Powering Business Worldwide

EGR-5000

Modbus® Register Maps

Version: 3.9

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

Response

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

Register address (HI · 256 + LO) — The data word address from where reading should start.

Register number (HI · 256 + LO) — Number of data words to be read. Valid range: 1…125

Byte number — Number of subsequent Bytes containing data words.

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

2.2 Function Code 5

Query

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

Response

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

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

Register data — Value of the data word to be written (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 blockings 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 Code HI 0x00	Data Diag Code LO 0x00	Test data	Test data	Check-sum HI	Check-sum LO

Response

Slave address	8	Data Diag Code HI	Data Diag Code LO	Test data	Test data	Check-sum HI	Check-sum 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 HI	Register address LO	Register number HI	Register number LO	Byte number	Register 0 HI	Register 0 LO	…	Check-sum HI	Check-sum LO

Response

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

Register address (HI · 256 + LO) — Data word address as from where writing should start.

Register number (HI · 256 + LO):

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

Byte number — Number of subsequent Bytes to contain data words.

Register — Data words read out of the device (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 + Function Code	Exception Code	Check-sum HI	Check-sum 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.
21P[1] – Phase Distance Protection		**283**	**1**	**3**	**Struct**			
	ExBlo1-I	283	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	283	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	283	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Blo by LB-I	283	1	3	Bit	0x8 (4)	-	Module input state: Blocking (of the distance protection) by Load Blinder module
	Blo by Power Swing-I	283	1	3	Bit	0x10 (5)	-	Module input state: Blocking (of the distance protection) by Power Swing detection
	Active	283	1	3	Bit	0x20 (6)	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo	283	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo by MeasCircSupv	283	1	3	Bit	0x80 (8)	-	Blocked by Measuring Circuit Supervision
	Blo by LB	283	1	3	Bit	0x100 (9)	-	Signal: Distance Protection blocked by Load Blinder module
	Trip	283	1	3	Bit	0x200 (10)	-	Trip
	Pickup (*)	283	1	3	Bit	0x400 (11)	-	Pickup
	Blo by Power Swing	283	1	3	Bit	0x800 (12)	-	Signal: Distance Protection blocked by Power Swing detection
	Started	283	1	3	Bit	0x1000 (13)	-	Signal: Distance Protection has been started.
	Blo TripCmd	283	1	3	Bit	0x2000 (14)	-	Signal: Trip Command blocked
	ExBlo TripCmd	283	1	3	Bit	0x4000 (15)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	283	1	3	Bit	0x8000 (16)	-	Signal: Trip Command
21P[1] – Phase Distance Protection		**284**	**1**	**3**	**Struct**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Fault Type A-B (*)	284	1	3	Bit	0x1 (1)	-	Fault Type: A-B
	Fault Type A-B-C (*)	284	1	3	Bit	0x2 (2)	-	Fault Type: A-B-C
	Fault Type B-C (*)	284	1	3	Bit	0x4 (3)	-	Fault Type: B-C
	Fault Type C-A (*)	284	1	3	Bit	0x8 (4)	-	Fault Type: C-A
21P[2] – Phase Distance Protection		**285**	**1**	**3**	**Struct**			
	ExBlo1-I	285	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	285	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	285	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Blo by LB-I	285	1	3	Bit	0x8 (4)	-	Module input state: Blocking (of the distance protection) by Load Blinder module
	Blo by Power Swing-I	285	1	3	Bit	0x10 (5)	-	Module input state: Blocking (of the distance protection) by Power Swing detection
	Active	285	1	3	Bit	0x20 (6)	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo	285	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo by MeasCircSupv	285	1	3	Bit	0x80 (8)	-	Blocked by Measuring Circuit Supervision
	Blo by LB	285	1	3	Bit	0x100 (9)	-	Signal: Distance Protection blocked by Load Blinder module
	Trip	285	1	3	Bit	0x200 (10)	-	Trip
	Pickup (*)	285	1	3	Bit	0x400 (11)	-	Pickup
	Blo by Power Swing	285	1	3	Bit	0x800 (12)	-	Signal: Distance Protection blocked by Power Swing detection
	Started	285	1	3	Bit	0x1000 (13)	-	Signal: Distance Protection has been started.
	Blo TripCmd	285	1	3	Bit	0x2000 (14)	-	Signal: Trip Command blocked
	ExBlo TripCmd	285	1	3	Bit	0x4000 (15)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	285	1	3	Bit	0x8000 (16)	-	Signal: Trip Command
21P[2] – Phase Distance Protection		**286**	**1**	**3**	**Struct**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Fault Type A-B	286	1	3	Bit	0x1 (1)	-	Fault Type: A-B
	Fault Type A-B-C	286	1	3	Bit	0x2 (2)	-	Fault Type: A-B-C
	Fault Type B-C	286	1	3	Bit	0x4 (3)	-	Fault Type: B-C
	Fault Type C-A	286	1	3	Bit	0x8 (4)	-	Fault Type: C-A
24[1] – Volts/ Hertz		**210**	**1**	**3**	**Struct**			
	ExBlo1-I	210	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	210	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	210	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	210	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Active	210	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	210	1	3	Bit	0x20 (6)	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	210	1	3	Bit	0x40 (7)	-	Signal: Trip
	Blo TripCmd	210	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	210	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	210	1	3	Bit	0x200 (10)	-	Signal: Trip Command
24[2] – Volts/ Hertz		**211**	**1**	**3**	**Struct**			
	ExBlo1-I	211	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	211	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	211	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	211	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Active	211	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	211	1	3	Bit	0x20 (6)	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	211	1	3	Bit	0x40 (7)	-	Signal: Trip
	Blo TripCmd	211	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	211	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	211	1	3	Bit	0x200 (10)	-	Signal: Trip Command
25 – Sync-Check		**175**	**1**	**3**	**Struct**			
	Active	175	1	3	Bit	0x1 (1)	-	Signal: Active
	ExBlo1-I	175	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking1
	ExBlo2-I	175	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking2
	ExBlo	175	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Bypass-I	175	1	3	Bit	0x10 (5)	-	State of the module input: The Sync-check will be bypassed if the state of the assigned signal (logic input) becomes true.
	BkrCloseInitiate-I	175	1	3	Bit	0x20 (6)	-	State of the module input: Breaker Close Initiate with synchronizm check from any control sources (e.g. HMI / SCADA). If the state of the assigned

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								signal becomes true, a Breaker Close will be initiated (Trigger Source).
	AngleDiffTooHigh	175	1	3	Bit	0x40 (7)	-	Signal: Phase Angle difference between bus and line voltages too high.
	Sys-in-Sync	175	1	3	Bit	0x80 (8)	-	Signal: Bus and line voltages are in synchronizm according to the system synchronizm criteria.
	LiveBus	175	1	3	Bit	0x100 (9)	-	Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold
	LiveLine	175	1	3	Bit	0x200 (10)	-	Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold
	SlipTooHigh	175	1	3	Bit	0x400 (11)	-	Signal: Frequency difference (slip frequency) between bus and line voltages too high.
	SyncOverridden	175	1	3	Bit	0x800 (12)	-	Signal:Synchronizm Check is overridden because one of the Synchronizm overriding conditions (DB/DL or ExtBypass) is met.
	In-Sync Allowed	175	1	3	Bit	0x1000 (13)	-	Signal: In-Sync Allowed
	SynchronFailed	175	1	3	Bit	0x2000 (14)	-	Signal: This signal indicates a failed synchronization. It is set for 5s when the breaker is still open after the Synchron-Run-timer has timed out.
	SynchronRunTiming	175	1	3	Bit	0x4000 (15)	-	Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is comming and stops if breaker is closed. Timeout means synchronizing failed.)
	VDiffTooHigh	175	1	3	Bit	0x8000	-	Signal: Voltage difference between bus and line too high.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(16)		
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
	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	-	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)		
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
	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	-	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)		
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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (2)	-	Module Input State: External Blocking2
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (8)	-	Signal: Trip
	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	-	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)		
	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 (8)	-	Signal: Pickup Power Protection
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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	-	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
						(2)		
	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 (9)	-	Signal: Trip Power Protection
	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	-	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
						(2)		
	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 (9)	-	Signal: Trip Power Protection
	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	-	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
						(2)		
	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 (9)	-	Signal: Trip Power Protection
	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	-	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
						(2)		
	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 (9)	-	Signal: Trip Power Protection
	TripCmd (*)	69	1	3	Bit	0x200 (10)	-	Signal: Trip Command
40-Z1[1] – LossOfExcitation		**206**	**1**	**3**	**Struct**			
	ExBlo1-I	206	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	206	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	206	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	206	1	3	Bit	0x8 (4)	-	Signal: Pickup Loss of Excitation
	Active	206	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	206	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo by MeasCircSupv	206	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Trip (*)	206	1	3	Bit	0x80 (8)	-	Signal: Trip
	V< Acc Trip	206	1	3	Bit	0x100 (9)	-	Signal: V< Acc Trip
	Blo TripCmd	206	1	3	Bit	0x200 (10)	-	Signal: Trip Command blocked
	ExBlo TripCmd	206	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	206	1	3	Bit	0x800 (12)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
40-Z1[2] – LossOfExcitation		**214**	**1**	**3**	**Struct**			
	ExBlo1-I	214	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	214	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	214	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	214	1	3	Bit	0x8 (4)	-	Signal: Pickup Loss of Excitation
	Active	214	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	214	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo by MeasCircSupv	214	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Trip (*)	214	1	3	Bit	0x80 (8)	-	Signal: Trip
	V< Acc Trip	214	1	3	Bit	0x100 (9)	-	Signal: V< Acc Trip
	Blo TripCmd	214	1	3	Bit	0x200 (10)	-	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	214	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	214	1	3	Bit	0x800 (12)	-	Signal: Trip Command
40-Z2[1] – LossOfExcitation		**207**	**1**	**3**	**Struct**			
	ExBlo1-I	207	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	207	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	207	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	207	1	3	Bit	0x8 (4)	-	Signal: Pickup Loss of Excitation
	Active	207	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	207	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo by MeasCircSupv	207	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Trip (*)	207	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
	V< Acc Trip	207	1	3	Bit	0x100 (9)	-	Signal: V< Acc Trip
	Blo TripCmd	207	1	3	Bit	0x200 (10)	-	Signal: Trip Command blocked
	ExBlo TripCmd	207	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	207	1	3	Bit	0x800 (12)	-	Signal: Trip Command
40-Z2[2] – LossOfExcitation		**215**	**1**	**3**	**Struct**			
	ExBlo1-I	215	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	215	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	215	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	215	1	3	Bit	0x8 (4)	-	Signal: Pickup Loss of Excitation
	Active	215	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	215	1	3	Bit	0x20 (6)	-	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 by MeasCircSupv	215	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Trip (*)	215	1	3	Bit	0x80 (8)	-	Signal: Trip
	V< Acc Trip	215	1	3	Bit	0x100 (9)	-	Signal: V< Acc Trip
	Blo TripCmd	215	1	3	Bit	0x200 (10)	-	Signal: Trip Command blocked
	ExBlo TripCmd	215	1	3	Bit	0x400 (11)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	215	1	3	Bit	0x800 (12)	-	Signal: Trip Command
46G[1] – G.Unbalance		**208**	**1**	**3**	**Struct**			
	ExBlo1-I	208	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	208	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	208	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	208	1	3	Bit	0x8 (4)	-	Signal: Pickup Negative Sequence

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Active	208	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	208	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Trip (*)	208	1	3	Bit	0x40 (7)	-	Signal: Trip
	Blo TripCmd	208	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	208	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	208	1	3	Bit	0x200 (10)	-	Signal: Trip Command
46G[2] – G.Unbalance		**209**	**1**	**3**	**Struct**			
	ExBlo1-I	209	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	209	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	209	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	209	1	3	Bit	0x8 (4)	-	Signal: Pickup Negative Sequence

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Active	209	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	209	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Trip (*)	209	1	3	Bit	0x40 (7)	-	Signal: Trip
	Blo TripCmd	209	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	209	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	209	1	3	Bit	0x200 (10)	-	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (9)	-	Signal: Trip
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (9)	-	Signal: Trip
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (9)	-	Signal: Trip
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo	101	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	101	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	101	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	101	1	3	Bit	0x80 (8)	-	Signal: Pickup Voltage Asymmetry
	Trip (*)	101	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	101	1	3	Bit	0x200 (10)	-	Signal: Trip Command
49 – Thermal		**19**	**1**	**3**	**Struct**			
	ExBlo1-I	19	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	19	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	19	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	19	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	19	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 TripCmd	19	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	19	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Alarm	19	1	3	Bit	0x80 (8)	-	Signal: Alarm Thermal Overload
	Trip (*)	19	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	19	1	3	Bit	0x200 (10)	-	Signal: Trip Command
50/27 – Inadv. Energ.		**217**	**1**	**3**	**Struct**			
	ExBlo1-I	217	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	217	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	217	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Pickup	217	1	3	Bit	0x8 (4)	-	Signal: Inadvertent Energization
	Active	217	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	217	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Blo by MeasCircSupv	217	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Trip (*)	217	1	3	Bit	0x80 (8)	-	Signal: Trip
	Blo TripCmd	217	1	3	Bit	0x100 (9)	-	Signal: Trip Command blocked
	ExBlo TripCmd	217	1	3	Bit	0x200 (10)	-	Signal: External Blocking of the Trip Command
	TripCmd (*)	217	1	3	Bit	0x400 (11)	-	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
	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	-	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
						(4)		
	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
	Pickup	4	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip (*)	4	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 (*)	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
	Blo TripCmd	5	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	5	1	3	Bit	0x100	-	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
						(9)		
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 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	7	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	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 (3)	-	Signal: Pickup IC
	Pickup	8	1	3	Bit	0x8 (4)	-	Signal: Pickup

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (7)	-	Signal: Reverse Blocking
	Blo TripCmd	61	1	3	Bit	0x80 (8)	-	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	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 (5)	-	Signal: Active
	ExBlo	62	1	3	Bit	0x20 (6)	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (3)	-	Module Input State: External Blocking of the Trip Command
	Rvs Blo-I	15	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	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 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	16	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	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 (13)	-	Signal: Trip Command
51P[1] – Phase Time OC		**9**	**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	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**			
	Pickup IA	10	1	3	Bit	0x1 (1)	-	Signal: Pickup IA

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	Active	11	1	3	Bit	0x10 (5)	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	TripCmd (*)	12	1	3	Bit	0x100 (9)	-	Signal: 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		**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
51P[3] – Phase Time OC		**14**	**1**	**3**	**Struct**			
	Pickup IA	14	1	3	Bit	0x1	-	Signal: Pickup IA

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		
	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
	Rvs Blo-I	63	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	63	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	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
	ExBlo2-I	64	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	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 (13)	-	Signal: Trip Command
51X[1] – Meas. Time OC		**17**	**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	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 (11)	-	Signal: The pickup value has been exceeded.
	Trip (*)	17	1	3	Bit	0x800	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(12)		
	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 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	18	1	3	Bit	0x100	-	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
						(9)		
	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 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	77	1	3	Bit	0x40	-	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
						(7)		
	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 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	78	1	3	Bit	0x40	-	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
						(7)		
	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 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	28	1	3	Bit	0x40	-	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
						(7)		
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
	ExBlo TripCmd-I	30	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	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
	TripCmd (*)	31	1	3	Bit	0x100 (9)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
59N[1] – Overvoltage		**79**	**1**	**3**	**Struct**			
	ExBlo1-I	79	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	79	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	79	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	79	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	79	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	79	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	79	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	79	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	79	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	79	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
59N[2] – Overvoltage		**80**	**1**	**3**	**Struct**			
	ExBlo1-I	80	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	80	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	80	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	80	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	80	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	80	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	80	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	80	1	3	Bit	0x80 (8)	-	Signal: Pickup Residual Voltage Supervision-Element
	Trip (*)	80	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	80	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
68 – Power Swing Blocking		**287**	**1**	**3**	**Struct**			
	ExBlo1-I	287	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	287	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Pickup Blinder A	287	1	3	Bit	0x4 (3)	-	Signal: The impedance is within the MHO circle on the right side of Blinder A.
	Pickup Blinder B	287	1	3	Bit	0x8 (4)	-	Signal: The impedance is within the MHO circle on the left side of Blinder B.
	Active	287	1	3	Bit	0x10 (5)	-	Signal: Active
	Int.blocked	287	1	3	Bit	0x20 (6)	-	Signal: The module is internally blocked because the »Max. dwell time« has expired.
	Blo by MeasCircSupv	287	1	3	Bit	0x40 (7)	-	Blocked by Measuring Circuit Supervision
	Pickup Mho	287	1	3	Bit	0x80 (8)	-	Signal: The impedance is within the characteristic.
	Pole slipping	287	1	3	Bit	0x200 (10)	-	Signal, that pole slipping has been detected. The state of this signal becomes true as soon as the impedance reaches 180°, and it gets reset when the characteristic area is left.
	Start	287	1	3	Bit	0x400	-	Signal, that a power swing (or an Out-of-step event) has been detected. The state of this signal becomes true as

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(11)		soon as the impedance traverses the first blinder, and it gets reset when the characteristic area is left.
	Swinging	287	1	3	Bit	0x800 (12)	-	Signal: The impedance is within the instable swing zone (i. e. within the characteristic and inside the borders defined by Blinders A and B).
	Syst.is sym.	287	1	3	Bit	0x1000 (13)	-	Signal that the system state is symmetrical, i. e. the negative-sequence current is below »I2 max«, and the positive-sequence current is above »I1 min«.
	Blo dZ/dt	287	1	3	Bit	0x4000 (15)	-	Signal: The module has detected a system fault based on the rate of impedance change per time, and therefore it has blocked itself.
	Blo min.dwell time	287	1	3	Bit	0x8000 (16)	-	Signal: The module has detected a system fault based on the »minimum dwell time«, and therefore it has blocked itself.
68 – Power Swing Blocking		**288**	**1**	**3**	**Struct**			
	ExBlo	288	1	3	Bit	0x2 (2)	-	Signal: External Blocking
78 – Out of Step Tripping		**281**	**1**	**3**	**Struct**			
	ExBlo1-I	281	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	281	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	281	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
	Pickup Blinder A	281	1	3	Bit	0x8 (4)	-	Signal: The impedance is within the MHO circle on the right side of Blinder A.
	Pickup Blinder B	281	1	3	Bit	0x10 (5)	-	Signal: The impedance is within the MHO circle on the left side of Blinder B.
	Active	281	1	3	Bit	0x20 (6)	-	Signal: Active
	Int.blocked	281	1	3	Bit	0x40 (7)	-	Signal: The module is internally blocked because the »Max. dwell time« has expired.
	Blo by MeasCircSupv	281	1	3	Bit	0x80 (8)	-	Blocked by Measuring Circuit Supervision
	Pickup Mho	281	1	3	Bit	0x100 (9)	-	Signal: The impedance is within the characteristic.
	Operate	281	1	3	Bit	0x200 (10)	-	Signal: The module is ready to send a trip command. The state of this signal becomes true as soon as the impedance traverses the second blinder, and it gets reset after the impedance has left the MHO circle.
	Pole slipping	281	1	3	Bit	0x400 (11)	-	Signal, that pole slipping has been detected. The state of this signal becomes true as soon as the impedance reaches 180°, and it gets reset when the characteristic area is left.
	Start	281	1	3	Bit	0x800 (12)	-	Signal, that a power swing (or an Out-of-step event) has been detected. The state of this signal becomes true as soon as the impedance traverses the first blinder, and it gets reset when the characteristic area is left.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Swinging	281	1	3	Bit	0x1000 (13)	-	Signal: The impedance is within the instable swing zone (i. e. within the characteristic and inside the borders defined by Blinders A and B).
	Trip (*)	281	1	3	Bit	0x2000 (14)	-	Signal: Trip
	Blo TripCmd	281	1	3	Bit	0x4000 (15)	-	Signal: Trip Command blocked
	ExBlo TripCmd	281	1	3	Bit	0x8000 (16)	-	Signal: External Blocking of the Trip Command
78 – Out of Step Tripping		**282**	**1**	**3**	**Struct**			
	ExBlo	282	1	3	Bit	0x1 (1)	-	Signal: External Blocking
	Pickup	282	1	3	Bit	0x2 (2)	-	Signal that the module has started, i. e. the impedance has entered the MHO circle and crossed the first blinder. »Pickup« is reset when the measured impedance has left the MHO circle without an »Operate«, or when the »Trip« signal is reset. If »Max.Num.Pole Slips« is greater than 1, the »Pickup« signal stays active until the »Trip« signal is reset or the »Reset Time« has expired.
	TripCmd (*)	282	1	3	Bit	0x4 (3)	-	Signal: Trip Command
	Syst.is sym.	282	1	3	Bit	0x8 (4)	-	Signal that the system state is symmetrical, i. e. the negative-sequence current is below »I2 max«, and the positive-sequence current is above »I1 min«.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Blo dZ/dt	282	1	3	Bit	0x10 (5)	-	Signal: The module has detected a system fault based on the rate of impedance change per time, and therefore it has blocked itself.
	Blo min.dwell time	282	1	3	Bit	0x20 (6)	-	Signal: The module has detected a system fault based on the »minimum dwell time«, and therefore it has blocked itself.
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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
81[1] – Frequency		**35**	**1**	**3**	**Struct**			
	Pickup 81	35	1	3	Bit	0x1 (1)	-	Signal: Pickup Frequency Protection
	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	-	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	36	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	36	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	36	1	3	Bit	0x8 (4)	-	Signal: Active
	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	-	Signal: Frequency has exceeded the limit.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	Trip df/dt | DF/DT (*)	37	1	3	Bit	0x8 (4)	-	Signal: Trip df/dt or DF/DT
	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	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(4)		
	ExBlo	38	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	38	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	38	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	38	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
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	-	Signal: Pickup Vector Surge

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(6)		
	Trip (*)	39	1	3	Bit	0x40 (7)	-	Signal: Trip Frequency Protection (collective signal)
	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	-	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
						(7)		
	ExBlo TripCmd	40	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
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	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(9)		
81[5] – Frequency		**42**	**1**	**3**	**Struct**			
	ExBlo1-I	42	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	42	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	42	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	42	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	42	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	42	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	42	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup df/dt | DF/DT	43	1	3	Bit	0x2 (2)	-	Pickup instantaneous or average value of the rate-of-frequency-change
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo TripCmd-I	44	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	44	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	44	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo by V<	44	1	3	Bit	0x20 (6)	-	Signal: Module is blocked by undervoltage.
	Blo TripCmd	44	1	3	Bit	0x40 (7)	-	Signal: Trip Command blocked
	ExBlo TripCmd	44	1	3	Bit	0x80 (8)	-	Signal: External Blocking of the Trip Command
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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup	45	1	3	Bit	0x10 (5)	-	Signal: Pickup Frequency Protection (collective signal)
	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
87 – Phase Differential		**130**	**1**	**3**	**Struct**			
	ExBlo1-I	130	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	130	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	130	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	130	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	130	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	130	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	130	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Restraining	130	1	3	Bit	0x1000 (13)	-	Signal: Restraining of the differential protection by means of rising the tripping curve.
87 – Phase Differential		**131**	**1**	**3**	**Struct**			
	Pickup A	131	1	3	Bit	0x1 (1)	-	Signal: Pickup System Phase A
	Pickup B	131	1	3	Bit	0x2 (2)	-	Signal: Pickup System Phase B
	Pickup C	131	1	3	Bit	0x4 (3)	-	Signal: Pickup System C
	Pickup	131	1	3	Bit	0x8 (4)	-	Signal: Pickup
	Trip A (*)	131	1	3	Bit	0x10 (5)	-	Signal: Trip System Phase A
	Trip B (*)	131	1	3	Bit	0x20 (6)	-	Signal: Trip System Phase B
	Trip C (*)	131	1	3	Bit	0x40 (7)	-	Signal: Trip System Phase C

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	131	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	131	1	3	Bit	0x100 (9)	-	Signal: Trip Command
	Restraining: A	131	1	3	Bit	0x1000 (13)	-	Restraining: A
	Restraining: B	131	1	3	Bit	0x2000 (14)	-	Restraining: B
	Restraining: C	131	1	3	Bit	0x4000 (15)	-	Restraining: C
87 – Phase Differential		**262**	**1**	**3**	**Struct**			
	CT Satur.Stab. triggered (*)	262	1	3	Bit	0x200 (10)	-	Signal: Temporary restraining of the Phase Differential Protection triggered by the detection of an external fault in case of CT saturation.
	CT Satur.Stab. A trig. (*)	262	1	3	Bit	0x400 (11)	-	Signal: Temporary restraining of the Phase Differential Protection in phase A, triggered by the detection of an external phase A fault in case of CT saturation.
	CT Satur.Stab. B trig. (*)	262	1	3	Bit	0x800 (12)	-	Signal: Temporary restraining of the Phase Differential Protection in phase B, triggered by the detection of an external phase B fault in case of CT saturation.
	CT Satur.Stab. C trig. (*)	262	1	3	Bit	0x1000 (13)	-	Signal: Temporary restraining of the Phase Differential Protection in phase C, triggered by the detection of an external phase C fault in case of CT saturation.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
87GD – Ground Differential		**133**	**1**	**3**	**Struct**			
	ExBlo1-I	133	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	133	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	133	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	133	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	133	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	133	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	133	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	133	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	133	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	133	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
87GDH – Unrestrained Gnd Diff		**135**	**1**	**3**	**Struct**			
	ExBlo1-I	135	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	135	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	135	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	135	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	135	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	135	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	135	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	135	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	135	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	135	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
87H – Unrestrained Phase Diff		**136**	**1**	**3**	**Struct**			
	ExBlo1-I	136	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	136	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	136	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	136	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	136	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	136	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	136	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	136	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Pickup A	136	1	3	Bit	0x100 (9)	-	Signal: Pickup System Phase A
	Pickup B	136	1	3	Bit	0x200 (10)	-	Signal: Pickup System Phase B

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Pickup C	136	1	3	Bit	0x400 (11)	-	Signal: Pickup System C
	Trip (*)	136	1	3	Bit	0x800 (12)	-	Signal: Trip
	Trip A (*)	136	1	3	Bit	0x1000 (13)	-	Signal: Trip System Phase A
	Trip B (*)	136	1	3	Bit	0x2000 (14)	-	Signal: Trip System Phase B
	Trip C (*)	136	1	3	Bit	0x4000 (15)	-	Signal: Trip System Phase C
	TripCmd (*)	136	1	3	Bit	0x8000 (16)	-	Signal: Trip Command
AnIn[1] – Analog In		**247**	**1**	**3**	**Struct**			
	Broken wire	247	1	3	Bit	0x1 (1)	-	Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.
	Input forced	247	1	3	Bit	0x2 (2)	-	The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.
AnIn[2] – Analog In		**248**	**1**	**3**	**Struct**			
	Broken wire	248	1	3	Bit	0x4 (3)	-	Signal: Broken wire. This signal is only valid, if the analog input is used in the 4...20 mA mode.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Input forced	248	1	3	Bit	0x8 (4)	-	The value of analog Input has been set by force. That means that the value of the analog Input is forced and does not represent the real measured value.
AnaP[1] – Analog Input Prot.		**268**	**1**	**3**	**Struct**			
	ExBlo1-I	268	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	268	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	268	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	268	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	268	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	268	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	268	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	268	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	268	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 (*)	268	1	3	Bit	0x200 (10)	-	Signal: Trip Command
AnaP[2] – Analog Input Prot.		**269**	**1**	**3**	**Struct**			
	ExBlo1-I	269	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	269	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	269	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	269	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	269	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	269	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	269	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	269	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	269	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 (*)	269	1	3	Bit	0x200 (10)	-	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
	Trigger3-I	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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«.)
	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.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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
	Sys-in-Sync-I	177	1	3	Bit	0x8 (4)	-	State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful.
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	Sync CLOSE request	178	1	3	Bit	0x4 (3)	-	Signal: Synchronous CLOSE request
	Bwear Slow Breaker	178	1	3	Bit	0x8 (4)	-	Signal: Slow Breaker Alarm
	Res Bwear Sl Breaker	178	1	3	Bit	0x10 (5)	-	Signal: Resetting the slow breaker alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 respectivly 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 SyncTimeout	178	1	3	Bit	0x2000 (14)	-	Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.
	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.
CLPU – Cold Load Pickup		**66**	**1**	**3**	**Struct**			
	ExBlo1-I	66	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	66	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	Rvs Blo-I	66	1	3	Bit	0x4 (3)	-	Module Input State: Reverse Blocking
	Active	66	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	66	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Rvs Blo	66	1	3	Bit	0x20 (6)	-	Signal: Reverse Blocking
	enabled	66	1	3	Bit	0x200 (10)	-	Signal: Cold Load enabled
	detected (*)	66	1	3	Bit	0x400 (11)	-	Signal: Cold Load detected
	I<	66	1	3	Bit	0x800 (12)	-	Signal: No Load Current.
	Load Inrush	66	1	3	Bit	0x2000 (14)	-	Signal: Load Inrush
	Settle Time	66	1	3	Bit	0x4000 (15)	-	Signal: Settle Time
CT Ntrl		**301**	**1**	**3**	**Struct**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Phase seq. wrong	301	1	3	Bit	0x1 (1)	-	Signal that the device has detected a phase sequence (A-B-C / A-C-B) that is different from the one that had been set at [System settings / General Settings] »Phase Sequence«.
	Phase seq. wrong	301	1	3	Bit	0x2 (2)	-	Signal that the device has detected a phase sequence (A-B-C / A-C-B) that is different from the one that had been set at [System settings / General Settings] »Phase Sequence«.
CTS		**137**	**1**	**3**	**Struct**			
	ExBlo1-I	137	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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-8 X5		**1001**	**1**	**3**	**Struct**			
	DI 1	1001	1	3	Bit	0x1 (1)	-	Signal: Digital Input
	DI 2	1001	1	3	Bit	0x2 (2)	-	Signal: Digital Input
	DI 3	1001	1	3	Bit	0x4 (3)	-	Signal: Digital Input
	DI 4	1001	1	3	Bit	0x8 (4)	-	Signal: Digital Input
	DI 5	1001	1	3	Bit	0x10 (5)	-	Signal: Digital Input
	DI 6	1001	1	3	Bit	0x20 (6)	-	Signal: Digital Input
	DI 7	1001	1	3	Bit	0x40 (7)	-	Signal: Digital Input
	DI 8	1001	1	3	Bit	0x80 (8)	-	Signal: Digital Input
DI-8P X1		**1000**	**1**	**3**	**Struct**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	DI 1	1000	1	3	Bit	0x1 (1)	-	Signal: Digital Input
	DI 2	1000	1	3	Bit	0x2 (2)	-	Signal: Digital Input
	DI 3	1000	1	3	Bit	0x4 (3)	-	Signal: Digital Input
	DI 4	1000	1	3	Bit	0x8 (4)	-	Signal: Digital Input
	DI 5	1000	1	3	Bit	0x10 (5)	-	Signal: Digital Input
	DI 6	1000	1	3	Bit	0x20 (6)	-	Signal: Digital Input
	DI 7	1000	1	3	Bit	0x40 (7)	-	Signal: Digital Input
	DI 8	1000	1	3	Bit	0x80 (8)	-	Signal: Digital Input
ECr		**60**	**1**	**3**	**Struct**			
	Cr Oflw Wh Fwd	60	1	3	Bit	0x1 (1)	-	Signal: Counter Overflow Wh Fwd
	Cr Oflw Wh Rev	60	1	3	Bit	0x2 (2)	-	Signal: Counter Overflow Wh Rev
	Cr Oflw VArh Lag	60	1	3	Bit	0x4	-	Signal: Counter Overflow VArh Lag

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	Cr Oflw VArh Lead	60	1	3	Bit	0x8 (4)	-	Signal: Counter Overflow VArh Lead
	Cr Oflw Wh Net	60	1	3	Bit	0x10 (5)	-	Signal: Counter Overflow Wh Net
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Cr OflwW VAh Net	60	1	3	Bit	0x2000 (14)	-	Signal: Counter VAh Net will overflow soon
Ems[1] – Emission		**266**	**1**	**3**	**Struct**			
	ExBlo1-I	266	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	266	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	266	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	266	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	266	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	266	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	266	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	266	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	266	1	3	Bit	0x100 (9)	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	TripCmd (*)	266	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Ems[2] – Emission		**267**	**1**	**3**	**Struct**			
	ExBlo1-I	267	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	267	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	267	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	267	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	267	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	267	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	267	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	267	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	267	1	3	Bit	0x100 (9)	-	Signal: Trip

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	TripCmd (*)	267	1	3	Bit	0x200 (10)	-	Signal: Trip Command
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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Alarm	49	1	3	Bit	0x200 (10)	-	Signal: Alarm
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Blo TripCmd	50	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	50	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	50	1	3	Bit	0x200 (10)	-	Signal: 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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Active	51	1	3	Bit	0x20 (6)	-	Signal: Active
	ExBlo	51	1	3	Bit	0x40 (7)	-	Signal: External Blocking
	Blo TripCmd	51	1	3	Bit	0x80 (8)	-	Signal: Trip Command blocked
	ExBlo TripCmd	51	1	3	Bit	0x100 (9)	-	Signal: External Blocking of the Trip Command
	Alarm	51	1	3	Bit	0x200 (10)	-	Signal: 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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Alarm-I	52	1	3	Bit	0x8 (4)	-	Module Input State: Alarm
	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:

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								EDR-3000 - 2 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-I	5002	1	3	Bit	0x1 (1)	-	State of the module input: Config Bin Inp
	Config Bin Inp2-I	5002	1	3	Bit	0x2 (2)	-	State of the module input: Config Bin Inp
	Config Bin Inp3-I	5002	1	3	Bit	0x4 (3)	-	State of the module input: Config Bin Inp
	Config Bin Inp4-I	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-I	5002	1	3	Bit	0x10 (5)	-	State of the module input: Config Bin Inp
	Config Bin Inp6-I	5002	1	3	Bit	0x20 (6)	-	State of the module input: Config Bin Inp
	Config Bin Inp7-I	5002	1	3	Bit	0x40 (7)	-	State of the module input: Config Bin Inp
	Config Bin Inp8-I	5002	1	3	Bit	0x80 (8)	-	State of the module input: Config Bin Inp
	Config Bin Inp9-I	5002	1	3	Bit	0x100 (9)	-	State of the module input: Config Bin Inp
	Config Bin Inp10-I	5002	1	3	Bit	0x200 (10)	-	State of the module input: Config Bin Inp
	Config Bin Inp11-I	5002	1	3	Bit	0x400 (11)	-	State of the module input: Config Bin Inp
	Config Bin Inp12-I	5002	1	3	Bit	0x800 (12)	-	State of the module input: Config Bin Inp
	Config Bin Inp13-I	5002	1	3	Bit	0x1000 (13)	-	State of the module input: Config Bin Inp
	Config Bin Inp14-I	5002	1	3	Bit	0x2000 (14)	-	State of the module input: Config Bin Inp
	Config Bin Inp15-I	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.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
FldC[1] – FieldCurrent		**224**	**1**	**3**	**Struct**			
	ExBlo1-I	224	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	224	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	224	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	224	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	224	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	224	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	224	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	224	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	224	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	224	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
FldC[2] – FieldCurrent		**225**	**1**	**3**	**Struct**			
	ExBlo1-I	225	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	225	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	225	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	225	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	225	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	225	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	225	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	225	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	225	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	225	1	3	Bit	0x200 (10)	-	Signal: Trip Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Fuel[1] – Fuel		**232**	**1**	**3**	**Struct**			
	ExBlo1-I	232	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	232	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	232	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	232	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	232	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	232	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	232	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	232	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	232	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	232	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Fuel[2] – Fuel		**233**	**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	233	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	233	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	233	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	233	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	233	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	233	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	233	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	233	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	233	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	233	1	3	Bit	0x200 (10)	-	Signal: Trip Command
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.
LB – Load Blinder		**280**	**1**	**3**	**Struct**			
	ExBlo1-I	280	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	280	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	280	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	280	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Blo by MeasCircSupv	280	1	3	Bit	0x10 (5)	-	Blocked by Measuring Circuit Supervision
	Operate	280	1	3	Bit	0x20 (6)	-	Signal that the measured system impedance is within the Load Blinder area for at least the duration t-Delay.
	Pickup	280	1	3	Bit	0x40 (7)	-	Signal that the measured system impedance is within the Load Blinder area.
LOP – Loss of Potential		**81**	**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	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
LVRT[1]		**254**	**1**	**3**	**Struct**			
	ExBlo1-I	254	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	254	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	254	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	254	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	254	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 TripCmd	254	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	254	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
LVRT[1]		**255**	**1**	**3**	**Struct**			
	Pickup Phase A	255	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	255	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	255	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	255	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element
	Trip (*)	255	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	255	1	3	Bit	0x100 (9)	-	Signal: Trip Command
	t-LVRT is running (*)	255	1	3	Bit	0x200 (10)	-	Signal: t-LVRT is running
LVRT[2]		**270**	**1**	**3**	**Struct**			
	ExBlo1-I	270	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	270	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	270	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	270	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	270	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	270	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	270	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
LVRT[2]		**271**	**1**	**3**	**Struct**			
	Pickup Phase A	271	1	3	Bit	0x1 (1)	-	Signal: Pickup Phase A
	Pickup Phase B	271	1	3	Bit	0x2 (2)	-	Signal: Pickup Phase B
	Pickup Phase C	271	1	3	Bit	0x4 (3)	-	Signal: Pickup Phase C
	Pickup	271	1	3	Bit	0x8 (4)	-	Signal: Pickup Voltage Element

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	271	1	3	Bit	0x80 (8)	-	Signal: Trip
	TripCmd (*)	271	1	3	Bit	0x100 (9)	-	Signal: Trip Command
	t-LVRT is running (*)	271	1	3	Bit	0x200 (10)	-	Signal: t-LVRT is running
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 (2)	-	Signal: Timer Output
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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)
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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)
	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**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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	-	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)		
	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
	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)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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**			
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (2)	-	Signal: Timer Output
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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)
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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)
	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**			

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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	-	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)		
	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
	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)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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**			
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (2)	-	Signal: Timer Output
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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)
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	LE20.Reset Latch-I	1119	1	3	Bit	0x100 (9)	-	State of the module input: Reset Signal for the Latching
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
	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	-	Communication Command

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(10)		
	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 (14)	-	Communication Command
	Comm Cmd 15	1005	1	3	Bit	0x4000 (15)	-	Communication Command
	Comm Cmd 16	1005	1	3	Bit	0x8000 (16)	-	Communication Command
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	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(4)		
	ExBlo	88	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	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	-	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
						(2)		
	ExBlo TripCmd-I	89	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
PF-55D[1] – Displacement PF		**90**	**1**	**3**	**Struct**			
	ExBlo1-I	90	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Compensator	90	1	3	Bit	0x400 (11)	-	Signal: Compensation Signal
	Impossible	90	1	3	Bit	0x800 (12)	-	Signal: Pickup Power Factor Impossible
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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Trip (*)	91	1	3	Bit	0x100 (9)	-	Signal: Trip Power Factor
	TripCmd (*)	91	1	3	Bit	0x200 (10)	-	Signal: Trip Command
	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).

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	PSS via Inp fct	59	1	3	Bit	0x40 (7)	-	Signal: Parameter Set Switch via Input Function
	PS1-I	59	1	3	Bit	0x80 (8)	-	State of the module input, respectively of the signal, that should activate this Parameter Setting Group.
	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
Pres[1] – Pressure		**226**	**1**	**3**	**Struct**			
	ExBlo1-I	226	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	226	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	226	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	226	1	3	Bit	0x8 (4)	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo	226	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	226	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	226	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	226	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	226	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	226	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Pres[2] – Pressure		**227**	**1**	**3**	**Struct**			
	ExBlo1-I	227	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	227	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	227	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	227	1	3	Bit	0x8 (4)	-	Signal: Active

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	ExBlo	227	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	227	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	227	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	227	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	227	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	227	1	3	Bit	0x200 (10)	-	Signal: Trip Command
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	-	Signal: General Pickup Phase A

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(5)		
	Pickup Phase B	1	1	3	Bit	0x20 (6)	-	Signal: General Pickup Phase B
	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		**2**	**1**	**3**	**Struct**			
	I dir fwd	2	1	3	Bit	0x80 (8)	-	Signal: Phase current failure forward direction

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	I dir rev	2	1	3	Bit	0x100 (9)	-	Signal: Phase current failure reverse direction
	I dir n poss	2	1	3	Bit	0x200 (10)	-	Signal: Phase fault - missing reference voltage
Prot		**57**	**1**	**3**	**Struct**			
	Fault No.	57	1	3	Bit	0xffff (1)	-	Waveform number
Prot		**200**	**1**	**3**	**Struct**			
	IR dir rev	200	1	3	Bit	0x1 (1)	-	Signal: IR Ground fault (calculated) reverse direction
	IR dir fwd	200	1	3	Bit	0x2 (2)	-	Signal: IR Ground fault (calculated) forward
	IR dir n poss	200	1	3	Bit	0x4 (3)	-	Signal: IR Ground fault (calculated) direction detection not possible
	IX dir rev	200	1	3	Bit	0x8 (4)	-	Signal: IX Ground fault (measured) reverse direction
	IX dir fwd	200	1	3	Bit	0x10 (5)	-	Signal: IX Ground fault (measured) forward
	IX dir n poss	200	1	3	Bit	0x20 (6)	-	Signal: IX Ground fault (measured) direction detection not possible
	DFT Invalid	200	1	3	Bit	0x40 (7)	-	DFT values of fundamental and harmonics (except VX) are not valid. They depend on period time of

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
								frequency and measured channels 1-3 (VA/VAB,VB/VBC,VC/VCA).
	f(VABC)>10Hz	200	1	3	Bit	0x80 (8)	-	Frequency of the measuring channels 1-3 (VA,VB,VC) is greater than 10Hz.
	f(VABC)>70Hz	200	1	3	Bit	0x100 (9)	-	Frequency of the measuring channels 1-3 (VA,VB,VC) is greater than 70Hz.
	f(VABC)<10Hz	200	1	3	Bit	0x200 (10)	-	Frequency of the measuring channels 1-3 (VA,VB,VC) is lower than 10Hz.
	f(VABC)<70Hz	200	1	3	Bit	0x400 (11)	-	Frequency of the measuring channels 1-3 (VA,VB,VC) is lower than 70Hz.
	DFT Invalid (VX)	200	1	3	Bit	0x800 (12)	-	DFT values of fundamental and harmonics of VX (only) are not valid.
	f(VX)>10Hz	200	1	3	Bit	0x1000 (13)	-	Frequency of the measuring channel 4 (VX) is greater than 10Hz.
	f(VX)>70Hz	200	1	3	Bit	0x2000 (14)	-	Frequency of the measuring channel 4 (VX) is greater than 70Hz.
	f(VX)<10Hz	200	1	3	Bit	0x4000 (15)	-	Frequency of the measuring channel 4 (VX) is lower than 10Hz.
	f(VX)<70Hz	200	1	3	Bit	0x8000 (16)	-	Frequency of the measuring channel 4 (VX) is lower than 70Hz.
Q->&V<		**157**	**1**	**3**	**Struct**			
	ExBlo1-I	157	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	157	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	157	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	157	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Fuse Fail VT Blo	157	1	3	Bit	0x10 (5)	-	Signal: Blocked by Fuse Failure (VT)
	Pickup	157	1	3	Bit	0x20 (6)	-	Signal: Pickup Reactive Power Undervoltage Protection
	Decoupling PCC	157	1	3	Bit	0x200 (10)	-	Signal: Decoupling at the Point of Common Coupling
	Decoupling Gen.	157	1	3	Bit	0x400 (11)	-	Signal: Decoupling of the (local) Energy Generator/Resource
RO-4 X5 – 4 Relais auf X5		**1013**	**1**	**3**	**Struct**			
	RO 1	1013	1	3	Bit	0x1 (1)	-	Signal: Relay Output
	RO 2	1013	1	3	Bit	0x2 (2)	-	Signal: Relay Output
	RO 3	1013	1	3	Bit	0x4	-	Signal: Relay Output

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(3)		
	RO 4	1013	1	3	Bit	0x8 (4)	-	Signal: Relay Output
	DISARMED!	1013	1	3	Bit	0x40 (7)	-	Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance 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	1013	1	3	Bit	0x80 (8)	-	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.
RO-4Z X2		**155**	**1**	**3**	**Struct**			
	DISARMED!	155	1	3	Bit	0x1 (1)	-	Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance 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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (3)	-	Module Input State: External Blocking of the Trip Command
	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	-	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
						(8)		
	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
	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	-	Winding 2 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
						(8)		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
	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	-	Winding 5 Timeout Alarm

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(2)		
	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
	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)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (12)	-	Auxiliary 1 Signal: Invalid Temperature Measurement Value (e.g caused by 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	-	Load Bearing Group Signal: Invalid Temperature Measurement Value (e.g

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(1)		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 (7)	-	Trip all Motor Bearings
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	TimeoutAlmAuxGrp	205	1	3	Bit	0x200 (10)	-	Timeout Alarm Auxiliary Group
	Trip Aux Group (*)	205	1	3	Bit	0x400 (11)	-	Trip Auxiliary Group
ReCon[1]		**158**	**1**	**3**	**Struct**			
	ExBlo1-I	158	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	158	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	158	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	158	1	3	Bit	0x8 (4)	-	Signal: External Blocking
	Blo by Meas Circ Superv	158	1	3	Bit	0x10 (5)	-	Signal: Module blocked by measuring cirucuit supervision
	reconnected-I	158	1	3	Bit	0x20 (6)	-	This signal indicates the state "reconnected" (mains parallel).
	V Ext Release PCC-I	158	1	3	Bit	0x40 (7)	-	Module input state: Release signal is being generated by the PCC (External Release)
	PCC Fuse Fail VT-I	158	1	3	Bit	0x80 (8)	-	State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Release Energy Res.	158	1	3	Bit	0x100 (9)	-	Signal: Release Energy Resource.
	Decoupling1-I	158	1	3	Bit	0x200 (10)	-	Decoupling signal that triggers the reclosure.
	Decoupling2-I	158	1	3	Bit	0x400 (11)	-	Decoupling signal that triggers the reclosure.
	Decoupling3-I	158	1	3	Bit	0x800 (12)	-	Decoupling signal that triggers the reclosure.
	Decoupling4-I	158	1	3	Bit	0x1000 (13)	-	Decoupling signal that triggers the reclosure.
	Decoupling5-I	158	1	3	Bit	0x2000 (14)	-	Decoupling signal that triggers the reclosure.
	Decoupling6-I	158	1	3	Bit	0x4000 (15)	-	Decoupling signal that triggers the reclosure.
ReCon[2]		**159**	**1**	**3**	**Struct**			
	ExBlo1-I	159	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	159	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	Active	159	1	3	Bit	0x4 (3)	-	Signal: Active
	ExBlo	159	1	3	Bit	0x8	-	Signal: External Blocking

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(4)		
	Blo by Meas Circ Superv	159	1	3	Bit	0x10 (5)	-	Signal: Module blocked by measuring cirucuit supervision
	reconnected-I	159	1	3	Bit	0x20 (6)	-	This signal indicates the state "reconnected" (mains parallel).
	V Ext Release PCC-I	159	1	3	Bit	0x40 (7)	-	Module input state: Release signal is being generated by the PCC (External Release)
	PCC Fuse Fail VT-I	159	1	3	Bit	0x80 (8)	-	State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.
	Release Energy Res.	159	1	3	Bit	0x100 (9)	-	Signal: Release Energy Resource.
	Decoupling1-I	159	1	3	Bit	0x200 (10)	-	Decoupling signal that triggers the reclosure.
	Decoupling2-I	159	1	3	Bit	0x400 (11)	-	Decoupling signal that triggers the reclosure.
	Decoupling3-I	159	1	3	Bit	0x800 (12)	-	Decoupling signal that triggers the reclosure.
	Decoupling4-I	159	1	3	Bit	0x1000 (13)	-	Decoupling signal that triggers the reclosure.
	Decoupling5-I	159	1	3	Bit	0x2000 (14)	-	Decoupling signal that triggers the reclosure.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	Decoupling6-I	159	1	3	Bit	0x4000 (15)	-	Decoupling signal that triggers the reclosure.
SOTF – Switch Onto Fault		**65**	**1**	**3**	**Struct**			
	ExBlo1-I	65	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking
	ExBlo2-I	65	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking
	Ext SOTF-I	65	1	3	Bit	0x4 (3)	-	Module Input State: External Switch Onto Fault Alarm
	Rvs Blo-I	65	1	3	Bit	0x8 (4)	-	Module Input State: Reverse Blocking
	Active	65	1	3	Bit	0x10 (5)	-	Signal: Active
	ExBlo	65	1	3	Bit	0x20 (6)	-	Signal: External Blocking
	Rvs Blo	65	1	3	Bit	0x40 (7)	-	Signal: Reverse Blocking
	enabled	65	1	3	Bit	0x800 (12)	-	Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.
	I<	65	1	3	Bit	0x2000 (14)	-	Signal: No Load Current.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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.
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (13)	-	Fault Simulation has been started
	Stopped	1012	1	3	Bit	0x2000 (14)	-	Fault Simulation has been stopped
Spd[1] – Speed		**234**	**1**	**3**	**Struct**			
	ExBlo1-I	234	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	234	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	234	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	234	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	234	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	234	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	234	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	234	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	234	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	234	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Spd[2] – Speed		**235**	**1**	**3**	**Struct**			
	ExBlo1-I	235	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	235	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	235	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	235	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	235	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	235	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	235	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	235	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	235	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	235	1	3	Bit	0x200 (10)	-	Signal: Trip Command
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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 (1)	-	Module Input State: External Blocking
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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**			
	ExBlo1-I	150	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	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-I	150	1	3	Bit	0x100 (9)	-	Module Input State: Feed-back signal of the Bkr (52a)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	CinBkr-52b-I	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.
Tmp[1] – Temperature		**228**	**1**	**3**	**Struct**			
	ExBlo1-I	228	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	228	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	228	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	228	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	228	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	228	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	228	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	228	1	3	Bit	0x80	-	Signal: Pickup

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	Trip (*)	228	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	228	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Tmp[2] – Temperature		**229**	**1**	**3**	**Struct**			
	ExBlo1-I	229	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	229	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	229	1	3	Bit	0x4 (3)	-	Module Input State: External Blocking of the Trip Command
	Active	229	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	229	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	229	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	229	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	229	1	3	Bit	0x80	-	Signal: Pickup

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(8)		
	Trip (*)	229	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	229	1	3	Bit	0x200 (10)	-	Signal: Trip Command
URTD		**1007**	**1**	**3**	**Struct**			
	WD1 Superv	1007	1	3	Bit	0x1 (1)	-	Signal: WD1, Channel Supervision. The value “1” reports a detected channel 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.)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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.)
	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.)
VBat[1] – DC Battery		**236**	**1**	**3**	**Struct**			
	ExBlo1-I	236	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	236	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	236	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	236	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	236	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	236	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	236	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	236	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	236	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	236	1	3	Bit	0x200 (10)	-	Signal: Trip Command
VBat[2] – DC Battery		**237**	**1**	**3**	**Struct**			
	ExBlo1-I	237	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	237	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	237	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	237	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	237	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	237	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	237	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	237	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	237	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	237	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Vibr[1] – Vibration		**230**	**1**	**3**	**Struct**			
	ExBlo1-I	230	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	230	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	230	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	230	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	230	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	230	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	230	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	230	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	230	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	230	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Vibr[2] – Vibration		**231**	**1**	**3**	**Struct**			
	ExBlo1-I	231	1	3	Bit	0x1 (1)	-	Module Input State: External Blocking1
	ExBlo2-I	231	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking2
	ExBlo TripCmd-I	231	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	231	1	3	Bit	0x8 (4)	-	Signal: Active
	ExBlo	231	1	3	Bit	0x10 (5)	-	Signal: External Blocking
	Blo TripCmd	231	1	3	Bit	0x20 (6)	-	Signal: Trip Command blocked
	ExBlo TripCmd	231	1	3	Bit	0x40 (7)	-	Signal: External Blocking of the Trip Command
	Pickup	231	1	3	Bit	0x80 (8)	-	Signal: Pickup
	Trip (*)	231	1	3	Bit	0x100 (9)	-	Signal: Trip
	TripCmd (*)	231	1	3	Bit	0x200 (10)	-	Signal: Trip Command
Wired Inputs		**171**	**1**	**3**	**Struct**			
	TOCa M1-I	171	1	3	Bit	0x1 (1)	-	State of the module input: Main 1 Breaker Connected
	TOCa M2-I	171	1	3	Bit	0x2 (2)	-	State of the module input: Main 2 Breaker Connected
	TOCa T-I	171	1	3	Bit	0x4 (3)	-	State of the module input: Tie Breaker Connected

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	43/10 M1-I	171	1	3	Bit	0x8 (4)	-	State of the module input: Main 1 Breaker Selected To Trip
	43/10 M2-I	171	1	3	Bit	0x10 (5)	-	State of the module input: Main 2 Breaker Selected To Trip
	43/10 T-I	171	1	3	Bit	0x20 (6)	-	State of the module input: Tie Breaker Selected To Trip
	43 A-I	171	1	3	Bit	0x40 (7)	-	State of the module input: System in Auto
	43 M-I	171	1	3	Bit	0x80 (8)	-	State of the module input: System In Manual
	43 P1-I	171	1	3	Bit	0x100 (9)	-	State of the module input: Preferred Source 1
	43 P2-I	171	1	3	Bit	0x200 (10)	-	State of the module input: Preferred Source 2
	52a M1-I	171	1	3	Bit	0x400 (11)	-	State of the module input: Main 1 Breaker Closed
	52a M2-I	171	1	3	Bit	0x800 (12)	-	State of the module input: Main 2 Breaker Closed
	52a T-I	171	1	3	Bit	0x1000 (13)	-	State of the module input: Tie Breaker Closed
	52b M1-I	171	1	3	Bit	0x2000	-	State of the module input: Main 1 Breaker Open

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
						(14)		
	52b M2-I	171	1	3	Bit	0x4000 (15)	-	State of the module input: Main 2 Breaker Open
	52b T-I	171	1	3	Bit	0x8000 (16)	-	State of the module input: Tie Breaker Open
Wired Inputs		**172**	**1**	**3**	**Struct**			
	Bkr Trouble-I	172	1	3	Bit	0x1 (1)	-	Breaker Trouble
ZI – Zone Inter.		**139**	**1**	**3**	**Struct**			
	ExBlo1-I	139	1	3	Bit	0x2 (2)	-	Module Input State: External Blocking1
	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	-	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	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 (13)	-	Signal: Zone Interlocking Phase OUT
	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

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
	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 / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
25 – Sync-Check	f Bus	20520	2	4	Float IEE754		Hz	Bus frequency
25 – Sync-Check	V Bus	20522	2	4	Float IEE754		V	Bus Voltage
25 – Sync-Check	Angle Bus	20524	2	4	Float IEE754		°	Bus Angle (Reference)
25 – Sync-Check	Angle Diff	20526	2	4	Float IEE754		°	Angle difference
25 – Sync-Check	Volt Diff	20528	2	4	Float IEE754		V	Voltage difference
25 – Sync-Check	f Line	20530	2	4	Float IEE754		Hz	Line frequency
25 – Sync-Check	V Line	20532	2	4	Float IEE754		V	Line Voltage
25 – Sync-Check	Angle Line	20534	2	4	Float IEE754		°	Line Angle
25 – Sync-Check	Slip Freq	20536	2	4	Float IEE754		Hz	Slip frequency
49 – Thermal	Thermal Cap Used	20110	2	4	Float IEE754		%	Measured value: Thermal Capacity Used
49 – Thermal	Time To Trip	20112	2	4	Float IEE754		s	Measured value (calculated/measured): Remaining time until the thermal overload module will trip
49 – Thermal	Thermal Cap max	21086	2	4	Float IEE754		%	Thermal Capacity maximum value
87 – Phase Differential	IdA	20352	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase A
87 – Phase Differential	IdB	20354	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase B

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
87 – Phase Differential	IdC	20356	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase C
87 – Phase Differential	IrA	20358	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase A
87 – Phase Differential	IrB	20360	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase B
87 – Phase Differential	IrC	20362	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase C
87GD – Ground Differential	IdG (X4)	20368	2	4	Float IEE754		A	Measured Value (Calculated): Ground Differential Current Slot X4
87GD – Ground Differential	IrG (X4)	20370	2	4	Float IEE754		A	Measured Value (Calculated): Ground Restraint Current Slot X4
AnIn[1] – Analog In	Value	20896	2	4	Float IEE754		%	Measured value of the Input in percent
AnIn[2] – Analog In	Value	20900	2	4	Float IEE754		%	Measured value of the Input in percent
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 Line	IR calc Fund.	20228	2	4	Float IEE754		A	Measured value (calculated): IR (Fundamental)
CT Line	IX meas Fund.	20230	2	4	Float IEE754		A	Measured value (measured): IX (Fundamental)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
CT Line	IA Fund.	20232	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Line	IB Fund.	20234	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Line	IC Fund.	20236	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Line	IR calc RMS	20248	2	4	Float IEE754		A	Measured value (calculated): IR (RMS)
CT Line	IX meas RMS	20250	2	4	Float IEE754		A	Measured value (measured): IX (RMS)
CT Line	IA RMS	20252	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Line	IB RMS	20254	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Line	IC RMS	20256	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Line	Angle IR calc	20258	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IR calc Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.
CT Line	Angle IX meas	20260	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 Line	Angle IA	20262	2	4	Float IEE754		°	Measured Value (Calculated): Angle of Phasor IA 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.
CT Line	Angle IB	20264	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 Line	Angle IC	20266	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 Ntrl	IA Fund.	20100	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Ntrl	IB Fund.	20102	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Ntrl	IC Fund.	20104	2	4	Float IEE754		A	Measured value: Phase current (Fundamental)
CT Ntrl	IX meas Fund.	20106	2	4	Float IEE754		A	Measured value (measured): IX (Fundamental)
CT Ntrl	I0 Fund.	20114	2	4	Float IEE754		A	Measured value (calculated): Zero current (Fundamental)
CT Ntrl	I1 Fund.	20116	2	4	Float IEE754		A	Measured value (calculated): Positive phase sequence current (Fundamental)
CT Ntrl	I2 Fund.	20118	2	4	Float IEE754		A	Measured value (calculated): Unbalanced load current (Fundamental)
CT Ntrl	IR calc Fund.	20160	2	4	Float IEE754		A	Measured value (calculated): IR (Fundamental)
CT Ntrl	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 Ntrl	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 Ntrl	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 Ntrl	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 Ntrl	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 Ntrl	IA THD	20210	2	4	Float IEE754		A	Measured Value (Calculated): IA Total Harmonic Current
CT Ntrl	IB THD	20212	2	4	Float IEE754		A	Measured Value (Calculated): IB Total Harmonic Current
CT Ntrl	IC THD	20214	2	4	Float IEE754		A	Measured Value (Calculated): IC Total Harmonic Current

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
CT Ntrl	%IA THD	20216	2	4	Float IEE754		%	Measured Value (Calculated): IA Total Harmonic Distortion
CT Ntrl	%IB THD	20218	2	4	Float IEE754		%	Measured Value (Calculated): IB Total Harmonic Distortion
CT Ntrl	%IC THD	20220	2	4	Float IEE754		%	Measured Value (Calculated): IC Total Harmonic Distortion
CT Ntrl	IA RMS	20316	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Ntrl	IB RMS	20318	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Ntrl	IC RMS	20320	2	4	Float IEE754		A	Measured value: Phase current (RMS)
CT Ntrl	IX meas RMS	20322	2	4	Float IEE754		A	Measured value (measured): IX (RMS)
CT Ntrl	IR calc RMS	20324	2	4	Float IEE754		A	Measured value (calculated): IR (RMS)
CT Ntrl	%(I2/I1)	20376	2	4	Float IEE754		%	Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.
CT Ntrl	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 Ntrl	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 Ntrl	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 Ntrl	I1 max Fund.	21074	2	4	Float IEE754		A	Maximum value positive phase sequence current (Fundamental)
CT Ntrl	I1 min Fund.	21076	2	4	Float IEE754		A	Minimum value positive phase sequence current (Fundamental)
CT Ntrl	I2 max Fund.	21080	2	4	Float IEE754		A	Maximum value negative sequence current (Fundamental)
CT Ntrl	I2 min Fund.	21082	2	4	Float IEE754		A	Minimum value unbalanced load current (Fundamental)
CT Ntrl	IA avg RMS	21130	2	4	Float IEE754		A	IA average value (RMS)
CT Ntrl	IB avg RMS	21132	2	4	Float IEE754		A	IB average value (RMS)
CT Ntrl	IC avg RMS	21134	2	4	Float IEE754		A	IC average value (RMS)
CT Ntrl	IA max RMS	21136	2	4	Float IEE754		A	IA maximum value (RMS)
CT Ntrl	IB max RMS	21138	2	4	Float IEE754		A	IB maximum value (RMS)
CT Ntrl	IC max RMS	21140	2	4	Float IEE754		A	IC maximum value (RMS)
CT Ntrl	IA min RMS	21142	2	4	Float IEE754		A	IA minimum value (RMS)
CT Ntrl	IB min RMS	21144	2	4	Float IEE754		A	IB minimum value (RMS)
CT Ntrl	IC min RMS	21146	2	4	Float IEE754		A	IC minimum value (RMS)
CT Ntrl	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 Ntrl	IR calc min RMS	21458	2	4	Float IEE754		A	Measured value (calculated): IR minimum value (RMS)
CT Ntrl	IX meas max RMS	21462	2	4	Float IEE754		A	Measured value: IX maximum value (RMS)
CT Ntrl	IX meas min RMS	21464	2	4	Float IEE754		A	Measured value: IX minimum value (RMS)
CT Ntrl	%(I2/I1) max	21468	2	4	Float IEE754		%	Measured value (calculated): I2/I1 maximum value, phase sequence will be taken into account automatically
CT Ntrl	%(I2/I1) min	21470	2	4	Float IEE754		%	Measured value (calculated): I2/I1 minimum value, phase sequence will be taken into account automatically
CT Ntrl	IA Peak demand	21784	2	4	Float IEE754		A	IA Peak value, RMS value
CT Ntrl	IB Peak demand	21786	2	4	Float IEE754		A	IB Peak value, RMS value
CT Ntrl	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
Generator	Gen Op hours	21826	2	4	Float IEE754		h	Generator running hours
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.
LVRT[1]	Cr Tot Numb of Vdips	24092	2	4	Float IEE754		-	Counter Total number of voltage dips.
LVRT[1]	Num Vdips in t-LVRT	24094	2	4	Float IEE754		-	Number of Voltage dips during t-LVRT
LVRT[1]	Cr Num Vdips to Trip	24096	2	4	Float IEE754		-	Counter Total number of voltage dips that caused a Trip
LVRT[2]	Cr Tot Numb of Vdips	24138	2	4	Float IEE754		-	Counter Total number of voltage dips.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
LVRT[2]	Num Vdips in t-LVRT	24140	2	4	Float IEE754		-	Number of Voltage dips during t-LVRT
LVRT[2]	Cr Num Vdips to Trip	24142	2	4	Float IEE754		-	Counter Total number of voltage dips that caused a Trip
Modbus	Mapped Meas 1	23000	2	4	Float IEE754		-	Mapped Measured Values. They can be used to provide measured values to the Modbus Master.
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.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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.
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.
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.
RTD	Hottest LB	20508	2	4	Float IEE754		°C	The actual value for the hottest load bearing temperature.
RTD	Hottest Aux	21820	2	4	Float IEE754		°C	The actual value for the hottest Auxiliary temperature.
Statistics	IdG max (X4)	21950	2	4	Float IEE754		A	Measured Value (Calculated): Ground Differential Current Maximum Value Slot X4
Statistics	IrG max (X4)	21956	2	4	Float IEE754		A	Measured Value (Calculated): Ground Restraint Current Maximum Value Slot X4
Statistics	IdA max	21962	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase A Maximum Value

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
Statistics	IdB max	21968	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase B Maximum Value
Statistics	IdC max	21974	2	4	Float IEE754		Ib	Measured Value (Calculated): Differential Current Phase C Maximum Value
Statistics	IrA max	21980	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase A Maximum Value
Statistics	IrB max	21986	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase B Maximum Value
Statistics	IrC max	21992	2	4	Float IEE754		Ib	Measured Value (Calculated): Restraint Current Phase C Maximum Value
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
URTD	MB2	20344	2	4	Float IEE754		°C	Motor Bearing 2
URTD	LB1	20346	2	4	Float IEE754		°C	Load Bearing 1

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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
URTD	Aux2 max	21800	2	4	Float IEE754		°C	Auxiliary2 Maximum Value
VT	f	20128	2	4	Float IEE754		Hz	Measured Value: Frequency

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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 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

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 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 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
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
VT	VBC THD	20414	2	4	Float IEE754		V	Measured value (calculated): VBC 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	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)
VT	VCA RMS	20446	2	4	Float IEE754		V	Measured value: Phase-to-phase voltage (RMS)

Module (ANSI / IEEE)	Name Function	Start Register Address	No. of Modbus Registers	Function code	Format	Bit Mask (Bit position)	Unit	Description
VT	%(V2/V1)	20450	2	4	Float IEE754		%	Measured value (calculated): V2/V1, phase sequence will be taken into account automatically.
VT	VX meas H3	20556	2	4	Float IEE754		V	Third harmonic of measured neutral voltage used to detect generator stator ground faults.
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	VX meas H3 max	21816	2	4	Float IEE754		V	Maximum value: Third harmonic of measured neutral voltage used to detect generator stator ground faults.
VT	VX meas H3 min	21818	2	4	Float IEE754		V	Minimum value:Third harmonic of measured neutral voltage used to detect generator stator ground faults.
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
Z	R1	20910	2	4	Float IEE754		Ω	Resistance part of impedance Measured positive-sequence impedance
Z	X1	20912	2	4	Float IEE754		Ω	Reactance part of impedance Measured positive-sequence impedance

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
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	**?**	**24[1], 24[2], 40-Z1[1], 40-Z1[2], 40-Z2[1], 40-Z2[2], 49, 50/27, 81[1], 81[2], 81[3], 81[4], 81[5], 81[6], 87, 87GD, 87GDH, 87H, AnaP[1], AnaP[2], Ems[1], Ems[2], FldC[1], FldC[2], Fuel[1], Fuel[2], Pres[1], Pres[2], RTD, Spd[1], Spd[2], Tmp[1], Tmp[2], VBat[1], VBat[2], Vibr[1], Vibr[2], ZI**
1	**NORM**	
2	**EXTERNAL**	**ExP[1], ExP[2], ExP[3], ExP[4]**
3	**PH IOC**	**50P[1], 50P[2], 50P[3]**
4	**IG IOC**	**50X[1], 50X[2]**
6	**IR IOC**	**50R[1], 50R[2]**

Trip Cause	Description	Module
7	PH TOC	51P[1], 51P[2], 51P[3]
8	IG TOC	51X[1], 51X[2]
10	IR TOC	51R[1], 51R[2]
11	OV	59M[1], 59M[2], 59N[1], 59N[2]
12	UV	27M[1], 27M[2], LVRT[1], LVRT[2]
13	AUX OV	59A[1], 59A[2]
14	AUX UV	27A[1], 27A[2]
17	I UNBAL	46G[1], 46G[2], 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]
4501		78
4601		21P[1]
4602		21P[2]

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.

Modbus Datapoints IL02602015E

EGR-5000

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