WOODWARD

MRM4 – IEC60870-5-103
HighPROTEC

Data point list

Manual MRM4 R3.6 (Build 41522)

Table of Contents

This manual applies to devices (version):

 Version 3.6.b

Build: 41481

Physical layer

Electrical interface

☒   EIA RS-485   ☒   Number of loads for one equipment: 32

Optical interface

☒   Glass fibre   ☐   F-SMA type connector

☒   Plastic fibre   ☒   BFOC/2,5 type connector

Transmission speed

☒   9600 bit/s   ☒   19200 bit/s

                                                  ☒   38400 bit/s

Link Layer

There are no choices for the link layer

Application layer

Transmission mode for application data Mode 1 (least significant octet first) as defined in 4.10 of IEC 60870-5-4

Common address of ADSU

☒ One common address of ADSU
(identical with station address)

☐ More than one common address of ASDU

Selection of standard information numbers in monitor direction

System functions in monitor direction

☒ 0 = End of general interrogation

☒ 0 = Time synchronization

☒ 2 = Reset FCB

☒ 3 = Reset CU

☒ 4 = Start/Restart

☒ 5 = Power on

Measurands in monitor direction

☐ 144 Measurand I   ☐ 145 Measurands I,V

☐ 146 Measurand I, V,P,Q   ☐ 147 Measurands I_N, V_{EN}

☒ 148 Measurands $IL_{1,2,3}$, $V_{L1,2,3}$, P, Q, f

Generic functions in monitor direction

☐ 240 Read headings of all defined groups   ☐ 241 Read values of all entries of one group

☐ 243 Read directory of a single entry   ☐ 244 Read value of a single entry

☐ 245 End of general interrogation of generic data   ☐ 249 Write entry with confirmation

☐ 250 Write entry with execution   ☐ 251 Write entry aborted

Selection of standard information numbers in control direction

System functions in control direction

☒ 0 = Initiation of general interrogation   ☒ 0 Time synchronization

General commands in control direction

☒ 16 Auto-recloser on/off   ☒ 17 Teleprotection on/off

☒ 18 Protection on/off   ☒ 19 LED reset

☒ 20 Blocking of Monitor Direction   ☒ 21 Test mode

☒ 23 Activate characteristic 1   ☒ 24 Activate characteristic 2

☒ 25 Activate characteristic 3   ☒ 26 Activate characteristic 4

Generic functions in control direction

☐ 240 Read headings of all defined groups   ☐ 241 Read values of all entries of one group

☐ 243 Read directory of a single entry   ☐ 244 Read value of a single entry

☐ 245 General interrogation of generic data   ☐ 248 Write entry

☐ 249 Write entry with confirmation   ☐ 250 Write entry with execution

☐ 251 Write entry abort

Basic application functions

☒ Test mode   ☒ Blocking of monitor direction

☒ Disturbance data   ☐ Generic services

☒ Private data

Miscellaneous

Measurand	max. value = rated value x	
	1.2	**2.4**
Current L_1	☐	☒
Current L_2	☐	☒
Current L_3	☐	☒
Voltage L_{1-E}	☐	☒
Voltage L_{2-E}	☐	☒
Voltage L_{3-E}	☐	☒
Voltage $L_1 - L_2$	☐	☒
Active power P	☐	☒
Reactive power Y	☐	☒
Frequency f	☒	☐

Data Points List

Signals

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Prot	active	1	178	18	GI	Signal: active
IEC103	Block MD active	1	178	20	GI	Signal: The blocking of IEC103 transmission in monitor direction has been activated.
IEC103	Test mode active	1	178	21	GI	Signal: IEC103 communication has been switched over into Test Mode.
PSet-Switch	min 1 param changed	1	178	22	GI	Signal: At least one parameter has been changed
DI Slot X1	DI 1	1	178	27	GI	Signal: Digital Input
DI Slot X1	DI 2	1	178	28	GI	Signal: Digital Input
DI Slot X1	DI 3	1	178	29	GI	Signal: Digital Input
DI Slot X1	DI 4	1	178	30	GI	Signal: Digital Input
CTS - 60L	Alarm	1	178	32	GI	Signal: Alarm Current Transformer Measuring Circuit Supervision
SSV	New warning	1	178	46	GI	Signal: A new warning message has been issued.
SSV	System Error	1	178	47	GI	Signal: Device Failure
Prot	Alarm L1	2	178	64	GI	Signal: General-Alarm L1
Prot	Alarm L2	2	178	65	GI	Signal: General-Alarm L2
Prot	Alarm L3	2	178	66	GI	Signal: General-Alarm L3
Prot	Alarm G	2	178	67	GI	Signal: General-Alarm - Earth fault

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Prot	Trip	2	178	68		Signal: General Trip
Prot	Trip L1	2	178	69		Signal: General Trip L1
Prot	Trip L2	2	178	70		Signal: General Trip L2
Prot	Trip L3	2	178	71		Signal: General Trip L3
Prot	Alarm	2	178	84	GI	Signal: General Alarm
CBF - 50BF, 62BF	Alarm	2	178	85		Signal: Circuit Breaker Failure
I[1] - 50, 51	TripCmd	2	178	90		Signal: Trip Command
I[2] - 50, 51	TripCmd	2	178	91		Signal: Trip Command
IG[1] - 50N, 51N	TripCmd	2	178	92		Signal: Trip Command
IG[2] - 50N, 51N	TripCmd	2	178	93		Signal: Trip Command
Ctrl	Local	1	178	160	GI	Switching Authority: Local
MStart	Blo	1	40	161	GI	Signal: Motor is blocked for starting or transition to Run mode
MStart	Stop	1	40	162	GI	Signal: Motor is in stop mode
MStart	Start	1	40	163	GI	Signal: Motor is in start mode
MStart	Run	1	40	164	GI	Signal: Motor is in run mode
MStart	LATBlock	1	40	165	GI	Signal: Long acceleration timer enforced
MStart	NOCSBlocked	1	40	166	GI	Signal: Motor is prohibited to start due to number of cold start limits
MStart	SPHBlocked	1	40	167	GI	Signal: Motor is prohibited to start due to starts per hour limits
MStart	TBSBlocked	1	40	168	GI	Signal: Motor is prohibited to start due to time between starts limits
MStart	ThermalBlo	1	40	169	GI	Signal: Thermal block

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
MStart	RemBlockStart	1	40	170	GI	Signal: Motor is prohibited to start due to external blocking through digital input DI
MStart	MotorStopBlo	1	40	171	GI	Signal: Motor stop block other protection functions
MStart	SPHBlockAlarm	1	40	172	GI	Signal: Motor is prohibited to start due to starts per hour limits, would come active in the next stop
MStart	INSQSt2RunFail	1	40	173	GI	Signal: Fail to transit from start to run based on reported back time
MStart	INSQSP2STFaill	1	40	174	GI	Signal: Fail to transit from stop to start based on reported back time
MStart	I_Transit	1	40	175	GI	Signal: Current transition signal
MStart	T_Transit	1	40	176	GI	Signal: Time transition signal
MStart	ABSActive	1	40	178	GI	Signal: Anti-backspin is active. For certain applications, such as pumping a fluid up a pipe, the motor may be driven backward for a period of time after it stops. The anti-backspin timer prevents starting the motor while it is spinning in the reverse direction.
MStart	ColdStartSeq	1	40	179	GI	Signal: Motor cold start sequence flag
MStart	EmergOverrideDI	1	40	180	GI	Signal: Emergency override start blocking through digital input DI
MStart	EmergOverrideUI	1	40	181	GI	Signal: Emergency override start blocking through front panel
MStart	ForcedStart	1	40	182	GI	Signal: Motor being forced to start

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
MStart	STPC Blo-I	1	40	183	GI	State of the module input: With this setting a Digital Input keeps the Motor in the RUN mode, even when the motor current drops below STPC (motor stop current).
MStart	TripCmd	2	40	90		Signal: Trip Command
MStart	TransitionTrip	2	40	91		Signal: Start transition fail trip
MStart	ZSSTrip	2	40	92		Signal: Zero speed trip (possible locked rotor)
MStart	TripPhaseReverse	2	40	93		Signal: Relay tripped because of phase reverse detection
MStart	Rotating forward	1	40	94	GI	Signal: Rotation Direction forward
MStart	Rotating backward	1	40	95	GI	Signal: Rotation Direction reverse
MStart	INSQ-I	1	41	161	GI	State of the module input: INcomplete SeQuence
MStart	RemStartBlock-I	1	41	167	GI	State of the module input: Remote Motor Start Blocking
MStart	ZSS-I	1	41	170	GI	State of the module input: Zero Speed Switch
MStart	Blo-IOCStart	1	41	171	GI	Signal: Phase Instantaneous Overcurrent Start Delay. IOC (Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
MStart	Blo-GOCStart	1	41	172	GI	Signal: Ground Instantaneous Overcurrent Start Delay. GOC (Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
MStart	Blo-JamStart	1	41	173	GI	Signal: JAM Start Delay. JAM(Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
MStart	Blo-I<Start	1	41	174	GI	Signal: Underload Start Delay. Underload(Instantaneous Overcurrent) elements are blocked for the time programmed under this parameter
MStart	Blo-I2>Start	1	41	175	GI	Signal: Motor start block current unbalance signal
MStart	Blo-Generic1	1	41	176	GI	Generic Start Delay. This value can be used to block any protective element.1
MStart	Blo-Generic2	1	41	177	GI	Generic Start Delay. This value can be used to block any protective element.2
MStart	Blo-Generic3	1	41	178	GI	Generic Start Delay. This value can be used to block any protective element.3
MStart	Blo-Generic4	1	41	179	GI	Generic Start Delay. This value can be used to block any protective element.4
MStart	Blo-Generic5	1	41	180	GI	Generic Start Delay. This value can be used to block any protective element.5
ThR	Blo TripCmd	1	42	31	GI	Signal: Trip Command blocked
ThR	Load above SF	1	42	160	GI	"Load above Service Factor": If the current exceeds the set value of "UTC" ("Ultimate trip threshold") then the used thermal capacity counts up and the state "Load above SF" is becoming true. If the current is below the "UTC" value this state is false.

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
ThR	RTD effective	1	42	161	GI	This state becomes true if the following conditions are all fulfilled: - the state "Load above SF" is true, - RTD functionality is active, - for at least one temperature a valid value above 0°C is being displayed.
ThR	Alarm	1	42	64	GI	Signal: Alarm
ThR	Alarm Pickup	1	42	65	GI	Signal: Alarm Pickup
ThR	Alarm Timeout	1	42	66	GI	Signal: Alarm Timeout
ThR	TripCmd	2	42	90		Signal: Trip Command
Jam[1] - 51LR	ExBlo	1	43	30	GI	Signal: External Blocking
Jam[2] - 51LR	ExBlo	1	43	31	GI	Signal: External Blocking
Jam[1] - 51LR	TripCmd	2	43	90		Signal: Trip Command
Jam[2] - 51LR	TripCmd	2	43	91		Signal: Trip Command
Jam[1] - 51LR	Alarm	1	43	100	GI	Signal: Alarm
Jam[2] - 51LR	Alarm	1	43	101	GI	Signal: Alarm
MLS	ExBlo	1	44	31	GI	Signal: External Blocking
MLS	Alarm	1	44	100	GI	Signal: Alarm
I<[1] - 37	ExBlo	1	45	30	GI	Signal: External Blocking
I<[2] - 37	ExBlo	1	45	31	GI	Signal: External Blocking
I<[3] - 37	ExBlo	1	45	32	GI	Signal: External Blocking
I<[1] - 37	TripCmd	2	45	90		Signal: Trip Command
I<[2] - 37	TripCmd	2	45	91		Signal: Trip Command

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
I<[3] - 37	TripCmd	2	45	92		Signal: Trip Command
I<[1] - 37	Alarm	2	45	100	GI	Signal: Alarm
I<[2] - 37	Alarm	2	45	101	GI	Signal: Alarm
I<[3] - 37	Alarm	2	45	102	GI	Signal: Alarm
RTD	TripCmd	2	46	90		Signal: Trip Command
RTD	Alarm	2	46	100	GI	Alarm RTD Temperature Protection
IEC103	Failure Event lost	1	100	100		Failure event lost
I[1] - 50, 51	active	1	101	50	GI	Signal: active
I[2] - 50, 51	active	1	101	51	GI	Signal: active
I[3] - 50, 51	active	1	101	52	GI	Signal: active
I[4] - 50, 51	active	1	101	53	GI	Signal: active
I[5] - 50, 51	active	1	101	54	GI	Signal: active
I[6] - 50, 51	active	1	101	55	GI	Signal: active
IG[1] - 50N, 51N	active	1	101	56	GI	Signal: active
IG[2] - 50N, 51N	active	1	101	57	GI	Signal: active
IG[3] - 50N, 51N	active	1	101	58	GI	Signal: active
IG[4] - 50N, 51N	active	1	101	59	GI	Signal: active
I[1] - 50, 51	Blo TripCmd	1	101	60	GI	Signal: Trip Command blocked
I[2] - 50, 51	Blo TripCmd	1	101	61	GI	Signal: Trip Command blocked
I[3] - 50, 51	Blo TripCmd	1	101	62	GI	Signal: Trip Command blocked
I[4] - 50, 51	Blo TripCmd	1	101	63	GI	Signal: Trip Command blocked
I[5] - 50, 51	Blo TripCmd	1	101	64	GI	Signal: Trip Command blocked
I[6] - 50, 51	Blo TripCmd	1	101	65	GI	Signal: Trip Command blocked

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
IG[1] - 50N, 51N	Blo TripCmd	1	101	66	GI	Signal: Trip Command blocked
IG[2] - 50N, 51N	Blo TripCmd	1	101	67	GI	Signal: Trip Command blocked
IG[3] - 50N, 51N	Blo TripCmd	1	101	68	GI	Signal: Trip Command blocked
IG[4] - 50N, 51N	Blo TripCmd	1	101	69	GI	Signal: Trip Command blocked
I[3] - 50, 51	TripCmd	2	101	92		Signal: Trip Command
I[4] - 50, 51	TripCmd	2	101	93		Signal: Trip Command
I[5] - 50, 51	TripCmd	2	101	94		Signal: Trip Command
I[6] - 50, 51	TripCmd	2	101	95		Signal: Trip Command
IG[3] - 50N, 51N	TripCmd	2	101	98		Signal: Trip Command
IG[4] - 50N, 51N	TripCmd	2	101	99		Signal: Trip Command
I[1] - 50, 51	Alarm	2	101	100	GI	Signal: Alarm
I[2] - 50, 51	Alarm	2	101	101	GI	Signal: Alarm
I[3] - 50, 51	Alarm	2	101	102	GI	Signal: Alarm
I[4] - 50, 51	Alarm	2	101	103	GI	Signal: Alarm
I[5] - 50, 51	Alarm	2	101	104	GI	Signal: Alarm
I[6] - 50, 51	Alarm	2	101	105	GI	Signal: Alarm
IG[1] - 50N, 51N	Alarm	2	101	106	GI	Signal: Alarm IG
IG[2] - 50N, 51N	Alarm	2	101	107	GI	Signal: Alarm IG
IG[3] - 50N, 51N	Alarm	2	101	108	GI	Signal: Alarm IG
IG[4] - 50N, 51N	Alarm	2	101	109	GI	Signal: Alarm IG
I2>[1] - 46	active	1	103	56	GI	Signal: active
I2>[2] - 46	active	1	103	57	GI	Signal: active
I2>[1] - 46	Blo TripCmd	1	103	66	GI	Signal: Trip Command blocked

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
I2>[2] - 46	Blo TripCmd	1	103	67	GI	Signal: Trip Command blocked
I2>[1] - 46	TripCmd	2	103	90		Signal: Trip Command
I2>[2] - 46	TripCmd	2	103	91		Signal: Trip Command
I2>[1] - 46	Alarm	2	103	100	GI	Signal: Alarm Negative Sequence
I2>[2] - 46	Alarm	2	103	101	GI	Signal: Alarm Negative Sequence
CBF - 50BF, 62BF	active	1	108	50	GI	Signal: active
CBF - 50BF, 62BF	running	1	108	60	GI	Signal: CBF-Module started
CBF - 50BF, 62BF	Trigger1-I	1	108	100	GI	Module Input: Trigger that will start the CBF
CBF - 50BF, 62BF	Trigger2-I	1	108	101	GI	Module Input: Trigger that will start the CBF
CBF - 50BF, 62BF	Trigger3-I	1	108	102	GI	Module Input: Trigger that will start the CBF
CBF - 50BF, 62BF	Lockout	1	108	106	GI	Signal: Lockout
CBF - 50BF, 62BF	Waiting for Trigger	1	108	107	GI	Waiting for Trigger
ExP[1]	active	1	114	50	GI	Signal: active
ExP[2]	active	1	114	51	GI	Signal: active
ExP[3]	active	1	114	52	GI	Signal: active
ExP[4]	active	1	114	53	GI	Signal: active
ExP[1]	Blo TripCmd	1	114	60	GI	Signal: Trip Command blocked
ExP[2]	Blo TripCmd	1	114	61	GI	Signal: Trip Command blocked
ExP[3]	Blo TripCmd	1	114	62	GI	Signal: Trip Command blocked
ExP[4]	Blo TripCmd	1	114	63	GI	Signal: Trip Command blocked
ExP[1]	TripCmd	2	114	90		Signal: Trip Command
ExP[2]	TripCmd	2	114	91		Signal: Trip Command
ExP[3]	TripCmd	2	114	92		Signal: Trip Command

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
ExP[4]	TripCmd	2	114	93		Signal: Trip Command
ExP[1]	Alarm	2	114	100	GI	Signal: Alarm
ExP[2]	Alarm	2	114	101	GI	Signal: Alarm
ExP[3]	Alarm	2	114	102	GI	Signal: Alarm
ExP[4]	Alarm	2	114	103	GI	Signal: Alarm
DI Slot X1	DI 5	1	121	27	GI	Signal: Digital Input
DI Slot X1	DI 6	1	121	28	GI	Signal: Digital Input
DI Slot X1	DI 7	1	121	29	GI	Signal: Digital Input
DI Slot X1	DI 8	1	121	30	GI	Signal: Digital Input
DI Slot X1	DI 1	1	121	35	GI	Signal: Digital Input
DI Slot X1	DI 2	1	121	36	GI	Signal: Digital Input
DI Slot X1	DI 3	1	121	37	GI	Signal: Digital Input
DI Slot X1	DI 4	1	121	38	GI	Signal: Digital Input
BO Slot X2	BO 1	1	123	160	GI	Signal: Binary Output Relay
BO Slot X2	BO 2	1	123	161	GI	Signal: Binary Output Relay
BO Slot X2	BO 3	1	123	162	GI	Signal: Binary Output Relay
BO Slot X2	BO 4	1	123	163	GI	Signal: Binary Output Relay
BO Slot X2	BO 5	1	123	164	GI	Signal: Binary Output Relay
BO Slot X2	BO 1	1	123	168	GI	Signal: Binary Output Relay
BO Slot X2	BO 2	1	123	169	GI	Signal: Binary Output Relay
BO Slot X2	BO 3	1	123	170	GI	Signal: Binary Output Relay
Logics	LE1.Gate Out	1	162	160	GI	Signal: Output of the logic gate
Logics	LE1.Timer Out	1	162	161	GI	Signal: Timer Output

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE1.Out	1	162	162	GI	Signal: Latched Output (Q)
Logics	LE2.Gate Out	1	162	167	GI	Signal: Output of the logic gate
Logics	LE2.Timer Out	1	162	168	GI	Signal: Timer Output
Logics	LE2.Out	1	162	169	GI	Signal: Latched Output (Q)
Logics	LE3.Gate Out	1	162	174	GI	Signal: Output of the logic gate
Logics	LE3.Timer Out	1	162	175	GI	Signal: Timer Output
Logics	LE3.Out	1	162	176	GI	Signal: Latched Output (Q)
Logics	LE4.Gate Out	1	162	181	GI	Signal: Output of the logic gate
Logics	LE4.Timer Out	1	162	182	GI	Signal: Timer Output
Logics	LE4.Out	1	162	183	GI	Signal: Latched Output (Q)
Logics	LE5.Gate Out	1	162	188	GI	Signal: Output of the logic gate
Logics	LE5.Timer Out	1	162	189	GI	Signal: Timer Output
Logics	LE5.Out	1	162	190	GI	Signal: Latched Output (Q)
Logics	LE6.Gate Out	1	162	195	GI	Signal: Output of the logic gate
Logics	LE6.Timer Out	1	162	196	GI	Signal: Timer Output
Logics	LE6.Out	1	162	197	GI	Signal: Latched Output (Q)
Logics	LE7.Gate Out	1	162	202	GI	Signal: Output of the logic gate
Logics	LE7.Timer Out	1	162	203	GI	Signal: Timer Output
Logics	LE7.Out	1	162	204	GI	Signal: Latched Output (Q)
Logics	LE8.Gate Out	1	162	209	GI	Signal: Output of the logic gate
Logics	LE8.Timer Out	1	162	210	GI	Signal: Timer Output
Logics	LE8.Out	1	162	211	GI	Signal: Latched Output (Q)
Logics	LE9.Gate Out	1	162	216	GI	Signal: Output of the logic gate

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE9.Timer Out	1	162	217	GI	Signal: Timer Output
Logics	LE9.Out	1	162	218	GI	Signal: Latched Output (Q)
Logics	LE10.Gate Out	1	162	223	GI	Signal: Output of the logic gate
Logics	LE10.Timer Out	1	162	224	GI	Signal: Timer Output
Logics	LE10.Out	1	162	225	GI	Signal: Latched Output (Q)
Logics	LE11.Gate Out	1	163	160	GI	Signal: Output of the logic gate
Logics	LE11.Timer Out	1	163	161	GI	Signal: Timer Output
Logics	LE11.Out	1	163	162	GI	Signal: Latched Output (Q)
Logics	LE11.Gate In1-I	1	163	163	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In2-I	1	163	164	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In3-I	1	163	165	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In4-I	1	163	166	GI	State of the module input: Assignment of the Input Signal
Logics	LE12.Gate Out	1	163	167	GI	Signal: Output of the logic gate
Logics	LE12.Timer Out	1	163	168	GI	Signal: Timer Output
Logics	LE12.Out	1	163	169	GI	Signal: Latched Output (Q)
Logics	LE12.Gate In1-I	1	163	170	GI	State of the module input: Assignment of the Input Signal
Logics	LE12.Gate In2-I	1	163	171	GI	State of the module input: Assignment of the Input Signal
Logics	LE12.Gate In3-I	1	163	172	GI	State of the module input: Assignment of the Input Signal

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE12.Gate In4-I	1	163	173	GI	State of the module input: Assignment of the Input Signal
Logics	LE13.Gate Out	1	163	174	GI	Signal: Output of the logic gate
Logics	LE13.Timer Out	1	163	175	GI	Signal: Timer Output
Logics	LE13.Out	1	163	176	GI	Signal: Latched Output (Q)
Logics	LE13.Gate In1-I	1	163	177	GI	State of the module input: Assignment of the Input Signal
Logics	LE13.Gate In2-I	1	163	178	GI	State of the module input: Assignment of the Input Signal
Logics	LE13.Gate In3-I	1	163	179	GI	State of the module input: Assignment of the Input Signal
Logics	LE13.Gate In4-I	1	163	180	GI	State of the module input: Assignment of the Input Signal
Logics	LE14.Gate Out	1	163	181	GI	Signal: Output of the logic gate
Logics	LE14.Timer Out	1	163	182	GI	Signal: Timer Output
Logics	LE14.Out	1	163	183	GI	Signal: Latched Output (Q)
Logics	LE14.Gate In1-I	1	163	184	GI	State of the module input: Assignment of the Input Signal
Logics	LE14.Gate In2-I	1	163	185	GI	State of the module input: Assignment of the Input Signal
Logics	LE14.Gate In3-I	1	163	186	GI	State of the module input: Assignment of the Input Signal
Logics	LE14.Gate In4-I	1	163	187	GI	State of the module input: Assignment of the Input Signal
Logics	LE15.Gate Out	1	163	188	GI	Signal: Output of the logic gate
Logics	LE15.Timer Out	1	163	189	GI	Signal: Timer Output

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE15.Out	1	163	190	GI	Signal: Latched Output (Q)
Logics	LE15.Gate In1-I	1	163	191	GI	State of the module input: Assignment of the Input Signal
Logics	LE15.Gate In2-I	1	163	192	GI	State of the module input: Assignment of the Input Signal
Logics	LE15.Gate In3-I	1	163	193	GI	State of the module input: Assignment of the Input Signal
Logics	LE15.Gate In4-I	1	163	194	GI	State of the module input: Assignment of the Input Signal
Logics	LE16.Gate Out	1	163	195	GI	Signal: Output of the logic gate
Logics	LE16.Timer Out	1	163	196	GI	Signal: Timer Output
Logics	LE16.Out	1	163	197	GI	Signal: Latched Output (Q)
Logics	LE16.Gate In1-I	1	163	198	GI	State of the module input: Assignment of the Input Signal
Logics	LE16.Gate In2-I	1	163	199	GI	State of the module input: Assignment of the Input Signal
Logics	LE16.Gate In3-I	1	163	200	GI	State of the module input: Assignment of the Input Signal
Logics	LE16.Gate In4-I	1	163	201	GI	State of the module input: Assignment of the Input Signal
Logics	LE17.Gate Out	1	163	202	GI	Signal: Output of the logic gate
Logics	LE17.Timer Out	1	163	203	GI	Signal: Timer Output
Logics	LE17.Out	1	163	204	GI	Signal: Latched Output (Q)
Logics	LE17.Gate In1-I	1	163	205	GI	State of the module input: Assignment of the Input Signal

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE17.Gate In2-I	1	163	206	GI	State of the module input: Assignment of the Input Signal
Logics	LE17.Gate In3-I	1	163	207	GI	State of the module input: Assignment of the Input Signal
Logics	LE17.Gate In4-I	1	163	208	GI	State of the module input: Assignment of the Input Signal
Logics	LE18.Gate Out	1	163	209	GI	Signal: Output of the logic gate
Logics	LE18.Timer Out	1	163	210	GI	Signal: Timer Output
Logics	LE18.Out	1	163	211	GI	Signal: Latched Output (Q)
Logics	LE18.Gate In1-I	1	163	212	GI	State of the module input: Assignment of the Input Signal
Logics	LE18.Gate In2-I	1	163	213	GI	State of the module input: Assignment of the Input Signal
Logics	LE18.Gate In3-I	1	163	214	GI	State of the module input: Assignment of the Input Signal
Logics	LE18.Gate In4-I	1	163	215	GI	State of the module input: Assignment of the Input Signal
Logics	LE19.Gate Out	1	163	216	GI	Signal: Output of the logic gate
Logics	LE19.Timer Out	1	163	217	GI	Signal: Timer Output
Logics	LE19.Out	1	163	218	GI	Signal: Latched Output (Q)
Logics	LE19.Gate In1-I	1	163	219	GI	State of the module input: Assignment of the Input Signal
Logics	LE19.Gate In2-I	1	163	220	GI	State of the module input: Assignment of the Input Signal
Logics	LE19.Gate In3-I	1	163	221	GI	State of the module input: Assignment of the Input Signal

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE19.Gate In4-I	1	163	222	GI	State of the module input: Assignment of the Input Signal
Logics	LE20.Gate Out	1	163	223	GI	Signal: Output of the logic gate
Logics	LE20.Timer Out	1	163	224	GI	Signal: Timer Output
Logics	LE20.Out	1	163	225	GI	Signal: Latched Output (Q)
Logics	LE20.Gate In1-I	1	163	226	GI	State of the module input: Assignment of the Input Signal
Logics	LE20.Gate In2-I	1	163	227	GI	State of the module input: Assignment of the Input Signal
Logics	LE20.Gate In3-I	1	163	228	GI	State of the module input: Assignment of the Input Signal
Logics	LE20.Gate In4-I	1	163	229	GI	State of the module input: Assignment of the Input Signal
SysA	active	1	182	50	GI	Signal: active
SysA	Alm Current Demd	2	182	106	GI	Signal: Alarm averaged demand current
SysA	Alarm I THD	2	182	107	GI	Signal: Alarm Total Harmonic Distortion Current
SysA	Trip Current Demand	2	182	96		Signal: Trip averaged demand current
SysA	Trip I THD	2	182	97		Signal: Trip Total Harmonic Distortion Current
TCS - 74TC	active	1	241	50	GI	Signal: active
TCS - 74TC	ExBlo	1	241	80		Signal: External Blocking
TCS - 74TC	Alarm	1	241	100	GI	Signal: Alarm Trip Circuit Supervision
TCS - 74TC	Not Possible	1	241	110	GI	Not possible because no state indicator assigned to the breaker.

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
SG[1]	Operations Alarm	1	242	104	GI	Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[1]	WearLevel Alarm	1	242	130	GI	Signal: Threshold for the Alarm
SG[1]	WearLevel Lockout	1	242	131	GI	Signal: Threshold for the Lockout Level
Ctrl	SG Disturb	1	246	32	GI	(At least one) Switchgear is disturbed.
Ctrl	SG Indeterm	1	246	33	GI	(At least one) Switchgear is moving (Position cannot be determined).
SG[1]	TripCmd	2	246	114		Signal: Trip Command
SG[1]	Ready	1	246	120	GI	Signal: Circuit breaker is ready for operation.
Scada Cmd	PS 1	1	178	23	GI	Signal: The currently active Parameter Set is PS 1
Scada Cmd	PS 2	1	178	24	GI	Signal: The currently active Parameter Set is PS 2
Scada Cmd	PS 3	1	178	25	GI	Signal: The currently active Parameter Set is PS 3
Scada Cmd	PS 4	1	178	26	GI	Signal: The currently active Parameter Set is PS 4
SG[1]	Pos	1	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

Measuring Values

Module (- ANSI / IEEE Device Number)	Subgroup Names Functions	Function type ASDU	Function code (FUN)	Information Number (INF)	Factor	Position	Description
CT	IL1 [%]	9	178	148	2.4	0	Measured value: Phase current (fundamental)
CT	IL2 [%]	9	178	148	2.4	1	Measured value: Phase current (fundamental)
CT	IL3 [%]	9	178	148	2.4	2	Measured value: Phase current (fundamental)
CT	IL1 [%]	9	152	148	2.4	0	Measured value: Phase current (fundamental)
CT	IL2 [%]	9	152	148	2.4	1	Measured value: Phase current (fundamental)
CT	IL3 [%]	9	152	148	2.4	2	Measured value: Phase current (fundamental)
CT	IG meas [%]	9	152	148	2.4	3	Measured value (measured): IG (fundamental)

Fault Values

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
CT	IL1	4	92	150		Measured value: Phase current (fundamental)
CT	IL2	4	92	151		Measured value: Phase current (fundamental)
CT	IL3	4	92	152		Measured value: Phase current (fundamental)
CT	IG meas	4	92	186		Measured value (measured): IG (fundamental)

Energy Values

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description

The unit of measurement for the energy values is always kWh, independent of the setting "Energy Units" [Device Para / Measurem Display / General settings].
Therefore we recommend to adapt this setting, I. e. change the "Energy Units" setting to kWh. Otherwise the precision of the measurement value might decrease.

Function type ASDU 195:

Type identification	195
Variable structure qualifier	129
Cause of transmission	1 or 7
Device address	
Function type	See Data point table
Information number	See Data point table
Data byte 1.1	Counter value1 (currently not used)
Data byte 1.2	
Data byte 1.3	
Data byte 1.4	
Data byte 2.1	Counter value 2
Data byte 2.2	
Data byte 2.3	
Data byte 2.4	
ms	Timestamp
min	
h	

Commands

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Scada Cmd	Ack LED	20	178	19		Signal: LEDs acknowledgement
Scada Cmd	PS 1	20	178	23	GI	Signal: The currently active Parameter Set is PS 1
Scada Cmd	PS 2	20	178	24	GI	Signal: The currently active Parameter Set is PS 2
Scada Cmd	PS 3	20	178	25	GI	Signal: The currently active Parameter Set is PS 3
Scada Cmd	PS 4	20	178	26	GI	Signal: The currently active Parameter Set is PS 4
Scada Cmd	Scada Cmd 1	20	130	15		Scada Command
Scada Cmd	Scada Cmd 2	20	130	16		Scada Command
Scada Cmd	Scada Cmd 3	20	130	17		Scada Command
Scada Cmd	Scada Cmd 4	20	130	18		Scada Command
Scada Cmd	Scada Cmd 5	20	130	19		Scada Command
Scada Cmd	Scada Cmd 6	20	130	20		Scada Command
Scada Cmd	Scada Cmd 7	20	130	21		Scada Command
Scada Cmd	Scada Cmd 8	20	130	22		Scada Command
Scada Cmd	Scada Cmd 9	20	130	23		Scada Command
Scada Cmd	Scada Cmd 10	20	130	24		Scada Command
Scada Cmd	Ack BO	20	130	40		Signal: Acknowledgement of the Binary Outputs
Scada Cmd	Ack TripCmd	20	130	41		Signal: Reset Trip Command

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
SG[1]	Pos	20	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

Analog Traces

Module	IEC60870-5-103 Channel Number	Desc
I L1	1	Analog trace I L1
I L2	2	Analog trace I L2
I L3	3	Analog trace I L3
IG	4	Analog trace IG

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