Trip Vector Surge (*)	39	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	39	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[4] - Frequency		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
	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	-	Signal: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
81[4] - Frequency		41	1	3	Struct			
	Pickup 81	41	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	Pickup df/dt DF/DT	41	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	Trip 81 (*)	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
	Pickup	41	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	Pickup Vector Surge	41	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	41	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip Vector Surge (*)	41	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	41	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[5] - Frequency		42	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	ExBlo TripCmd	42	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
81[5] - Frequency		43	1	3	Struct			
	Pickup 81	43	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	Pickup df/dt DF/DT	43	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip 81 (*)	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
	Pickup	43	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	Pickup Vector Surge	43	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	43	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip Vector Surge (*)	43	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	43	1	3	Bit	0x100 (9)	-	Signal: Trip Command
81[6] - Frequency		44	1	3	Struct			
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
81[6] - Frequency		45	1	3	Struct			
	Pickup 81	45	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	Pickup df/dt DF/DT	45	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	Trip 81 (*)	45	1	3	Bit	0x4 (3)	-	Signal: Frequency has exceeded the limit.
	Trip df/dt DF/DT (*)	45	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	Pickup	45	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup Vector Surge	45	1	3	Bit	0x20 (6)	-	Signal: Pickup Vector Surge
	Trip (*)	45	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	Trip Vector Surge (*)	45	1	3	Bit	0x80 (8)	-	Signal: Trip delta phi
	TripCmd (*)	45	1	3	Bit	0x100 (9)	-	Signal: Trip Command
BF		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
	Trigger1-I	53	1	3	Bit	0x10 (5)	-	Module Input: Trigger that will start the BF
	Trigger2-I	53	1	3	Bit	0x20 (6)	-	Module Input: Trigger that will start the BF

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trigger3-l	53	1	3	Bit	0x40 (7)	-	Module Input: Trigger that will start the BF
	Pickup	53	1	3	Bit	0x80 (8)	-	Signal: BF-Module Started (Pickup)
	Trip (*)	53	1	3	Bit	0x100 (9)	-	Signal: Breaker Failure Trip
	Lockout (*)	53	1	3	Bit	0x200 (10)	-	Signal: Lockout
	Waiting for Trigger (*)	53	1	3	Bit	0x400 (11)	-	Waiting for Trigger
Bkr		123	1	3	Struct			
	Isum Intr trip	123	1	3	Bit	0x10 (5)	-	Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase.
	Isum Intr trip: IA	123	1	3	Bit	0x20 (6)	-	Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IA
	Isum Intr trip: IB	123	1	3	Bit	0x40 (7)	-	Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IB
	Isum Intr trip: IC	123	1	3	Bit	0x80 (8)	-	Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded: IC
	Operations Alarm	123	1	3	Bit	0x100 (9)	-	Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	WearLevel Alarm	123	1	3	Bit	0x200 (10)	-	Signal: Breaker Wear curve Alarm
	WearLevel Lockout	123	1	3	Bit	0x400 (11)	-	Signal: Breaker Wear Curve Lockout Level
	Isum Intr ph Alm	123	1	3	Bit	0x800 (12)	-	Signal: Alarm, the per hour Sum (Limit) of interrupting currents has been exceeded.
Bkr		177	1	3	Struct			
	CinBkr-52b-I	177	1	3	Bit	0x1 (1)	-	Module Input State: Feed-back signal of the Bkr. (52b)
	CinBkr-52a-I	177	1	3	Bit	0x2 (2)	-	Module Input State: Feed-back signal of the Bkr (52a)
	Ready-I	177	1	3	Bit	0x4 (3)	-	Module Input State: Breaker Ready
	Interl OPEN1-I	177	1	3	Bit	0x10 (5)	-	State of the module input: Interlocking of the OPEN command
	Interl OPEN2-I	177	1	3	Bit	0x20 (6)	-	State of the module input: Interlocking of the OPEN command
	Interl OPEN3-I	177	1	3	Bit	0x40 (7)	-	State of the module input: Interlocking of the OPEN command
	Interl CLOSE1-I	177	1	3	Bit	0x80 (8)	-	State of the module input: Interlocking of the CLOSE command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Interl CLOSE2-I	177	1	3	Bit	0x100 (9)	-	State of the module input: Interlocking of the CLOSE command
	Interl CLOSE3-I	177	1	3	Bit	0x200 (10)	-	State of the module input: Interlocking of the CLOSE command
	SC OPEN-I	177	1	3	Bit	0x800 (12)	-	State of the module input: Switching OPEN Command, e.g. the state of the Logics or the state of the digital input
	SC CLOSE-I	177	1	3	Bit	0x1000 (13)	-	State of the module input: Switching CLOSE Command, e.g. the state of the Logics or the state of the digital input
	TripCmd (*)	177	1	3	Bit	0x2000 (14)	-	Signal: Trip Command
	OPEN Cmd	177	1	3	Bit	0x4000 (15)	-	Signal: OPEN command issued to the switchgear. Depending on the setting the signal may include the OPEN command of the Prot module.
	OPEN Cmd manual	177	1	3	Bit	0x8000 (16)	-	Signal: OPEN Cmd manual
Bkr		178	1	3	Struct			
	CLOSE Cmd	178	1	3	Bit	0x1 (1)	-	Signal: CLOSE command issued to the switchgear. Depending on the setting the signal may include the CLOSE command of the Prot module.
	CLOSE Cmd manual	178	1	3	Bit	0x2 (2)	-	Signal: CLOSE Cmd manual
	Bwear Slow Breaker	178	1	3	Bit	0x8 (4)	-	Signal: Slow Breaker Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Res Bwear SI Breaker	178	1	3	Bit	0x10 (5)	-	Signal: Resetting the slow breaker alarm
	CES Disturbed	178	1	3	Bit	0x40 (7)	-	Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.
	CES Field Interl	178	1	3	Bit	0x80 (8)	-	Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.
	CES CLOSE d OPEN	178	1	3	Bit	0x400 (11)	-	Signal: Command Execution Supervision: CLOSE Command during a pending OPEN Command.
	CES SwitchgDir	178	1	3	Bit	0x800 (12)	-	Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OPEN should be switched OPEN again (doubly). The same applies to CLOSE commands.
	CES SG not ready	178	1	3	Bit	0x1000 (13)	-	Signal: Command Execution Supervision: Switchgear not ready
	CES succesf	178	1	3	Bit	0x4000 (15)	-	Signal: Command Execution Supervision: Switching command executed successfully.
Bkr		179	1	3	Struct			
	Pos Disturb	179	1	3	Bit	0x1 (1)	-	Signal: Breaker Disturbed - Undefined Breaker Position. The feed-back signals (Position Indicators) contradict themselves. After expiring of a supervision timer this signal becomes true.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pos Indeterm	179	1	3	Bit	0x4 (3)	-	Signal: Breaker is in Indeterminate Position
	Pos OPEN	179	1	3	Bit	0x8 (4)	-	Signal: Breaker is in OPEN-Position
	Pos CLOSE	179	1	3	Bit	0x10 (5)	-	Signal: Breaker is in CLOSE-Position
	Ready	179	1	3	Bit	0x20 (6)	-	Signal: Breaker is ready for operation.
	Pos not CLOSE	179	1	3	Bit	0x40 (7)	-	Signal: Pos not CLOSE
	SI SingleContactInd	179	1	3	Bit	0x80 (8)	-	Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.
	CES Fail TripCmd	179	1	3	Bit	0x800 (12)	-	Signal: Command Execution Supervision: Command execution failed because trip command is pending.
	Interl OPEN	179	1	3	Bit	0x1000 (13)	-	Signal: One or more IL_Open inputs are active.
	Interl CLOSE	179	1	3	Bit	0x2000 (14)	-	Signal: One or more IL_Close inputs are active.
CTS		137	1	3	Struct			
	ExBlo1-I	137	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo2-I	137	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	137	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	137	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Pickup	137	1	3	Bit	0x10 (5)	-	Signal: Pickup Current Transformer Measuring Circuit Supervision
Ctrl		176	1	3	Struct			
	Local	176	1	3	Bit	0x1 (1)	-	Switching Authority: Local
	Remote	176	1	3	Bit	0x2 (2)	-	Switching Authority: Remote
	SG Disturb	176	1	3	Bit	0x8 (4)	-	(At least one) Switch is disturbed.
	SG Indeterm	176	1	3	Bit	0x10 (5)	-	(At least one) Switch is moving (Position cannot be determined).
DI-8P 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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
ECr		60	1	3	Struct			
	Cr Ofw Wh Fwd	60	1	3	Bit	0x1 (1)	-	Signal: Counter Overflow Wh Fwd
	Cr Ofw Wh Rev	60	1	3	Bit	0x2 (2)	-	Signal: Counter Overflow Wh Rev
	Cr Ofw VARh Lag	60	1	3	Bit	0x4 (3)	-	Signal: Counter Overflow VARh Lag
	Cr Ofw VARh Lead	60	1	3	Bit	0x8 (4)	-	Signal: Counter Overflow VARh Lead
	Cr Ofw Wh Net	60	1	3	Bit	0x10	-	Signal: Counter Overflow Wh Net

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(5)		
	Cr Oflw VARh Net	60	1	3	Bit	0x20 (6)	-	Signal: Counter Overflow VARh Net
	Cr Oflw VAh Net	60	1	3	Bit	0x40 (7)	-	Signal: Counter Overflow VAh Net
	Cr OflwW Wh Fwd	60	1	3	Bit	0x80 (8)	-	Signal: Counter Wh Fwd will overflow soon
	Cr OflwW Wh Rev	60	1	3	Bit	0x100 (9)	-	Signal: Counter Wh Rev will overflow soon
	Cr OflwW VARh Lag	60	1	3	Bit	0x200 (10)	-	Signal: Counter VARh Lag will overflow soon
	Cr OflwW VARh Lead	60	1	3	Bit	0x400 (11)	-	Signal: Counter VARh Lead will overflow soon
	Cr OflwW Wh Net	60	1	3	Bit	0x800 (12)	-	Signal: Counter Wh Net will overflow soon
	Cr OflwW VARh Net	60	1	3	Bit	0x1000 (13)	-	Signal: Counter VARh Net will overflow soon
	Cr OflwW VAh Net	60	1	3	Bit	0x2000 (14)	-	Signal: Counter VAh Net will overflow soon
Ex87		223	1	3	Struct			
	Alarm-I	223	1	3	Bit	0x1 (1)	-	Module Input State: Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo1-I	223	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking1
	ExBlo2-I	223	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	223	1	3	Bit	0x8 (4)	-	Module Input State: External Blocking of the Trip Command
	Trip-I (*)	223	1	3	Bit	0x10 (5)	-	Module Input State: Trip
	Alarm	223	1	3	Bit	0x20 (6)	-	Signal: Alarm
	Active	223	1	3	Bit	0x40 (7)	-	Signal: Active
	ExBlo	223	1	3	Bit	0x80 (8)	-	Signal: External Blocking
	Trip (*)	223	1	3	Bit	0x100 (9)	-	Signal: Trip
	Blo TripCmd	223	1	3	Bit	0x200 (10)	-	Signal: Trip Command blocked
	ExBlo TripCmd	223	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	223	1	3	Bit	0x800	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(12)		
ExP[1] - Ext Protection		49	1	3	Struct			
	ExBlo1-I	49	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	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: Alarm
	Trip-I	49	1	3	Bit	0x10 (5)	-	Module Input State: 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	-	Signal: Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(10)		
	Trip (*)	49	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	49	1	3	Bit	0x800 (12)	-	Signal: Trip Command
Exp[2] - Ext Protection		50	1	3	Struct			
	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: Alarm
	Trip-I	50	1	3	Bit	0x10 (5)	-	Module Input State: 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	-	Signal: Trip Command blocked

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	ExBlo TripCmd	50	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	50	1	3	Bit	0x200 (10)	-	Signal: Alarm
	Trip (*)	50	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	50	1	3	Bit	0x800 (12)	-	Signal: Trip Command
ExP[3] – Ext Protection		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: Alarm
	Trip-I	51	1	3	Bit	0x10 (5)	-	Module Input State: Trip
	Active	51	1	3	Bit	0x20	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	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: Alarm
	Trip (*)	51	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	51	1	3	Bit	0x800 (12)	-	Signal: Trip Command
ExP[4] - Ext Protection		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	-	Module Input State: Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(4)		
	Trip-I	52	1	3	Bit	0x10 (5)	-	Module Input State: 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
	Alarm	52	1	3	Bit	0x200 (10)	-	Signal: Alarm
	Trip (*)	52	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	52	1	3	Bit	0x800 (12)	-	Signal: Trip Command
Fast Status Register		5000	1	3	Struct			
	Device Type	5000	1	3	Bit	0xffff (1)	-	Device type code for relationship between device name and its Modbus code. For Eaton E-Series: EDR-3000 - 2

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								EDR-5000 - 3 EMR-3000 - 4 EMR-3MP0 - 4 EMR-4000 - 5 EMR-5000 - 6 ETR-4000 - 8 ETR-5000 - 9 EGR-5000 - 12 EBR-3000 - 13
Fast Status Register		5001	1	3	Struct			
	Comm Version	5001	1	3	Bit	0xffff (1)	-	Modbus Communication version. This version number changes if something becomes incompatible between different Modbus releases.
Fast Status Register		5002	1	3	Struct			
	Config Bin Inp1-l	5002	1	3	Bit	0x1 (1)	-	State of the module input: Config Bin Inp
	Config Bin Inp2-l	5002	1	3	Bit	0x2 (2)	-	State of the module input: Config Bin Inp
	Config Bin Inp3-l	5002	1	3	Bit	0x4 (3)	-	State of the module input: Config Bin Inp
	Config Bin Inp4-l	5002	1	3	Bit	0x8 (4)	-	State of the module input: Config Bin Inp

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Config Bin Inp5-l	5002	1	3	Bit	0x10 (5)	-	State of the module input: Config Bin Inp
	Config Bin Inp6-l	5002	1	3	Bit	0x20 (6)	-	State of the module input: Config Bin Inp
	Config Bin Inp7-l	5002	1	3	Bit	0x40 (7)	-	State of the module input: Config Bin Inp
	Config Bin Inp8-l	5002	1	3	Bit	0x80 (8)	-	State of the module input: Config Bin Inp
	Config Bin Inp9-l	5002	1	3	Bit	0x100 (9)	-	State of the module input: Config Bin Inp
	Config Bin Inp10-l	5002	1	3	Bit	0x200 (10)	-	State of the module input: Config Bin Inp
	Config Bin Inp11-l	5002	1	3	Bit	0x400 (11)	-	State of the module input: Config Bin Inp
	Config Bin Inp12-l	5002	1	3	Bit	0x800 (12)	-	State of the module input: Config Bin Inp
	Config Bin Inp13-l	5002	1	3	Bit	0x1000 (13)	-	State of the module input: Config Bin Inp
	Config Bin Inp14-l	5002	1	3	Bit	0x2000 (14)	-	State of the module input: Config Bin Inp
	Config Bin Inp15-l	5002	1	3	Bit	0x4000	-	State of the module input: Config Bin Inp

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(15)		
	Config Bin Inp16-I	5002	1	3	Bit	0x8000 (16)	-	State of the module input: Config Bin Inp
Fast Status Register		5003	1	3	Struct			
	Config Bin Inp17-I	5003	1	3	Bit	0x1 (1)	-	State of the module input: Config Bin Inp
	Config Bin Inp18-I	5003	1	3	Bit	0x2 (2)	-	State of the module input: Config Bin Inp
	Config Bin Inp19-I	5003	1	3	Bit	0x4 (3)	-	State of the module input: Config Bin Inp
	Config Bin Inp20-I	5003	1	3	Bit	0x8 (4)	-	State of the module input: Config Bin Inp
	Config Bin Inp21-I	5003	1	3	Bit	0x10 (5)	-	State of the module input: Config Bin Inp
	Config Bin Inp22-I	5003	1	3	Bit	0x20 (6)	-	State of the module input: Config Bin Inp
	Config Bin Inp23-I	5003	1	3	Bit	0x40 (7)	-	State of the module input: Config Bin Inp
	Config Bin Inp24-I	5003	1	3	Bit	0x80 (8)	-	State of the module input: Config Bin Inp
	Config Bin Inp25-I	5003	1	3	Bit	0x100	-	State of the module input: Config Bin Inp

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
	Config Bin Inp26-I	5003	1	3	Bit	0x200 (10)	-	State of the module input: Config Bin Inp
	Config Bin Inp27-I	5003	1	3	Bit	0x400 (11)	-	State of the module input: Config Bin Inp
	Config Bin Inp28-I	5003	1	3	Bit	0x800 (12)	-	State of the module input: Config Bin Inp
	Config Bin Inp29-I	5003	1	3	Bit	0x1000 (13)	-	State of the module input: Config Bin Inp
	Config Bin Inp30-I	5003	1	3	Bit	0x2000 (14)	-	State of the module input: Config Bin Inp
	Config Bin Inp31-I	5003	1	3	Bit	0x4000 (15)	-	State of the module input: Config Bin Inp
	Config Bin Inp32-I	5003	1	3	Bit	0x8000 (16)	-	State of the module input: Config Bin Inp
Fast Status Register		5004	1	3	Struct			
	Trip Cause (*)	5004	1	3	Bit	0xffff (1)	-	Initial reason of trip. It is presented as an integer value and corresponds to the "Trip" entry in the fault record, which refers to the name of the protective module that tripped first. Look up the definition of these integer values (i. e. the mapping trip code number->module name) in the "Cause of Trip" table within the SCADA documentation.
IRIG-B		148	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	IRIG-B active	148	1	3	Bit	0x1 (1)	-	Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive.
	High-Low Invert	148	1	3	Bit	0x2 (2)	-	Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected.
LOP - Loss of Potential		81	1	3	Struct			
	ExBlo1-I	81	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	81	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	81	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	81	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	LOP Blo	81	1	3	Bit	0x10 (5)	-	Signal: Loss of Potential blocks other elements
	Pickup	81	1	3	Bit	0x20 (6)	-	Signal: Pickup Loss of Potential
Logic		1100	1	3	Struct			
	LE1.Gate Out	1100	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE1.Timer Out	1100	1	3	Bit	0x2	-	Signal: Timer Output

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	LE1.Out	1100	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE1.Out inverted	1100	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE1.Gate In1-I	1100	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE1.Gate In2-I	1100	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE1.Gate In3-I	1100	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE1.Gate In4-I	1100	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE1.Reset Latch-I	1100	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1101	1	3	Struct			
	LE2.Gate Out	1101	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE2.Timer Out	1101	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE2.Out	1101	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE2.Out inverted	1101	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE2.Gate In1-I	1101	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE2.Gate In2-I	1101	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE2.Gate In3-I	1101	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE2.Gate In4-I	1101	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE2.Reset Latch-I	1101	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1102	1	3	Struct			
	LE3.Gate Out	1102	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE3.Timer Out	1102	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE3.Out	1102	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE3.Out inverted	1102	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE3.Gate In1-I	1102	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE3.Gate In2-I	1102	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE3.Gate In3-I	1102	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE3.Gate In4-I	1102	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE3.Reset Latch-I	1102	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1103	1	3	Struct			
	LE4.Gate Out	1103	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE4.Timer Out	1103	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE4.Out	1103	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE4.Out inverted	1103	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE4.Gate In1-I	1103	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE4.Gate In2-I	1103	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE4.Gate In3-I	1103	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE4.Gate In4-I	1103	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE4.Reset Latch-I	1103	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1104	1	3	Struct			
	LE5.Gate Out	1104	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE5.Timer Out	1104	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE5.Out	1104	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE5.Out inverted	1104	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE5.Gate In1-I	1104	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE5.Gate In2-I	1104	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE5.Gate In3-I	1104	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE5.Gate In4-I	1104	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE5.Reset Latch-I	1104	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1105	1	3	Struct			
	LE6.Gate Out	1105	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE6.Timer Out	1105	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE6.Out	1105	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE6.Out inverted	1105	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE6.Gate In1-I	1105	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE6.Gate In2-I	1105	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE6.Gate In3-I	1105	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE6.Gate In4-I	1105	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE6.Reset Latch-I	1105	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1106	1	3	Struct			
	LE7.Gate Out	1106	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE7.Timer Out	1106	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE7.Out	1106	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE7.Out inverted	1106	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE7.Gate In1-I	1106	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE7.Gate In2-I	1106	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE7.Gate In3-I	1106	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE7.Gate In4-I	1106	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE7.Reset Latch-I	1106	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1107	1	3	Struct			
	LE8.Gate Out	1107	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE8.Timer Out	1107	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE8.Out	1107	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE8.Out inverted	1107	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE8.Gate In1-I	1107	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE8.Gate In2-I	1107	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE8.Gate In3-I	1107	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE8.Gate In4-I	1107	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE8.Reset Latch-I	1107	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1108	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE9.Gate Out	1108	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE9.Timer Out	1108	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE9.Out	1108	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE9.Out inverted	1108	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE9.Gate In1-I	1108	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE9.Gate In2-I	1108	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE9.Gate In3-I	1108	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE9.Gate In4-I	1108	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE9.Reset Latch-I	1108	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1109	1	3	Struct			
	LE10.Gate Out	1109	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE10.Timer Out	1109	1	3	Bit	0x2	-	Signal: Timer Output

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	LE10.Out	1109	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE10.Out inverted	1109	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE10.Gate In1-I	1109	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE10.Gate In2-I	1109	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE10.Gate In3-I	1109	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE10.Gate In4-I	1109	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE10.Reset Latch-I	1109	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1110	1	3	Struct			
	LE11.Gate Out	1110	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE11.Timer Out	1110	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE11.Out	1110	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE11.Out inverted	1110	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE11.Gate In1-I	1110	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE11.Gate In2-I	1110	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE11.Gate In3-I	1110	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE11.Gate In4-I	1110	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE11.Reset Latch-I	1110	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1111	1	3	Struct			
	LE12.Gate Out	1111	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE12.Timer Out	1111	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE12.Out	1111	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE12.Out inverted	1111	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE12.Gate In1-I	1111	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE12.Gate In2-I	1111	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE12.Gate In3-I	1111	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE12.Gate In4-I	1111	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE12.Reset Latch-I	1111	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1112	1	3	Struct			
	LE13.Gate Out	1112	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE13.Timer Out	1112	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE13.Out	1112	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE13.Out inverted	1112	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE13.Gate In1-I	1112	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE13.Gate In2-I	1112	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE13.Gate In3-I	1112	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE13.Gate In4-I	1112	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE13.Reset Latch-I	1112	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1113	1	3	Struct			
	LE14.Gate Out	1113	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE14.Timer Out	1113	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE14.Out	1113	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE14.Out inverted	1113	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE14.Gate In1-I	1113	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE14.Gate In2-I	1113	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE14.Gate In3-I	1113	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE14.Gate In4-I	1113	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE14.Reset Latch-I	1113	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1114	1	3	Struct			
	LE15.Gate Out	1114	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE15.Timer Out	1114	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE15.Out	1114	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE15.Out inverted	1114	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE15.Gate In1-I	1114	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE15.Gate In2-I	1114	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE15.Gate In3-I	1114	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE15.Gate In4-I	1114	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE15.Reset Latch-I	1114	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1115	1	3	Struct			
	LE16.Gate Out	1115	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE16.Timer Out	1115	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE16.Out	1115	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE16.Out inverted	1115	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE16.Gate In1-I	1115	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE16.Gate In2-I	1115	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE16.Gate In3-I	1115	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE16.Gate In4-I	1115	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE16.Reset Latch-I	1115	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1116	1	3	Struct			
	LE17.Gate Out	1116	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE17.Timer Out	1116	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE17.Out	1116	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE17.Out inverted	1116	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE17.Gate In1-I	1116	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE17.Gate In2-I	1116	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE17.Gate In3-I	1116	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE17.Gate In4-I	1116	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE17.Reset Latch-I	1116	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1117	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE18.Gate Out	1117	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE18.Timer Out	1117	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE18.Out	1117	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE18.Out inverted	1117	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE18.Gate In1-I	1117	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE18.Gate In2-I	1117	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE18.Gate In3-I	1117	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE18.Gate In4-I	1117	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE18.Reset Latch-I	1117	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1118	1	3	Struct			
	LE19.Gate Out	1118	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE19.Timer Out	1118	1	3	Bit	0x2	-	Signal: Timer Output

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	LE19.Out	1118	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)
	LE19.Out inverted	1118	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE19.Gate In1-I	1118	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE19.Gate In2-I	1118	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE19.Gate In3-I	1118	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE19.Gate In4-I	1118	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE19.Reset Latch-I	1118	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
Logic		1119	1	3	Struct			
	LE20.Gate Out	1119	1	3	Bit	0x1 (1)	-	Signal: Output of the logic gate
	LE20.Timer Out	1119	1	3	Bit	0x2 (2)	-	Signal: Timer Output
	LE20.Out	1119	1	3	Bit	0x4 (3)	-	Signal: Latched Output (Q)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE20.Out inverted	1119	1	3	Bit	0x8 (4)	-	Signal: Negated Latched Output (Q NOT)
	LE20.Gate In1-I	1119	1	3	Bit	0x10 (5)	-	State of the module input: Assignment of the Input Signal
	LE20.Gate In2-I	1119	1	3	Bit	0x20 (6)	-	State of the module input: Assignment of the Input Signal
	LE20.Gate In3-I	1119	1	3	Bit	0x40 (7)	-	State of the module input: Assignment of the Input Signal
	LE20.Gate In4-I	1119	1	3	Bit	0x80 (8)	-	State of the module input: Assignment of the Input Signal
	LE20.Reset Latch-I	1119	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
MLS - Mech.Load Shedding		170	1	3	Struct			
	ExBlo1-I	170	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	170	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	170	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	170	1	3	Bit	0x8 (4)	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup	170	1	3	Bit	0x10 (5)	-	Signal: Pickup
	Trip	170	1	3	Bit	0x20 (6)	-	Signal: Trip
MStart - Motor Start		160	1	3	Struct			
	ExBlo TripCmd-I	160	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Blo TripCmd	160	1	3	Bit	0x10 (5)	-	Signal: Trip Command blocked
	Blo	160	1	3	Bit	0x40 (7)	-	Signal: Motor is blocked for starting or transition to Run mode
	ThermalBlock	160	1	3	Bit	0x80 (8)	-	Signal: Thermal block
	EmgOvr-I	160	1	3	Bit	0x100 (9)	-	State of the module input: Emergency Override. Signal has to be active in order to release the thermal capacity of the motor. Please notice that by doing this you run the risk of damaging the motor. "EMGOVR" has to be set to "DI" or "DI or UI" for this input to take effect
	InSq-I	160	1	3	Bit	0x200 (10)	-	State of the module input: Incomplete Sequence
MStart - Motor Start		161	1	3	Struct			
	RemStartBlock-I	161	1	3	Bit	0x2	-	State of the module input: Remote Motor Start Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	ZSS-I	161	1	3	Bit	0x10 (5)	-	State of the module input: Zero Speed Switch
	Active	161	1	3	Bit	0x80 (8)	-	Signal: Active
	Trip (*)	161	1	3	Bit	0x400 (11)	-	Signal: Trip
	TripCmd (*)	161	1	3	Bit	0x800 (12)	-	Signal: Trip Command
	InSq Start2Run Fail	161	1	3	Bit	0x1000 (13)	-	Signal: Fail to transit from start to run based on reported back time
	InSq Stop2Start Fail	161	1	3	Bit	0x2000 (14)	-	Signal: Fail to transit from stop to start based on reported back time
	LATBlock	161	1	3	Bit	0x4000 (15)	-	Signal: Long acceleration timer enforced
	TripPhaseReverse (*)	161	1	3	Bit	0x8000 (16)	-	Signal: Relay tripped because of phase reverse detection
MStart - Motor Start		162	1	3	Struct			
	NOCSBlocked	162	1	3	Bit	0x1 (1)	-	Signal: Motor is prohibited to start due to number of cold start limits

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	RemBlockStart	162	1	3	Bit	0x2 (2)	-	Signal: Motor is prohibited to start due to external blocking through digital input DI
	Run	162	1	3	Bit	0x4 (3)	-	Signal: Motor is in run mode
	Start	162	1	3	Bit	0x8 (4)	-	Signal: Motor is in start mode
	SPHBlockAlarm	162	1	3	Bit	0x10 (5)	-	Signal: Motor is prohibited to start due to starts per hour limits, would come active in the next stop
	SPHBlocked	162	1	3	Bit	0x20 (6)	-	Signal: Motor is prohibited to start due to starts per hour limits
	Stop	162	1	3	Bit	0x40 (7)	-	Signal: Motor is in stop mode
	TBSBlocked	162	1	3	Bit	0x80 (8)	-	Signal: Motor is prohibited to start due to time between starts limits
	TransitionTrip (*)	162	1	3	Bit	0x100 (9)	-	Signal: Start transition fail trip
	ZSSTrip (*)	162	1	3	Bit	0x200 (10)	-	Signal: Zero speed trip (possible locked rotor)
	ABKActive	162	1	3	Bit	0x400 (11)	-	Signal: Anti-backspin is active. For certain applications, such as pumping a fluid up a pipe, the motor may be driven backward for a period of time after it stops. The anti-backspin timer prevents starting the motor while it is spinning in the reverse direction.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	EmergOverrideDI	162	1	3	Bit	0x800 (12)	-	Signal: Emergency override start blocking through digital input DI
	EmergOverrideUI	162	1	3	Bit	0x1000 (13)	-	Signal: Emergency override start blocking through front panel
	ForcedStart	162	1	3	Bit	0x2000 (14)	-	Signal: Motor being forced to start
	GOCStartBlock	162	1	3	Bit	0x4000 (15)	-	Signal: Ground Instantaneous Overcurrent Start Delay. GOC (Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
	IOCStartBlock	162	1	3	Bit	0x8000 (16)	-	Signal: Phase Instantaneous Overcurrent Start Delay. IOC (Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
MStart - Motor Start		163	1	3	Struct			
	JamStartBlock	163	1	3	Bit	0x1 (1)	-	Signal: JAM Start Delay. JAM(Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
	ULoadStartBlock	163	1	3	Bit	0x2 (2)	-	Signal: Underload Start Delay. Underload(Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
	IUnbalStartBlock	163	1	3	Bit	0x4 (3)	-	Signal: Motor start block current unbalance signal
	ColdStartSeq	163	1	3	Bit	0x8 (4)	-	Signal: Motor cold start sequence flag

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	MotorStopBlo	163	1	3	Bit	0x20 (6)	-	Signal: Motor stop block other protection functions
	Blo-Generic1	163	1	3	Bit	0x40 (7)	-	Generic Start Delay. This value can be used to block any protective element.1
	Blo-Generic2	163	1	3	Bit	0x80 (8)	-	Generic Start Delay. This value can be used to block any protective element.2
	Blo-Generic3	163	1	3	Bit	0x100 (9)	-	Generic Start Delay. This value can be used to block any protective element.3
	Blo-Generic4	163	1	3	Bit	0x200 (10)	-	Generic Start Delay. This value can be used to block any protective element.4
	Blo-Generic5	163	1	3	Bit	0x400 (11)	-	Generic Start Delay. This value can be used to block any protective element.5
	I_Transit	163	1	3	Bit	0x800 (12)	-	Signal: Current transition signal
	T_Transit	163	1	3	Bit	0x1000 (13)	-	Signal: Time transition signal
	RFD_IA_Normal	163	1	3	Bit	0x2000 (14)	-	Signal: System IA RotaryFieldDetection Normal
	RFD_IA_Reverse	163	1	3	Bit	0x4000 (15)	-	Signal: System IA RotaryFieldDetection Reverse
	STPC Blo-I	163	1	3	Bit	0x8000	-	State of the module input: With this setting a Digital Input keeps the Motor in the RUN mode, even when the motor

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(16)		current drops below STPC (motor stop current).
MStart - Motor Start		204	1	3	Struct			
	FrqStartBlock	204	1	3	Bit	0x1 (1)	-	Signal: Frequency Start Delay. Frequency elements are blocked for the time programmed under this parameter
	OverVStartBlock	204	1	3	Bit	0x2 (2)	-	Signal: Overvoltage Start Delay. Overvoltage elements are blocked for the time programmed under this parameter
	PFacStartBlock	204	1	3	Bit	0x4 (3)	-	Signal: Power Factor Start Delay. Power Factor elements are blocked for the time programmed under this parameter
	PowerStartBlock	204	1	3	Bit	0x8 (4)	-	Signal: Power Start Delay. Power elements are blocked for the time programmed under this parameter
	UnderVStartBlock	204	1	3	Bit	0x10 (5)	-	Signal: Undervoltage Start Delay. Undervoltage elements are blocked for the time programmed under this parameter
	VUnbalStartBlock	204	1	3	Bit	0x20 (6)	-	Signal: Motor start block voltage unbalance signal.
Modbus		1005	1	3	Struct			
	Comm Cmd 1	1005	1	3	Bit	0x1 (1)	-	Communication Command
	Comm Cmd 2	1005	1	3	Bit	0x2 (2)	-	Communication Command
	Comm Cmd 3	1005	1	3	Bit	0x4 (3)	-	Communication Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Comm Cmd 4	1005	1	3	Bit	0x8 (4)	-	Communication Command
	Comm Cmd 5	1005	1	3	Bit	0x10 (5)	-	Communication Command
	Comm Cmd 6	1005	1	3	Bit	0x20 (6)	-	Communication Command
	Comm Cmd 7	1005	1	3	Bit	0x40 (7)	-	Communication Command
	Comm Cmd 8	1005	1	3	Bit	0x80 (8)	-	Communication Command
	Comm Cmd 9	1005	1	3	Bit	0x100 (9)	-	Communication Command
	Comm Cmd 10	1005	1	3	Bit	0x200 (10)	-	Communication Command
	Comm Cmd 11	1005	1	3	Bit	0x400 (11)	-	Communication Command
	Comm Cmd 12	1005	1	3	Bit	0x800 (12)	-	Communication Command
	Comm Cmd 13	1005	1	3	Bit	0x1000 (13)	-	Communication Command
	Comm Cmd 14	1005	1	3	Bit	0x2000	-	Communication Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(14)		
	Comm Cmd 15	1005	1	3	Bit	0x4000 (15)	-	Communication Command
	Comm Cmd 16	1005	1	3	Bit	0x8000 (16)	-	Communication Command
Motor Diagnosis		203	1	3	Struct			
	BRBAlarm	203	1	3	Bit	0x10 (5)	-	Signal: BRBAlarm
	BRBReliable	203	1	3	Bit	0x20 (6)	-	Signal: Indicates if signal is valid for a broken bar detection.
PF-55A[1] - Apparent PF		88	1	3	Struct			
	ExBlo1-I	88	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	ExBlo2-I	88	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	ExBlo TripCmd-I	88	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	88	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	88	1	3	Bit	0x10 (5)	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Blo TripCmd	88	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	88	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	88	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Factor
	Trip (*)	88	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	88	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Compensator	88	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	88	1	3	Bit	0x800 (12)	-	Signal: Pickup Power Factor Impossible
PF-55A[2] - Apparent PF		89	1	3	Struct			
	ExBlo1-I	89	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	ExBlo2-I	89	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	ExBlo TripCmd-I	89	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Active	89	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	89	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	89	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	89	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	89	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Factor
	Trip (*)	89	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	89	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Compensator	89	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	89	1	3	Bit	0x800 (12)	-	Signal: Pickup Power Factor Impossible
PF-55D[1] - Displacement PF		90	1	3	Struct			
	ExBlo1-I	90	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo2-I	90	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	ExBlo TripCmd-I	90	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	90	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	90	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	90	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	90	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	90	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Factor
	Trip (*)	90	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	90	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	Compensator	90	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	90	1	3	Bit	0x800	-	Signal: Pickup Power Factor Impossible

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(12)		
PF-55D[2] - Displacement PF		91	1	3	Struct			
	ExBlo1-I	91	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	ExBlo2-I	91	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	ExBlo TripCmd-I	91	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	91	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	91	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	91	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	91	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	91	1	3	Bit	0x80 (8)	-	Signal: Pickup Power Factor
	Trip (*)	91	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	91	1	3	Bit	0x200	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(10)		
	Compensator	91	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	91	1	3	Bit	0x800 (12)	-	Signal: Pickup Power Factor Impossible
PSet-Switch		59	1	3	Struct			
	PS 1	59	1	3	Bit	0x1 (1)	-	Signal: The currently active Parameter Set is PS 1
	PS 2	59	1	3	Bit	0x2 (2)	-	Signal: The currently active Parameter Set is PS 2
	PS 3	59	1	3	Bit	0x4 (3)	-	Signal: The currently active Parameter Set is PS 3
	PS 4	59	1	3	Bit	0x8 (4)	-	Signal: The currently active Parameter Set is PS 4
	PSS manual	59	1	3	Bit	0x10 (5)	-	Signal: Manual switch over of a Parameter Set
	PSS via Comm	59	1	3	Bit	0x20 (6)	-	Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4).
	PSS via Inp fct	59	1	3	Bit	0x40 (7)	-	Signal: Parameter Set Switch via Input Function

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	PS1-I	59	1	3	Bit	0x80 (8)	-	State of the module input, respectively of the signal, that should activate this Parameter Setting Group.
	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
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
	Pickup Phase A	1	1	3	Bit	0x10 (5)	-	Signal: General Pickup Phase A
	Pickup Phase B	1	1	3	Bit	0x20	-	Signal: General Pickup Phase B

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	Pickup Phase C	1	1	3	Bit	0x40 (7)	-	Signal: General Pickup Phase C
	Pickup IX or IR	1	1	3	Bit	0x80 (8)	-	Signal: General Pickup - Ground Fault
	Pickup	1	1	3	Bit	0x100 (9)	-	Signal: General Pickup
	Trip Phase A (*)	1	1	3	Bit	0x200 (10)	-	Signal: General Trip Phase A
	Trip Phase B (*)	1	1	3	Bit	0x400 (11)	-	Signal: General Trip Phase B
	Trip Phase C (*)	1	1	3	Bit	0x800 (12)	-	Signal: General Trip Phase C
	Trip IX or IR (*)	1	1	3	Bit	0x1000 (13)	-	Signal: General Trip Ground Fault
	Trip (*)	1	1	3	Bit	0x2000 (14)	-	Signal: General Trip
Prot		57	1	3	Struct			
	Fault No.	57	1	3	Bit	0xffff (1)	-	Waveform number
RO-4Z X2		155	1	3	Struct			
	DISARMED!	155	1	3	Bit	0x1	-	Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		while eliminating the risk of taking an entire process off-line. (Note: Zone Interlocking and Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance
	Outs forced	155	1	3	Bit	0x2 (2)	-	Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.
	ZI OUT	155	1	3	Bit	0x4 (3)	-	Signal: Zone Interlocking OUT
	RO 1	155	1	3	Bit	0x8 (4)	-	Signal: Relay Output
	RO 2	155	1	3	Bit	0x10 (5)	-	Signal: Relay Output
	RO 3	155	1	3	Bit	0x20 (6)	-	Signal: Relay Output
	RO 4	155	1	3	Bit	0x40 (7)	-	Signal: Relay Output
RTD		143	1	3	Struct			
	ExBlo1-I	143	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	143	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	143	1	3	Bit	0x4	-	Module Input State: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	Active	143	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	143	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	143	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	143	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	143	1	3	Bit	0x80 (8)	-	Alarm RTD Temperature Protection
	Trip (*)	143	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	143	1	3	Bit	0x200 (10)	-	Signal: Trip Command
RTD		144	1	3	Struct			
	WD 1 Alarm	144	1	3	Bit	0x1 (1)	-	Winding 1 Alarm RTD Temperature Protection
	WD 1 Timeout Alarm	144	1	3	Bit	0x2 (2)	-	Winding 1 Timeout Alarm
	WD 1 Trip (*)	144	1	3	Bit	0x4 (3)	-	Winding 1 Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	WD 1 Invalid	144	1	3	Bit	0x8 (4)	-	Winding 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	WD 2 Alarm	144	1	3	Bit	0x10 (5)	-	Winding 2 Alarm RTD Temperature Protection
	WD 2 Timeout Alarm	144	1	3	Bit	0x20 (6)	-	Winding 2 Timeout Alarm
	WD 2 Trip (*)	144	1	3	Bit	0x40 (7)	-	Winding 2 Signal: Trip
	WD 2 Invalid	144	1	3	Bit	0x80 (8)	-	Winding 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	WD 3 Alarm	144	1	3	Bit	0x100 (9)	-	Winding 3 Alarm RTD Temperature Protection
	WD 3 Timeout Alarm	144	1	3	Bit	0x200 (10)	-	Winding 3 Timeout Alarm
	WD 3 Trip (*)	144	1	3	Bit	0x400 (11)	-	Winding 3 Signal: Trip
	WD 3 Invalid	144	1	3	Bit	0x800 (12)	-	Winding 3 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	WD 4 Alarm	144	1	3	Bit	0x1000 (13)	-	Winding 4 Alarm RTD Temperature Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	WD 4 Timeout Alarm	144	1	3	Bit	0x2000 (14)	-	Winding 4 Timeout Alarm
	WD 4 Trip (*)	144	1	3	Bit	0x4000 (15)	-	Winding 4 Signal: Trip
	WD 4 Invalid	144	1	3	Bit	0x8000 (16)	-	Winding 4 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
RTD		145	1	3	Struct			
	WD 5 Alarm	145	1	3	Bit	0x1 (1)	-	Winding 5 Alarm RTD Temperature Protection
	WD 5 Timeout Alarm	145	1	3	Bit	0x2 (2)	-	Winding 5 Timeout Alarm
	WD 5 Trip (*)	145	1	3	Bit	0x4 (3)	-	Winding 5 Signal: Trip
	WD 5 Invalid	145	1	3	Bit	0x8 (4)	-	Winding 5 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	WD 6 Alarm	145	1	3	Bit	0x10 (5)	-	Winding 6 Alarm RTD Temperature Protection
	WD 6 Timeout Alarm	145	1	3	Bit	0x20 (6)	-	Winding 6 Timeout Alarm
	WD 6 Trip (*)	145	1	3	Bit	0x40 (7)	-	Winding 6 Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	WD 6 Invalid	145	1	3	Bit	0x80 (8)	-	Winding 6 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	MB 1 Alarm	145	1	3	Bit	0x100 (9)	-	Motor Bearing 1 Alarm RTD Temperature Protection
	MB 1 Timeout Alarm	145	1	3	Bit	0x200 (10)	-	Motor Bearing 1 Timeout Alarm
	MB 1 Trip (*)	145	1	3	Bit	0x400 (11)	-	Motor Bearing 1 Signal: Trip
	MB 1 Invalid	145	1	3	Bit	0x800 (12)	-	Motor Bearing 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	MB 2 Alarm	145	1	3	Bit	0x1000 (13)	-	Motor Bearing 2 Alarm RTD Temperature Protection
	MB 2 Timeout Alarm	145	1	3	Bit	0x2000 (14)	-	Motor Bearing 2 Timeout Alarm
	MB 2 Trip (*)	145	1	3	Bit	0x4000 (15)	-	Motor Bearing 2 Signal: Trip
	MB 2 Invalid	145	1	3	Bit	0x8000 (16)	-	Motor Bearing 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
RTD		146	1	3	Struct			
	LB 1 Alarm	146	1	3	Bit	0x1 (1)	-	Load Bearing 1 Alarm RTD Temperature Protection

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LB 1 Timeout Alarm	146	1	3	Bit	0x2 (2)	-	Load Bearing 1 Timeout Alarm
	LB 1 Trip (*)	146	1	3	Bit	0x4 (3)	-	Load Bearing 1 Signal: Trip
	LB 1 Invalid	146	1	3	Bit	0x8 (4)	-	Load Bearing 1 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	LB 2 Alarm	146	1	3	Bit	0x10 (5)	-	Load Bearing 2 Alarm RTD Temperature Protection
	LB 2 Timeout Alarm	146	1	3	Bit	0x20 (6)	-	Load Bearing 2 Timeout Alarm
	LB 2 Trip (*)	146	1	3	Bit	0x40 (7)	-	Load Bearing 2 Signal: Trip
	LB 2 Invalid	146	1	3	Bit	0x80 (8)	-	Load Bearing 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	Aux1 Alarm	146	1	3	Bit	0x100 (9)	-	Auxiliary 1 Alarm RTD Temperature Protection
	Aux1 Timeout Alarm	146	1	3	Bit	0x200 (10)	-	Auxiliary 1 Timeout Alarm
	Aux1 Trip (*)	146	1	3	Bit	0x400 (11)	-	Auxiliary 1 Signal: Trip
	Aux1 Invalid	146	1	3	Bit	0x800	-	Auxiliary 1 Signal: Invalid Temperature Measurement Value (e.g caused by

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(12)		an defective or interrupted RTD Measurement)
	WD Group Invalid	146	1	3	Bit	0x1000 (13)	-	Winding Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	MB Group Invalid	146	1	3	Bit	0x2000 (14)	-	Motor Bearing Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	Timeout Alarm (*)	146	1	3	Bit	0x4000 (15)	-	Alarm timeout expired
RTD		147	1	3	Struct			
	LB Group Invalid	147	1	3	Bit	0x1 (1)	-	Load Bearing Group Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	Alarm LB Group	147	1	3	Bit	0x2 (2)	-	Alarm all Load Bearings
	TimeoutAlmLBGrp	147	1	3	Bit	0x4 (3)	-	Timeout Alarm all Load Bearings
	Trip LB Group (*)	147	1	3	Bit	0x8 (4)	-	Trip all Load Bearings
	Alarm MB Group	147	1	3	Bit	0x10 (5)	-	Alarm all Motor Bearings
	TimeoutAlmMBGrp	147	1	3	Bit	0x20 (6)	-	Timeout Alarm all Motor Bearings
	Trip MB Group (*)	147	1	3	Bit	0x40	-	Trip all Motor Bearings

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(7)		
	Alarm WD Group	147	1	3	Bit	0x80 (8)	-	Alarm all Windings
	TimeoutAlmWDGrp	147	1	3	Bit	0x100 (9)	-	Timeout Alarm all Windings
	Trip WD Group (*)	147	1	3	Bit	0x200 (10)	-	Trip all Windings
	Voting Trip Grp 1 (*)	147	1	3	Bit	0x2000 (14)	-	Voting Trip Group 1
	Voting Trip Grp 2 (*)	147	1	3	Bit	0x4000 (15)	-	Voting Trip Group 2
RTD		205	1	3	Struct			
	Alarm Any Group	205	1	3	Bit	0x1 (1)	-	Alarm Any Group
	Trip Any Group (*)	205	1	3	Bit	0x2 (2)	-	Trip Any Group
	TimeoutAlmAnyGrp	205	1	3	Bit	0x4 (3)	-	Timeout Alarm Any Group
	Aux2 Alarm	205	1	3	Bit	0x8 (4)	-	Auxiliary 2 Alarm RTD Temperature Protection
	Aux2 Timeout Alarm	205	1	3	Bit	0x10 (5)	-	Auxiliary 2 Timeout Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Aux2 Invalid	205	1	3	Bit	0x20 (6)	-	Auxiliary 2 Signal: Invalid Temperature Measurement Value (e.g caused by an defective or interrupted RTD Measurement)
	Aux2 Trip (*)	205	1	3	Bit	0x40 (7)	-	Auxiliary 2 Signal: Trip
	AuxGrpInvalid	205	1	3	Bit	0x80 (8)	-	Invalid Auxiliary Group
	Alarm Aux Group	205	1	3	Bit	0x100 (9)	-	Alarm Auxiliary Group
	TimeoutAlmAuxGrp	205	1	3	Bit	0x200 (10)	-	Timeout Alarm Auxiliary Group
	Trip Aux Group (*)	205	1	3	Bit	0x400 (11)	-	Trip Auxiliary Group
Remote Trip		222	1	3	Struct			
	Alarm-I	222	1	3	Bit	0x1 (1)	-	Module Input State: Alarm
	ExBlo1-I	222	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking1
	ExBlo2-I	222	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	222	1	3	Bit	0x8 (4)	-	Module Input State: External Blocking of the Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip-I (*)	222	1	3	Bit	0x10 (5)	-	Module Input State: Trip
	Alarm	222	1	3	Bit	0x20 (6)	-	Signal: Alarm
	Active	222	1	3	Bit	0x40 (7)	-	Signal: Active
	ExBlo	222	1	3	Bit	0x80 (8)	-	Signal: External Blocking
	Trip (*)	222	1	3	Bit	0x100 (9)	-	Signal: Trip
	Blo TripCmd	222	1	3	Bit	0x200 (10)	-	Signal: Trip Command blocked
	ExBlo TripCmd	222	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	222	1	3	Bit	0x800 (12)	-	Signal: Trip Command
SSV		273	1	3	Struct			
	System Error	273	1	3	Bit	0x1 (1)	-	Signal: Device Failure
	New error (*)	273	1	3	Bit	0x8 (4)	-	Signal: A new error message has been issued.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	New warning (*)	273	1	3	Bit	0x10 (5)	-	Signal: A new warning message has been issued.
	Active	273	1	3	Bit	0x20 (6)	-	Signal: Active
Sgen		1012	1	3	Struct			
	ExBlo1-I	1012	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	Ex ForcePost-I	1012	1	3	Bit	0x2 (2)	-	State of the module input:Force Post state. Abort simulation.
	Running	1012	1	3	Bit	0x10 (5)	-	Signal: Measuring value simulation is running
	State	1012	1	3	Bit	0xe0 (6)	-	Signal: Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset
	Ex Start Simulation-I	1012	1	3	Bit	0x100 (9)	-	State of the module input:External Start of Fault Simulation (Using the test parameters)
	ExBlo2-I	1012	1	3	Bit	0x200 (10)	-	Module Input State: External Blocking2
	Manual Start	1012	1	3	Bit	0x400 (11)	-	Fault Simulation has been started manually.
	Manual Stop	1012	1	3	Bit	0x800 (12)	-	Fault Simulation has been stopped manually.
	Started	1012	1	3	Bit	0x1000	-	Fault Simulation has been started

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(13)		
	Stopped	1012	1	3	Bit	0x2000 (14)	-	Fault Simulation has been stopped
Sys		154	1	3	Struct			
	Maint Mode Active	154	1	3	Bit	0x1 (1)	-	Signal: Arc Flash Reduction Maintenance Active
	MaintMode Manually	154	1	3	Bit	0x2 (2)	-	Signal: Arc Flash Reduction Maintenance Manual Mode
	Maint Mode DI	154	1	3	Bit	0x4 (3)	-	Signal: Arc Flash Reduction Maintenance Digital Input Mode
	Maint Mode Comm	154	1	3	Bit	0x8 (4)	-	Signal: Arc Flash Reduction Maintenance Comm Mode
	Maint Mode Inactive	154	1	3	Bit	0x10 (5)	-	Signal: Arc Flash Reduction Maintenance Inactive
	Maint Mode-I	154	1	3	Bit	0x20 (6)	-	Module Input State: Arc Flash Reduction Maintenance Switch
	SNTP active	154	1	3	Bit	0x80 (8)	-	Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive.
	Program Mode Bypass	154	1	3	Bit	0x100 (9)	-	Signal: Short-period bypass of the Program Mode.
SysA		173	1	3	Struct			
	ExBlo-I	173	1	3	Bit	0x1	-	Module Input State: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		
	ExBlo	173	1	3	Bit	0x2 (2)	-	Signal: External Blocking
	Alm Current Demd	173	1	3	Bit	0x4 (3)	-	Signal: Alarm Current demand value
	Active	173	1	3	Bit	0x8 (4)	-	Signal: Active
	Alarm I THD	173	1	3	Bit	0x10 (5)	-	Signal: Alarm Total Harmonic Distortion Current
	Alarm VA Power	173	1	3	Bit	0x20 (6)	-	Signal: Alarm VAs peak
	Alarm VA Demand	173	1	3	Bit	0x40 (7)	-	Signal: Alarm VAs demand value
	Alarm VAr Power	173	1	3	Bit	0x80 (8)	-	Signal: Alarm VARs peak
	Alarm VAr Demand	173	1	3	Bit	0x100 (9)	-	Signal: Alarm VARs demand value
	Alarm V THD	173	1	3	Bit	0x200 (10)	-	Signal: Alarm Total Harmonic Distortion Voltage
	Alarm Watt Power max	173	1	3	Bit	0x400 (11)	-	Signal: Alarm WATTS peak

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Alarm Watt avg Demand	173	1	3	Bit	0x800 (12)	-	Signal: Alarm WATTS demand value
	Trip Current Demd (*)	173	1	3	Bit	0x1000 (13)	-	Signal: Trip Current demand value
	Trip I THD (*)	173	1	3	Bit	0x2000 (14)	-	Signal: Trip Total Harmonic Distortion Current
	Trip VA Demand (*)	173	1	3	Bit	0x4000 (15)	-	Signal: Trip VAs demand value
	Trip VA Power (*)	173	1	3	Bit	0x8000 (16)	-	Signal: Trip VAs peak
SysA		174	1	3	Struct			
	Trip VAr Demand (*)	174	1	3	Bit	0x1 (1)	-	Signal: Trip VARs demand value
	Trip VAr Power (*)	174	1	3	Bit	0x2 (2)	-	Signal: Trip VARs peak
	Trip V THD (*)	174	1	3	Bit	0x4 (3)	-	Signal: Trip Total Harmonic Distortion Voltage
	Trip Watt Demand (*)	174	1	3	Bit	0x8 (4)	-	Signal: Trip WATTS demand value
	Trip Watt Power (*)	174	1	3	Bit	0x10 (5)	-	Signal: Trip WATTS peak
TCM		150	1	3	Struct			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo1-l	150	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-l	150	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	150	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	150	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Pickup	150	1	3	Bit	0x10 (5)	-	Signal: Pickup Trip Circuit Supervision
	Not Possible	150	1	3	Bit	0x20 (6)	-	Not possible because no state indicator assigned to the breaker.
	CinBkr-52a-l	150	1	3	Bit	0x100 (9)	-	Module Input State: Feed-back signal of the Bkr (52a)
	CinBkr-52b-l	150	1	3	Bit	0x200 (10)	-	Module Input State: Feed-back signal of the Bkr. (52b)
TimeSync		54	1	3	Struct			
	synchronized	54	1	3	Bit	0x1 (1)	-	Clock is synchronized.
URTD		1007	1	3	Struct			
	WD1 Superv	1007	1	3	Bit	0x1	-	Signal: WD1, Channel Supervision. The value "1" reports a detected channel

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		failure. (The value “0” means that this RTD channel is healthy.)
	WD2 Superv	1007	1	3	Bit	0x2 (2)	-	Signal: WD2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	WD3 Superv	1007	1	3	Bit	0x4 (3)	-	Signal: WD3, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	WD4 Superv	1007	1	3	Bit	0x8 (4)	-	Signal: WD4, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	WD5 Superv	1007	1	3	Bit	0x10 (5)	-	Signal: WD5, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	WD6 Superv	1007	1	3	Bit	0x20 (6)	-	Signal: WD6, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	MB1 Superv	1007	1	3	Bit	0x40 (7)	-	Signal: MB1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	MB2 Superv	1007	1	3	Bit	0x80 (8)	-	Signal: MB2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	LB1 Superv	1007	1	3	Bit	0x100 (9)	-	Signal: LB1, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)
	LB2 Superv	1007	1	3	Bit	0x200 (10)	-	Signal: LB2, Channel Supervision. The value “1” reports a detected channel failure. (The value “0” means that this RTD channel is healthy.)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Aux1 Superv	1007	1	3	Bit	0x400 (11)	-	Signal: Aux1, Channel Supervision. The value "1" reports a detected channel failure. (The value "0" means that this RTD channel is healthy.)
	Superv	1007	1	3	Bit	0x800 (12)	-	Signal: URTD Channel Supervision. The value "1" reports a detected channel failure of at least one channel. (The value "0" means that all RTD channels are healthy.)
	Aux2 Superv	1007	1	3	Bit	0x1000 (13)	-	Signal: Aux2, Channel Supervision. The value "1" reports a detected channel failure. (The value "0" means that this RTD channel is healthy.)
Wired Inputs		172	1	3	Struct			
	Bkr Trouble-I	172	1	3	Bit	0x1 (1)	-	Breaker Trouble
Wired Inputs		216	1	3	Struct			
	ExtPer1-I	216	1	3	Bit	0x1 (1)	-	State of the module input: External Permissive1
	ExtPer2-I	216	1	3	Bit	0x2 (2)	-	State of the module input: External Permissive2
	ExtTrip1-I	216	1	3	Bit	0x4 (3)	-	State of the module input: External Trip1
	ExtTrip1-I2	216	1	3	Bit	0x8 (4)	-	State of the module input: External Trip2
	Forward-I	216	1	3	Bit	0x10 (5)	-	State of the module input: Forward

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	GrpSetSelect-I	216	1	3	Bit	0x20 (6)	-	State of the module input: Group Setting Select
	Jog Forward-I	216	1	3	Bit	0x40 (7)	-	State of the module input: Jog Forward
	Jog Reverse-I	216	1	3	Bit	0x80 (8)	-	State of the module input: Jog Reverse
	Local-I	216	1	3	Bit	0x100 (9)	-	State of the module input: Local (Remote)
	MainCont-I	216	1	3	Bit	0x200 (10)	-	State of the module input: Main Contactor
	RunCont-I	216	1	3	Bit	0x400 (11)	-	State of the module input: Running Contactor (inc sequence)
	Reverse-I	216	1	3	Bit	0x800 (12)	-	State of the module input: Reverse
	StartCont-I	216	1	3	Bit	0x1000 (13)	-	State of the module input: Starting Contactor
	Start-I	216	1	3	Bit	0x4000 (15)	-	State of the module input: Start
	Stop-I	216	1	3	Bit	0x8000 (16)	-	State of the module input: Stop
ZI - Zone Inter.		139	1	3	Struct			
	ExBlo1-I	139	1	3	Bit	0x2	-	Module Input State: External Blocking1

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	ExBlo2-I	139	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	139	1	3	Bit	0x8 (4)	-	Module Input State: External Blocking of the Trip Command
	Bkr Blo	139	1	3	Bit	0x10 (5)	-	Signal: Blocked by Breaker Failure
	Active	139	1	3	Bit	0x20 (6)	-	Signal: Active
	ExBlo	139	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	139	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	139	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Ground OUT	139	1	3	Bit	0x200 (10)	-	Signal: Zone Interlocking Ground OUT
	Ground Pickup	139	1	3	Bit	0x400 (11)	-	Signal: Zone Interlocking Ground Pickup
	Ground Trip (*)	139	1	3	Bit	0x800 (12)	-	Signal: Zone Interlocking Ground Trip
	Phase OUT	139	1	3	Bit	0x1000	-	Signal: Zone Interlocking Phase OUT

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(13)		
	Phase Pickup	139	1	3	Bit	0x2000 (14)	-	Signal: Zone Interlocking Phase Pickup
	Phase Trip (*)	139	1	3	Bit	0x4000 (15)	-	Signal: Zone Interlocking Phase Trip
	IN	139	1	3	Bit	0x8000 (16)	-	Signal: Zone Interlocking IN
ZI - Zone Inter.		140	1	3	Struct			
	OUT	140	1	3	Bit	0x1 (1)	-	Signal: Zone Interlocking OUT
	Pickup	140	1	3	Bit	0x2 (2)	-	Signal: Pickup Zone Interlocking
	Trip (*)	140	1	3	Bit	0x4 (3)	-	Signal: Zone Interlocking Trip Logic
	TripCmd (*)	140	1	3	Bit	0x8 (4)	-	Signal: Zone Interlocking Trip Command

3.2 Measuring Values

Module (ANSI / IEC)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
27A[1] - Undervoltage	nTripCmds	21854	2	4	Float IEE754		-	Number of trip commands since the last reset.
27A[1] - Undervoltage	nPickups	21856	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
27A[2] - Undervoltage	nTripCmds	21858	2	4	Float IEE754		-	Number of trip commands since the last reset.
27A[2] - Undervoltage	nPickups	21860	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
27M[1] - Undervoltage	nPickups	21830	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
27M[1] - Undervoltage	nTripCmds	21832	2	4	Float IEE754		-	Number of trip commands since the last reset.
27M[2] - Undervoltage	nPickups	21834	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
27M[2] - Undervoltage	nTripCmds	21836	2	4	Float IEE754		-	Number of trip commands since the last reset.
32V[1] - Vars	nPickups	20594	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32V[1] - Vars	nTripCmds	20596	2	4	Float IEE754		-	Number of trip commands since the last reset.
32V[2] - Vars	nPickups	20598	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32V[2] - Vars	nTripCmds	20600	2	4	Float IEE754		-	Number of trip commands since the last reset.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
32V[3] - Vars	nPickups	20602	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32V[3] - Vars	nTripCmds	20604	2	4	Float IEE754		-	Number of trip commands since the last reset.
32[1] - Real Power	nPickups	20582	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32[1] - Real Power	nTripCmds	20584	2	4	Float IEE754		-	Number of trip commands since the last reset.
32[2] - Real Power	nPickups	20586	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32[2] - Real Power	nTripCmds	20588	2	4	Float IEE754		-	Number of trip commands since the last reset.
32[3] - Real Power	nPickups	20590	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
32[3] - Real Power	nTripCmds	20592	2	4	Float IEE754		-	Number of trip commands since the last reset.
37[1] - Underload	nTripCmds	21642	2	4	Float IEE754		-	Number of trip commands since the last reset.
37[1] - Underload	nPickups	21648	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
37[2] - Underload	nTripCmds	21644	2	4	Float IEE754		-	Number of trip commands since the last reset.
37[2] - Underload	nPickups	21650	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
37[3] - Underload	nTripCmds	21646	2	4	Float IEE754		-	Number of trip commands since the last reset.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
37[3] - Underload	nPickups	21652	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
46[1] - I.Unbalance	nRevTrips	21614	2	4	Float IEE754		-	Number of reverse spinning trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
46[1] - I.Unbalance	nPickups	21724	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
46[1] - I.Unbalance	nTripCmds	21726	2	4	Float IEE754		-	Number of trip commands since the last reset.
46[2] - I.Unbalance	nPickups	21730	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
46[2] - I.Unbalance	nTripCmds	21732	2	4	Float IEE754		-	Number of trip commands since the last reset.
47[1] - V.Unbalance	nTripCmds	21886	2	4	Float IEE754		-	Number of trip commands since the last reset.
47[1] - V.Unbalance	nPickups	21888	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
47[2] - V.Unbalance	nTripCmds	21890	2	4	Float IEE754		-	Number of trip commands since the last reset.
47[2] - V.Unbalance	nPickups	21892	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
49 - Thermal Model	I2T Used	20482	2	4	Float IEE754		%	Thermal capacity used.
49 - Thermal Model	I2T Remained	20484	2	4	Float IEE754		%	Thermal capacity remained.
49 - Thermal Model	nAlarms	21658	2	4	Float IEE754		-	Number of alarms since the last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
49 – Thermal Model	nTripCmds	21660	2	4	Float IEE754		-	Number of trip commands since the last reset.
50J[1] – Jam-Stall	nTripCmds	21580	2	4	Float IEE754		-	Number of trip commands since the last reset.
50J[1] – Jam-Stall	nPickups	21662	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50J[2] – Jam-Stall	nTripCmds	21582	2	4	Float IEE754		-	Number of trip commands since the last reset.
50J[2] – Jam-Stall	nPickups	21664	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50P[1] – Phase Inst. OC	nPickups	21666	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50P[1] – Phase Inst. OC	nTripCmds	21668	2	4	Float IEE754		-	Number of trip commands since the last reset.
50P[2] – Phase Inst. OC	nPickups	21670	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50P[2] – Phase Inst. OC	nTripCmds	21672	2	4	Float IEE754		-	Number of trip commands since the last reset.
50P[3] – Phase Inst. OC	nPickups	21674	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50P[3] – Phase Inst. OC	nTripCmds	21676	2	4	Float IEE754		-	Number of trip commands since the last reset.
50R[1] – Residual Inst. OC	nPickups	21706	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50R[1] – Residual Inst. OC	nTripCmds	21708	2	4	Float IEE754		-	Number of trip commands since the last reset.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
50R[2] – Residual Inst. OC	nPickups	21710	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50R[2] – Residual Inst. OC	nTripCmds	21712	2	4	Float IEE754		-	Number of trip commands since the last reset.
50X[1] – Meas. Inst. OC	nPickups	21690	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50X[1] – Meas. Inst. OC	nTripCmds	21692	2	4	Float IEE754		-	Number of trip commands since the last reset.
50X[2] – Meas. Inst. OC	nPickups	21694	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
50X[2] – Meas. Inst. OC	nTripCmds	21696	2	4	Float IEE754		-	Number of trip commands since the last reset.
51P[1] – Phase Time OC	nPickups	21678	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51P[1] – Phase Time OC	nTripCmds	21680	2	4	Float IEE754		-	Number of trip commands since the last reset.
51P[2] – Phase Time OC	nPickups	21682	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51P[2] – Phase Time OC	nTripCmds	21684	2	4	Float IEE754		-	Number of trip commands since the last reset.
51P[3] – Phase Time OC	nPickups	21686	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51P[3] – Phase Time OC	nTripCmds	21688	2	4	Float IEE754		-	Number of trip commands since the last reset.
51R[1] – Residual Time OC	nPickups	21714	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
51R[1] – Residual Time OC	nTripCmds	21716	2	4	Float IEE754		-	Number of trip commands since the last reset.
51R[2] – Residual Time OC	nPickups	21718	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51R[2] – Residual Time OC	nTripCmds	21720	2	4	Float IEE754		-	Number of trip commands since the last reset.
51X[1] – Meas. Time OC	nPickups	21698	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51X[1] – Meas. Time OC	nTripCmds	21700	2	4	Float IEE754		-	Number of trip commands since the last reset.
51X[2] – Meas. Time OC	nPickups	21702	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
51X[2] – Meas. Time OC	nTripCmds	21704	2	4	Float IEE754		-	Number of trip commands since the last reset.
59A[1] – Overvoltage	nPickups	20622	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
59A[1] – Overvoltage	nTripCmds	20624	2	4	Float IEE754		-	Number of trip commands since the last reset.
59A[2] – Overvoltage	nPickups	20626	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
59A[2] – Overvoltage	nTripCmds	20628	2	4	Float IEE754		-	Number of trip commands since the last reset.
59M[1] – Overvoltage	nPickups	21838	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
59M[1] – Overvoltage	nTripCmds	21840	2	4	Float IEE754		-	Number of trip commands since the last reset.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
59M[2] – Overvoltage	nPickups	21842	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
59M[2] – Overvoltage	nTripCmds	21844	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[1] – Frequency	nTripCmds	21862	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[1] – Frequency	nPickups	21864	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
81[2] – Frequency	nTripCmds	21866	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[2] – Frequency	nPickups	21868	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
81[3] – Frequency	nTripCmds	21870	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[3] – Frequency	nPickups	21872	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
81[4] – Frequency	nTripCmds	21874	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[4] – Frequency	nPickups	21876	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
81[5] – Frequency	nTripCmds	21878	2	4	Float IEE754		-	Number of trip commands since the last reset.
81[5] – Frequency	nPickups	21880	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
81[6] – Frequency	nTripCmds	21882	2	4	Float IEE754		-	Number of trip commands since the last reset.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
81[6] - Frequency	nPickups	21884	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
Bkr	TripCmd Cr	20006	2	4	Float IEE754		-	Counter: Total number of trips of the switch.
Bkr	Isum trip IA	20182	2	4	Float IEE754		A	Summation of the tripping currents phase
Bkr	Isum trip IB	20184	2	4	Float IEE754		A	Summation of the tripping currents phase
Bkr	Isum trip IC	20186	2	4	Float IEE754		A	Summation of the tripping currents phase
Bkr	Bkr Wear Level	20516	2	4	Float IEE754		%	Wear level of the breaker. (100% means that the breaker has to be maintained.)
Bkr	Isum Intr per hour	20518	2	4	Float IEE754		kA	Sum per hour of interrupting currents.
CT	IA Fund.	20100	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT	IB Fund.	20102	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT	IC Fund.	20104	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT	IX meas Fund.	20106	2	4	Float IEE754		A	Measured value (measured): IX (Fundamental)
CT	I0 Fund.	20114	2	4	Float IEE754		A	Measured value (calculated): Zero current (Fundamental)
CT	I1 Fund.	20116	2	4	Float IEE754		A	Measured value (calculated): Positive phase sequence current (Fundamental)
CT	I2 Fund.	20118	2	4	Float IEE754		A	Measured value (calculated): Unbalanced load current (Fundamental)
CT	IR calc Fund.	20160	2	4	Float IEE754		A	Measured value (calculated): IR (Fundamental)
CT	Angle IR calc	20200	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IR calc

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle IX meas	20202	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IX meas Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle IA	20204	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IA Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle IB	20206	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IB Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle IC	20208	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IC Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	IA THD	20210	2	4	Float IEE754		A	Measured Value (Calculated): IA Total Harmonic Current
CT	IB THD	20212	2	4	Float IEE754		A	Measured Value (Calculated): IB Total Harmonic Current
CT	IC THD	20214	2	4	Float IEE754		A	Measured Value (Calculated): IC Total Harmonic Current

Module (ANSI / IEEI)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
CT	%IA THD	20216	2	4	Float IEE754		%	Measured Value (Calculated): IA Total Harmonic Distortion
CT	%IB THD	20218	2	4	Float IEE754		%	Measured Value (Calculated): IB Total Harmonic Distortion
CT	%IC THD	20220	2	4	Float IEE754		%	Measured Value (Calculated): IC Total Harmonic Distortion
CT	IA RMS	20316	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT	IB RMS	20318	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT	IC RMS	20320	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT	IX meas RMS	20322	2	4	Float IEE754		A	Measured value (measured): IX (RMS)
CT	IR calc RMS	20324	2	4	Float IEE754		A	Measured value (calculated): IR (RMS)
CT	%(I2/I1)	20376	2	4	Float IEE754		%	Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.
CT	Angle I0	20378	2	4	Float IEE754		°	Measured Value (calculated): Angle of Zero Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle I1	20380	2	4	Float IEE754		°	Measured Value (calculated): Angle of Positive Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	Angle I2	20382	2	4	Float IEE754		°	Measured value (calculated): Angle of Negative Sequence System

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT	I1 max Fund.	21074	2	4	Float IEE754		A	Maximum value positive phase sequence current (Fundamental)
CT	I1 min Fund.	21076	2	4	Float IEE754		A	Minimum value positive phase sequence current (Fundamental)
CT	I2 max Fund.	21080	2	4	Float IEE754		A	Maximum value negative sequence current (Fundamental)
CT	I2 min Fund.	21082	2	4	Float IEE754		A	Minimum value unbalanced load current (Fundamental)
CT	IA avg RMS	21130	2	4	Float IEE754		A	IA average value (RMS)
CT	IB avg RMS	21132	2	4	Float IEE754		A	IB average value (RMS)
CT	IC avg RMS	21134	2	4	Float IEE754		A	IC average value (RMS)
CT	IA max RMS	21136	2	4	Float IEE754		A	IA maximum value (RMS)
CT	IB max RMS	21138	2	4	Float IEE754		A	IB maximum value (RMS)
CT	IC max RMS	21140	2	4	Float IEE754		A	IC maximum value (RMS)
CT	IA min RMS	21142	2	4	Float IEE754		A	IA minimum value (RMS)
CT	IB min RMS	21144	2	4	Float IEE754		A	IB minimum value (RMS)
CT	IC min RMS	21146	2	4	Float IEE754		A	IC minimum value (RMS)
CT	IR calc max RMS	21456	2	4	Float IEE754		A	Measured value (calculated): IR maximum value (RMS)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
CT	IR calc min RMS	21458	2	4	Float IEE754		A	Measured value (calculated): IR minimum value (RMS)
CT	IX meas max RMS	21462	2	4	Float IEE754		A	Measured value: IX maximum value (RMS)
CT	IX meas min RMS	21464	2	4	Float IEE754		A	Measured value: IX minimum value (RMS)
CT	%(I2/I1) max	21468	2	4	Float IEE754		%	Measured value (calculated): I2/I1 maximum value, phase sequence will be taken into account automatically
CT	%(I2/I1) min	21470	2	4	Float IEE754		%	Measured value (calculated): I2/I1 minimum value, phase sequence will be taken into account automatically
CT	IA Peak demand	21784	2	4	Float IEE754		A	IA Peak value, RMS value
CT	IB Peak demand	21786	2	4	Float IEE754		A	IB Peak value, RMS value
CT	IC Peak demand	21788	2	4	Float IEE754		A	IC Peak value, RMS value
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	-	Minute

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(65)		
	ms	20000	6	4	Short	Word 5 (81)	-	Milliseconds
ECr	Disp PF	20152	2	4	Float IEE754		-	Measured Value (Calculated): 55D - Displacement Power Factor: Sign Convention: sign(PF) = sign(Syst W)
ECr	Syst W Fund.	20154	2	4	Float IEE754		W	Measured Watts. Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (Fundamental)
ECr	Syst VAr Fund.	20156	2	4	Float IEE754		VAr	Measured VARs. Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (Fundamental)
ECr	Syst VA Fund.	20158	2	4	Float IEE754		VA	Measured VAs (Fundamental)
ECr	Wh Fwd	20174	2	4	Float IEE754		kWh	Positive Active Power is consumed active energy
ECr	Wh Rev	20176	2	4	Float IEE754		kWh	Negative Active Power (Fed Energy)
ECr	VArh Lag	20178	2	4	Float IEE754		kVArh	Positive Reactive Power is consumed Reactive Energy
ECr	VArh Lead	20180	2	4	Float IEE754		kVArh	Negative Reactive Power (Fed Energy)
ECr	Syst W RMS	20452	2	4	Float IEE754		W	Measured Watts. Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (RMS)
ECr	Syst VA RMS	20454	2	4	Float IEE754		VA	Measured VAs (RMS)
ECr	Apt PF	20456	2	4	Float IEE754		-	Measured Value (Calculated): 55A - Apparent Power Factor: Sign Convention: sign(PF) = sign(Syst W)
ECr	Wh Net	20460	2	4	Float IEE754		kWh	Net Watt Hours

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
ECr	VARh Net	20462	2	4	Float IEE754		kVARh	Net VAR Hours
ECr	VAh Net	20464	2	4	Float IEE754		kVAh	Net VA Hours
ECr	Syst W 1	20496	2	4	Float IEE754		W	Measured Watts. Active power in positive sequence system (P- = Fed Active Power, P+ = Consumpted Active Power)
ECr	Syst VAR 1	20498	2	4	Float IEE754		VAR	Measured VARs. Reactive power in positive sequence system (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power)
ECr	Disp PF max	21092	2	4	Float IEE754		-	Maximum value of the 55D - Displacement Power Factor: Sign Convention: sign(PF) = sign(Syst W)
ECr	Disp PF min	21094	2	4	Float IEE754		-	Minimum value of the 55D - Displacement Power Factor: Sign Convention: sign(PF) = sign(Syst W)
ECr	Syst W avg	21556	2	4	Float IEE754		W	Average of the active power
ECr	Syst W max	21558	2	4	Float IEE754		W	Maximum value of the active power
ECr	Syst W min	21560	2	4	Float IEE754		W	Minimum value of the active power
ECr	Syst VA avg	21562	2	4	Float IEE754		VA	Average of the apparent power
ECr	Syst VA max	21564	2	4	Float IEE754		VA	Maximum value of the apparent power
ECr	Syst VA min	21566	2	4	Float IEE754		VA	Minimum value of the apparent power
ECr	Apt PF max	21570	2	4	Float IEE754		-	Maximum value of the 55A - Apparent Power Factor: Sign Convention: sign(PF) = sign(Syst W)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
ECr	Apt PF min	21572	2	4	Float IEE754		-	Minimum value of the 55A - Apparent Power Factor: Sign Convention: sign(PF) = sign(Syst W)
ECr	Syst VAr avg	21574	2	4	Float IEE754		VAr	Average of the reactive power
ECr	Syst VAr max	21576	2	4	Float IEE754		VAr	Maximum value of the reactive power
ECr	Syst VAr min	21578	2	4	Float IEE754		VAr	Minimum value of the reactive power
ECr	Watt Peak demand	21790	2	4	Float IEE754		W	WATTS Peak value, RMS value
ECr	VAr Peak demand	21792	2	4	Float IEE754		VAr	VARs Peak value, RMS value
ECr	VA Peak demand	21794	2	4	Float IEE754		VA	VA Peak value, RMS value
Exp[1] - Ext Protection	nPickups	24018	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
Exp[1] - Ext Protection	nTripCmds	24020	2	4	Float IEE754		-	Number of trip commands since the last reset.
Exp[2] - Ext Protection	nPickups	24022	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
Exp[2] - Ext Protection	nTripCmds	24024	2	4	Float IEE754		-	Number of trip commands since the last reset.
Exp[3] - Ext Protection	nPickups	24026	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
Exp[3] - Ext Protection	nTripCmds	24028	2	4	Float IEE754		-	Number of trip commands since the last reset.
Exp[4] - Ext Protection	nPickups	24030	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Exp[4] - Ext Protection	nTripCmds	24032	2	4	Float IEE754		-	Number of trip commands since the last reset.
IRIG-B	Edges	20298	2	4	Float IEE754		-	Edges: Total number of rising and falling edges. This signal indicates if a signal is available at the IRIG-B input.
IRIG-B	NoOfFrameErrors	20300	2	4	Float IEE754		-	Total Number of Frame Errors. Physically corrupted Frame.
IRIG-B	NoOfFramesOK	20302	2	4	Float IEE754		-	Total number valid Frames.
MStart - Motor Start	ABK Rem.Time	20466	2	4	Float IEE754		s	This is the remaining anti-backspin time.
MStart - Motor Start	IA FLA	20468	2	4	Float IEE754		FLA	Measured value: Phase current multiples of FLA
MStart - Motor Start	IB FLA	20470	2	4	Float IEE754		FLA	Measured value: Phase current multiples of FLA
MStart - Motor Start	IC FLA	20472	2	4	Float IEE754		FLA	Measured value: Phase current multiples of FLA
MStart - Motor Start	NOCS Remaining	20474	2	4	Float IEE754		-	This counter shows the number of remaining permitted cold starts.
MStart - Motor Start	SPH Remaining	20476	2	4	Float IEE754		-	SPH Remaining
MStart - Motor Start	TBS Rem.Block.Time	20478	2	4	Float IEE754		s	In case that the Motor is blocked by TBS functions, the remaining blocking time is shown.
MStart - Motor Start	I3 PRMS avg	20510	2	4	Float IEE754		A	Average RMS current of all 3 phases
MStart - Motor Start	I3 PFLA avg	20512	2	4	Float IEE754		FLA	Average RMS current of all 3 phases as multiples of FLA
MStart - Motor Start	SPH Rem.Block.Time	20894	2	4	Float IEE754		min	In case that the Motor is blocked by an SPH blocking, the remaining blocking time is shown until the next motor start is permitted.
MStart - Motor Start	HighestRunI	21584	2	4	Float IEE754		A	Highest running phase current. The time stamp indicates the point in

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								time when the maximum current has occurred. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart – Motor Start	HighestStartI	21586	2	4	Float IEE754		A	Highest starting phase current. The time stamp indicates the point in time when the maximum current has occurred. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart – Motor Start	OCNT	21588	2	4	Float IEE754		-	Motor Operation count since last reset. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart – Motor Start	RunTime	21590	2	4	Float IEE754		h	Motor Operation time since last reset. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart – Motor Start	TOCS	21592	2	4	Float IEE754		-	Total Motor Operation count since last reset. Resettable with "Sys. Res TotalCr" or "All". Resettable with »Sys . Res TotalCr« or »Sys . Res All«.
MStart – Motor Start	TRunTime	21594	2	4	Float IEE754		h	Motor Operation (Motor run time) time since last reset. Resettable with »Sys . Res TotalCr« or »Sys . Res All«.
MStart – Motor Start	nEmrgOvr	21596	2	4	Float IEE754		-	Number of emergency overrides since last reset. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart – Motor Start	nInSqTrips	21598	2	4	Float IEE754		-	Number of incomplete sequence trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
MStart – Motor Start	nTRNTrips	21606	2	4	Float IEE754		-	Number of transition trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
MStart – Motor Start	nZSWTrips	21608	2	4	Float IEE754		-	Number of zero speed switch trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
MStart – Motor Start	nSPHBlocks	21654	2	4	Float IEE754		-	Number of start per hour blocks since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
MStart - Motor Start	nTBSBlocks	21656	2	4	Float IEE754		-	Number of time between start blocks since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
MStart - Motor Start	Highest%I2/I1	21722	2	4	Float IEE754		%	Highest %I2/I1 value since last reset. The time stamp indicates the point in time when the maximum unbalanced load has occurred. Resettable with »Sys . Res OperationsCr« or »Sys . Res All«.
MStart - Motor Start	I3P Fla Demand	21734	2	4	Float IEE754		FLA	RMS current of all 3 phases calculated in a fixed demand window as multiples of FLA
MStart - Motor Start	IA avg FLA	21736	2	4	Float IEE754		FLA	IA average value multiples of FLA
MStart - Motor Start	IA max FLA	21738	2	4	Float IEE754		FLA	IA maximum value multiples of FLA
MStart - Motor Start	IA min FLA	21740	2	4	Float IEE754		FLA	IA minimum value multiples of FLA
MStart - Motor Start	IB avg FLA	21742	2	4	Float IEE754		FLA	IB average value multiples of FLA
MStart - Motor Start	IB max FLA	21744	2	4	Float IEE754		FLA	IB maximum value multiples of FLA
MStart - Motor Start	IB min FLA	21746	2	4	Float IEE754		FLA	IB minimum value multiples of FLA
MStart - Motor Start	IC avg FLA	21748	2	4	Float IEE754		FLA	IC average value multiples of FLA
MStart - Motor Start	IC max FLA	21750	2	4	Float IEE754		FLA	IC maximum value multiples of FLA
MStart - Motor Start	IC min FLA	21752	2	4	Float IEE754		FLA	IC minimum value multiples of FLA
Modbus	Mapped Meas 1	23000	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Modbus	Mapped Meas 2	23002	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 3	23004	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 4	23006	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 5	23008	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 6	23010	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 7	23012	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 8	23014	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 9	23016	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 10	23018	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 11	23020	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 12	23022	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 13	23024	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Modbus	Mapped Meas 14	23026	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 15	23028	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
Modbus	Mapped Meas 16	23030	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
PF-55A[1] – Apparent PF	nPickups	20606	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
PF-55A[1] – Apparent PF	nTripCmds	20608	2	4	Float IEE754		-	Number of trip commands since the last reset.
PF-55A[2] – Apparent PF	nPickups	20610	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
PF-55A[2] – Apparent PF	nTripCmds	20612	2	4	Float IEE754		-	Number of trip commands since the last reset.
PF-55D[1] – Displacement PF	nPickups	20614	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
PF-55D[1] – Displacement PF	nTripCmds	20616	2	4	Float IEE754		-	Number of trip commands since the last reset.
PF-55D[2] – Displacement PF	nPickups	20618	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
PF-55D[2] – Displacement PF	nTripCmds	20620	2	4	Float IEE754		-	Number of trip commands since the last reset.
RTD	Hottest WD	20504	2	4	Float IEE754		°C	The actual value for the hottest winding temperature.
RTD	Hottest MB	20506	2	4	Float IEE754		°C	The actual value for the hottest motor bearing temperature.

Module (ANSI / IEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
RTD	Hottest LB	20508	2	4	Float IEE754		°C	The actual value for the hottest load bearing temperature.
RTD	HighestLbTemp	21618	2	4	Float IEE754		°C	Highest load bearing temperature since the last reset. Resettable via »Sys . Res OperationsCr« oder »Sys . Res All«.
RTD	HighestMbTemp	21620	2	4	Float IEE754		°C	Highest motor bearing temperature since the last reset. Resettable via »Sys . Res OperationsCr« oder »Sys . Res All«.
RTD	HighestWdTemp	21622	2	4	Float IEE754		°C	Highest motor winding temperature since the last reset. Resettable via »Sys . Res OperationsCr« oder »Sys . Res All«.
RTD	nAuxAlarms	21624	2	4	Float IEE754		-	Number of auxiliary temperature alarms since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
RTD	nAuxTrips	21626	2	4	Float IEE754		-	Number of auxiliary temperature trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
RTD	nChannelFails	21628	2	4	Float IEE754		-	Number of RTD channel failures. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
RTD	nLbAlarms	21630	2	4	Float IEE754		-	Number of load bearing temperature alarms since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
RTD	nLbTrips	21632	2	4	Float IEE754		-	Number of load bearing temperature trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
RTD	nMbAlarms	21634	2	4	Float IEE754		-	Number of motor bearing temperature alarms since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
RTD	nMbTrips	21636	2	4	Float IEE754		-	Number of motor bearing temperature trips since last reset. Resettable

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								with »Sys . Res TripCr« or »Sys . Res All«.
RTD	nWdAlarms	21638	2	4	Float IEE754		-	Number of winding temperature alarms since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
RTD	nWdTrips	21640	2	4	Float IEE754		-	Number of winding temperature trips since last reset. Resettable with »Sys . Res TripCr« or »Sys . Res All«.
RTD	Hottest Aux	21820	2	4	Float IEE754		°C	The actual value for the hottest Auxiliary temperature.
RTD	HighestAuxTemp	21822	2	4	Float IEE754		°C	Highest Auxiliary temperature since the last reset. Resettable via »Sys . Res OperationsCr« oder »Sys . Res All«.
Remote Trip	nPickups	24058	2	4	Float IEE754		-	Number of pickups since last reset. Resettable with »Sys . Res AlarmCr« or »Sys . Res All«.
Remote Trip	nTripCmds	24060	2	4	Float IEE754		-	Number of trip commands since the last reset.
URTD	Aux2	20328	2	4	Float IEE754		°C	Auxiliary2
URTD	WD1	20330	2	4	Float IEE754		°C	Winding 1
URTD	WD2	20332	2	4	Float IEE754		°C	Winding 2
URTD	WD3	20334	2	4	Float IEE754		°C	Winding 3
URTD	WD4	20336	2	4	Float IEE754		°C	Winding 4
URTD	WD5	20338	2	4	Float IEE754		°C	Winding 5
URTD	WD6	20340	2	4	Float IEE754		°C	Winding 6
URTD	MB1	20342	2	4	Float IEE754		°C	Motor Bearing 1

Module (ANSI / IEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
URTD	MB2	20344	2	4	Float IEE754		°C	Motor Bearing 2
URTD	LB1	20346	2	4	Float IEE754		°C	Load Bearing 1
URTD	LB2	20348	2	4	Float IEE754		°C	Load Bearing 2
URTD	Aux1	20350	2	4	Float IEE754		°C	Auxiliary1
URTD	RTD Max	20486	2	4	Float IEE754		°C	Maximum temperature of all channels.
URTD	WD1 max	21194	2	4	Float IEE754		°C	Winding1 Maximum Value
URTD	WD2 max	21196	2	4	Float IEE754		°C	Winding2 Maximum Value
URTD	WD3 max	21198	2	4	Float IEE754		°C	Winding3 Maximum Value
URTD	WD4 max	21200	2	4	Float IEE754		°C	Winding4 Maximum Value
URTD	WD5 max	21202	2	4	Float IEE754		°C	Winding5 Maximum Value
URTD	WD6 max	21204	2	4	Float IEE754		°C	Winding6 Maximum Value
URTD	MB1 max	21206	2	4	Float IEE754		°C	Motor Bearing1 Maximum Value
URTD	MB2 max	21208	2	4	Float IEE754		°C	Motor Bearing2 Maximum Value
URTD	LB1 max	21210	2	4	Float IEE754		°C	Load Bearing1 Maximum Value
URTD	LB2 max	21212	2	4	Float IEE754		°C	Load Bearing2 Maximum Value
URTD	Aux1 max	21214	2	4	Float IEE754		°C	Auxiliary1 Maximum Value

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
URTD	Aux2 max	21800	2	4	Float IEE754		°C	Auxiliary2 Maximum Value
VT	f	20128	2	4	Float IEE754		Hz	Measured Value: Frequency
VT	VAB Fund.	20130	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (Fundamental)
VT	VBC Fund.	20132	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (Fundamental)
VT	VCA Fund.	20134	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (Fundamental)
VT	VA Fund.	20136	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (Fundamental)
VT	VB Fund.	20138	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (Fundamental)
VT	VC Fund.	20140	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (Fundamental)
VT	VX meas Fund.	20142	2	4	Float IEE754		V	Measured value (measured): VX measured (Fundamental)
VT	V0 Fund.	20146	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components Zero voltage(Fundamental)
VT	V1 Fund.	20148	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components positive phase sequence voltage(Fundamental)
VT	V2 Fund.	20150	2	4	Float IEE754		V	Measured value (calculated): Symmetrical components negative phase sequence voltage(Fundamental)
VT	VR calc Fund.	20162	2	4	Float IEE754		V	Measured value (calculated): VR (Fundamental)
VT	Angle VR calc	20386	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VR calc Reference phasor is required to calculate the angle. This is the first

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VX meas	20388	2	4	Float IEE754		°	Measured Value: Angle of Phasor VX meas Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VAB	20390	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VAB Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VA	20392	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VA Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VBC	20394	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VBC Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VB	20396	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VB Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VCA	20398	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VCA

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle VC	20400	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor VC Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle V0	20402	2	4	Float IEE754		°	Measured Value (calculated): Angle of Zero Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle V1	20404	2	4	Float IEE754		°	Measured Value (calculated): Angle of Positive Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	Angle V2	20406	2	4	Float IEE754		°	Measured value (calculated): Angle of Negative Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
VT	VA THD	20408	2	4	Float IEE754		V	Measured value (calculated): VA Total Harmonic Distortion
VT	VAB THD	20410	2	4	Float IEE754		V	Measured value (calculated): VAB Total Harmonic Distortion
VT	VB THD	20412	2	4	Float IEE754		V	Measured value (calculated): VB Total Harmonic Distortion

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
VT	VBC THD	20414	2	4	Float IEE754		V	Measured value (calculated): VBC Total Harmonic Distortion
VT	VC THD	20416	2	4	Float IEE754		V	Measured value (calculated): VC Total Harmonic Distortion
VT	VCA THD	20418	2	4	Float IEE754		V	Measured value (calculated): VCA Total Harmonic Distortion
VT	%VA THD	20420	2	4	Float IEE754		%	Measured value (calculated): VA Total Harmonic Distortion / fundamental
VT	%VAB THD	20422	2	4	Float IEE754		%	Measured value (calculated): VAB Total Harmonic Distortion / fundamental
VT	%VB THD	20424	2	4	Float IEE754		%	Measured value (calculated): VB Total Harmonic Distortion / fundamental
VT	%VBC THD	20426	2	4	Float IEE754		%	Measured value (calculated): VBC Total Harmonic Distortion / fundamental
VT	%VC THD	20428	2	4	Float IEE754		%	Measured value (calculated): VC Total Harmonic Distortion / fundamental
VT	%VCA THD	20430	2	4	Float IEE754		%	Measured value (calculated): VCA Total Harmonic Distortion / fundamental
VT	VR calc RMS	20432	2	4	Float IEE754		V	Measured value (calculated): VR (RMS)
VT	VX meas RMS	20434	2	4	Float IEE754		V	Measured value (measured): VX measured (RMS)
VT	VA RMS	20436	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (RMS)
VT	VAB RMS	20438	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (RMS)
VT	VB RMS	20440	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (RMS)
VT	VBC RMS	20442	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (RMS)
VT	VC RMS	20444	2	4	Float IEE754		V	Measured value: Phase-to-neutral voltage (RMS)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
VT	VCA RMS	20446	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (RMS)
VT	%(V2/V1)	20450	2	4	Float IEE754		%	Measured value (calculated): V2/V1, phase sequence will be taken into account automatically.
VT	Volts/Hertz	20646	2	4	Float IEE754		%	Ratio Volts/Hertz in relation to nominal values.
VT	f max	21002	2	4	Float IEE754		Hz	Max. frequency value
VT	f min	21004	2	4	Float IEE754		Hz	Min. frequency value
VT	V1 max Fund.	21044	2	4	Float IEE754		V	Maximum value: Symmetrical components positive phase sequence voltage(Fundamental)
VT	V1 min Fund.	21046	2	4	Float IEE754		V	Minimum value: Symmetrical components positive phase sequence voltage(Fundamental)
VT	V2 max Fund.	21050	2	4	Float IEE754		V	Maximum value: Symmetrical components negative phase sequence voltage(Fundamental)
VT	V2 min Fund.	21052	2	4	Float IEE754		V	Minimum value: Symmetrical components negative phase sequence voltage(Fundamental)
VT	delta phi	21126	2	4	Float IEE754		°	Measured Value (Calculated): Vector Surge
VT	df/dt	21128	2	4	Float IEE754		Hz/s	Measured value (calculated): Rate-of-frequency-change.
VT	VR calc max RMS	21498	2	4	Float IEE754		V	Measured value (calculated): VR maximum value (RMS)
VT	VR calc min RMS	21500	2	4	Float IEE754		V	Measured value (calculated): VR minimum value (RMS)
VT	VX meas max RMS	21504	2	4	Float IEE754		V	Measured value: VX maximum value (RMS)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
VT	VX meas min RMS	21506	2	4	Float IEE754		V	Measured value: VX minimum value (RMS)
VT	VAB max RMS	21510	2	4	Float IEE754		V	VAB maximum value (RMS)
VT	VAB min RMS	21512	2	4	Float IEE754		V	VAB minimum value (RMS)
VT	VA max RMS	21516	2	4	Float IEE754		V	VA maximum value (RMS)
VT	VA min RMS	21518	2	4	Float IEE754		V	VA minimum value (RMS)
VT	VBC max RMS	21522	2	4	Float IEE754		V	VBC maximum value (RMS)
VT	VBC min RMS	21524	2	4	Float IEE754		V	VBC minimum value (RMS)
VT	VB max RMS	21528	2	4	Float IEE754		V	VB maximum value (RMS)
VT	VB min RMS	21530	2	4	Float IEE754		V	VB minimum value (RMS)
VT	VCA max RMS	21534	2	4	Float IEE754		V	VCA maximum value (RMS)
VT	VCA min RMS	21536	2	4	Float IEE754		V	VCA minimum value (RMS)
VT	VC max RMS	21540	2	4	Float IEE754		V	VC maximum value (RMS)
VT	VC min RMS	21542	2	4	Float IEE754		V	VC minimum value (RMS)
VT	%(V2/V1) max	21552	2	4	Float IEE754		%	Measured value (calculated): V2/V1 maximum value, phase sequence will be taken into account automatically
VT	%(V2/V1) min	21554	2	4	Float IEE754		%	Measured value (calculated): V2/V1 minimum value , phase sequence will be taken into account automatically

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
VT	Volts/Hertz max	21894	2	4	Float IEE754		%	Maximum value: Ratio Volts/Hertz in relation to nominal values.
VT	Volts/Hertz min	21896	2	4	Float IEE754		%	Minimum value: Ratio Volts/Hertz in relation to nominal values.
Values	Build	20008	2	4	Float IEE754		-	Build Number
Values	Operating hours Cr	20010	2	4	Float IEE754		h	Operating hours counter of the protective device
Values	Hours Counter	20514	2	4	Float IEE754		h	Resettable device operation hours counter. Resettable with »Sys . Res TotalCr« or »Sys . Res All«.

3.3 Commands

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Acknowledge	LEDs	22000	1	5	0xFF00		-	LEDs
Acknowledge	Relay Outputs	22001	1	5	0xFF00		-	Relay Outputs
Acknowledge	SCADA	22002	1	5	0xFF00		-	SCADA Communication
Acknowledge	Device	22003	1	5	0xFF00		-	Device
Acknowledge	Ack TripCmd	22005	1	5	0xFF00		-	Signal: Acknowledge Trip Command
Reset	Modbus diagnosis counter	22006	1	5	0xFF00		-	Modbus diagnosis counter
Reset	Res all Energy Cr	22011	1	5	0xFF00		-	Reset of all Energy Counters
Reset	Res Isum trip	22012	1	5	0xFF00		-	Reset summation of the tripping currents
Comm Cmd	Assbl Comm Cmd 1	22020	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 2	22021	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 3	22022	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 4	22023	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 5	22024	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 6	22025	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 7	22026	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 8	22027	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 9	22028	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Comm Cmd	Assbl Comm Cmd 10	22029	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 11	22030	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 12	22031	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 13	22032	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 14	22033	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 15	22034	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Comm Cmd	Assbl Comm Cmd 16	22035	1	5	0xFF00=On, 0x0000=Off		-	Assignable Communication Command
Fault rec	Res all rec	22040	1	5	0xFF00		-	Reset all records
PSet-Switch	Comm PS1	22050	1	5	0xFF00		-	Communication Setting Group1
PSet-Switch	Comm PS2	22051	1	5	0xFF00		-	Communication Setting Group2
PSet-Switch	Comm PS3	22052	1	5	0xFF00		-	Communication Setting Group3
PSet-Switch	Comm PS4	22053	1	5	0xFF00		-	Communication Setting Group4
Maint Mode	Maint Mode Comm	22054	1	5	0xFF00=On, 0x0000=Off		-	Signal: Arc Flash Reduction Maintenance Comm Mode
Res I2T Used	Res I2T Used	22055	1	5	0xFF00		-	Reset thermal capacity used.
Res OperationsCr	Res OperationsCr	22056	1	5	0xFF00		-	Reset all counters in history group operations
Res AlarmCr	Res AlarmCr	22057	1	5	0xFF00		-	Reset all counters in history group alarms
Res TripCmdCr	Res TripCmdCr	22058	1	5	0xFF00		-	Reset all counters in history group Trip Commands
Res TotalCr	Res TotalCr	22059	1	5	0xFF00		-	Reset all counters in history group total
Res All	Res All	22060	1	5	0xFF00		-	Reset of all Counters

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Bkr	SG ControlCmd1	22100	1	5	0xFF00=On, 0x0000=Off		-	Control Command Switchgear

3.4 Settings

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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
Fault rec		50000	9	3 16	Struct			
	RecordNo	50000	9	3 16	Short	Word 0 (1)	-	Record Number
	Trip Cause	50000	9	3 16	Short	Word 1 (17)	-	Code for the trip cause. In case of several simultaneous trip causes the primary cause is selected. If there is another trip later then the new trip cause overwrites the previous one. The codes for the trip cause are documented in the SCADA documentation.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup Cause	50000	9	3 16	Short	Word 2 (33)	-	Code for last Pickup cause corresponds to fault record: See scada doc for correlation between pickup reason and code
	Fault No.	50000	9	3 16	Short	Word 3 (49)	-	Waveform number
	No of Grid Faults	50000	9	3 16	Short	Word 4 (65)	-	Number of grid faults: This is a counter for all faults (i.e. General Pickups »Prot . Pickup«), but except faults during a running cycle of the Automatic Reclosure module (signal »AR . Running«). (Remark: The »Fault No.« counts every new fault independent of AR cycles. This means that for protective devices without AR module these two counters are equivalent.)
	Time stamp:	50000	9	3 16	long long	Word 5- Word 8 (81)	-	Timestamp in milliseconds since 1970

3.5 Cause of Trip

Cause of trip reason is provided on two different Modbus addresses:

- At address 5004 the “last primary trip cause” is available. This means, in case of several simultaneous trip causes the primary cause is selected. If there is another trip later then the new trip cause overwrites the previous one. The trip cause can be read as long as a trip reason is present. In addition, the content of this register can be latched. The trip cause is latched in the same way as other trip signals, that means if the corresponding latching setting in Modbus is active, the content of the register is fixed until it is acknowledged by command.
- At address 50000 and up the last trip and alarm reason is available with related record, fault, net number and time stamp. Any saved record can be requested by sending the record number to the corresponding register. Be aware that the content of these registers can only be read entirely and that the content changes every time a new fault occurs in the fault recorder.

All required fault values must be defined within a SCADApter (ErSMap) mapping file. The default datapoint list cannot be used in this case. All data-points that are needed for communicating with the substation must be defined as a ErSMap mapping file. (See also the separate SCADApter User Manual.)

If not a specific fault is selected, last fault value is presented on these addresses.

The following table is showing the “trip cause code” and its relation to the “trip cause reason”.

Trip Cause	Description	Module
0	?	37[1], 37[2], 37[3], 49, 50J[1], 50J[2], 81[1], 81[2], 81[3], 81[4], 81[5], 81[6], MLS, RTD, ZI
1	NORM	
2	EXTERNAL	Ex87, ExP[1], ExP[2], ExP[3], ExP[4], Remote Trip
3	PH IOC	50P[1], 50P[2], 50P[3]
4	IG IOC	50X[1], 50X[2]
6	IR IOC	50R[1], 50R[2]
7	PH TOC	51P[1], 51P[2], 51P[3]
8	IG TOC	51X[1], 51X[2]

Trip Cause	Description	Module
10	IR TOC	51R[1], 51R[2]
11	OV	59M[1], 59M[2]
12	UV	27M[1], 27M[2]
13	AUX OV	59A[1], 59A[2]
14	AUX UV	27A[1], 27A[2]
17	I UNBAL	46[1], 46[2]
18	V UNBAL	47[1], 47[2]
19	APP PF	PF-55A[1], PF-55A[2]
20	DISP PF	PF-55D[1], PF-55D[2]
152	POWER	32V[1], 32V[2], 32V[3], 32[1], 32[2], 32[3]

3.6 Fast Status Register

At registers ≥ 5000 an area is provided where common status indicator bits can be read from one location. See the Register Maps for information that is available in general.

At registers 5002 and 5003 the user has the option to collect arbitrary device status information. The purpose is to get a custom set of device states in a single request. Some of these positions are already pre-configured.

The following table lists the pre-configured states:

General Function	Bit Position	Short Description	Long Description
Relay Health	0	Health status	
General Trips / General Pickups	1	Pickup	General pickup of any type - not element-specific.
	2	Trip	General Trip of any type - not element-specific.
	3		
	4		
	5		
	6		
	7		
Breaker [*]	8	Pos Open	Breaker is in Open position.
	9	Pos Close	Breaker is in Closed position.
	10	Pickup	Breaker failure detected and timer in progress.
	11	Trip	Breaker failure detected and trip initiated.
	12	Lockout	Breaker failure lockout.
	13		
	14		
	15		

General Function	Bit Position	Short Description	Long Description
Sgen status	16	Running	Test simulation signal generation "Running".
ARMS [**]	17	Maintenance	Maintenance mode active.
Motor [***]	18	Motor Relay Ready - (stopped)	
	19	Motor Relay Start	
	20	Motor Relay Running	

[*] Only available in devices with Breaker Control.

[]** Only available in devices that support Maintenance mode.

[*]** Only available in Motor Relays.

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