



**MRMV4 – IEC60870-5-103**  
**HighPROTEC**

Data point list

**Manual DOK-TD-MRMV4IDE**

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This manual applies to devices (version):

Version 3.0.d

Build: 28612

## 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

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> One common address of ADSU<br>(identical with station address) | <input type="checkbox"/> More than one common address of ASDU |
|--|---|

Selection of standard information numbers in monitor direction

System functions in monitor direction

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> 0 = End of general interrogation | <input checked="" type="checkbox"/> 0 = Time synchronization |
| <input checked="" type="checkbox"/> 2 = Reset FCB                    | <input checked="" type="checkbox"/> 3 = Reset CU             |
| <input checked="" type="checkbox"/> 4 = Start/Restart                | <input checked="" type="checkbox"/> 5 = Power on             |

## Application layer

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### Measurands in monitor direction

- |  |   |
|--|---|
| <input type="checkbox"/> 144 Measurand I   | <input type="checkbox"/> 145 Measurands I,V           |
| <input type="checkbox"/> 146 Measurand I, V,P,Q                                      | <input type="checkbox"/> 147 Measurands $I_N, V_{EN}$ |
| <input checked="" type="checkbox"/> 148 Measurands $I_{L1,2,3}, V_{L1,2,3}, P, Q, f$ |   |

### Generic functions in monitor direction

- |   |  |
|---|--|
| <input type="checkbox"/> 240 Read headings of all defined groups          | <input type="checkbox"/> 241 Read values of all entries of one group |
| <input type="checkbox"/> 243 Read directory of a single entry             | <input type="checkbox"/> 244 Read value of a single entry            |
| <input type="checkbox"/> 245 End of general interrogation of generic data | <input type="checkbox"/> 249 Write entry with confirmation           |
| <input type="checkbox"/> 250 Write entry with execution                   | <input type="checkbox"/> 251 Write entry aborted                     |

### Selection of standard information numbers in control direction

#### System functions in control direction

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> 0 = Initiation of general interrogation | <input checked="" type="checkbox"/> 0 Time synchronization |
|---|--|

General commands in control direction

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> 16 Auto-recloser on/off      | <input checked="" type="checkbox"/> 17 Teleprotection on/off     |
| <input checked="" type="checkbox"/> 18 Protection on/off         | <input checked="" type="checkbox"/> 19 LED reset                 |
| <input checked="" type="checkbox"/> 23 Activate characteristic 1 | <input checked="" type="checkbox"/> 24 Activate characteristic 2 |
| <input checked="" type="checkbox"/> 25 Activate characteristic 3 | <input checked="" type="checkbox"/> 26 Activate characteristic 4 |

Generic functions in control direction

- |  |  |
|--|--|
| <input type="checkbox"/> 240 Read headings of all defined groups   | <input type="checkbox"/> 241 Read values of all entries of one group |
| <input type="checkbox"/> 243 Read directory of a single entry      | <input type="checkbox"/> 244 Read value of a single entry            |
| <input type="checkbox"/> 245 General interrogation of generic data | <input type="checkbox"/> 248 Write entry                             |
| <input type="checkbox"/> 249 Write entry with confirmation         | <input type="checkbox"/> 250 Write entry with execution              |
| <input type="checkbox"/> 251 Write entry abort                     |  |

Basic application functions

- |  |  |
|--|--|
| <input type="checkbox"/> Test mode                   | <input type="checkbox"/> Blocking of monitor direction |
| <input checked="" type="checkbox"/> Disturbance data | <input type="checkbox"/> Generic services              |
| <input checked="" type="checkbox"/> Private data     |  |

Application layer

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Miscellaneous

Measurand	max. value = rated value x	
	1.2	2.4
Current L <sub>1</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Current L <sub>2</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Current L <sub>3</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L <sub>1-E</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L <sub>2-E</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L <sub>3-E</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L <sub>1</sub> – L <sub>2</sub>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Active power P	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reactive power Y	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Frequency f	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Data Points List

### Signals

<b>Module</b> <b>( - ANSI / IEEE Device Number )</b>	<b>Subgroups</b> <b>Names</b> <b>Functions</b>	<b>Function Type</b> <b>ASDU</b>	<b>Function</b> <b>(FUN)</b>	<b>Information</b> <b>Number (INF)</b>	<b>Device</b> <b>Interrogation</b>	<b>Description</b>
Prot	active	1	178	18	GI	Signal: active
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	System Error	1	178	46	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
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



Data Points List

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

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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	INSQSP2STFail	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
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

Data Points List

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

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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
MStart	Blo-FrqStart	1	41	181	GI	Signal: Frequency Start Delay. Frequency elements are blocked for the time programmed under this parameter
MStart	Block-OverVStart	1	41	182	GI	Signal: Overvoltage Start Delay. Overvoltage elements are blocked for the time programmed under this parameter
MStart	Blo-PFacStart	1	41	183	GI	Signal: Power Factor Start Delay. Power Factor elements are blocked for the time programmed under this parameter
MStart	Blo-PowerStart	1	41	184	GI	Signal: Power Start Delay. Power elements are blocked for the time programmed under this parameter
MStart	Blo-UnderV Start	1	41	185	GI	Signal: Undervoltage Start Delay. Undervoltage elements are blocked for the time programmed under this parameter

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
MStart	Blo-U2>	1	41	186	GI	Signal: Motor start block voltage unbalance signal.
ThR	Blo TripCmd	1	42	31	GI	Signal: Trip Command blocked
ThR	Load above SF	1	42	160	GI	Load above Service Factor
ThR	RTD effective	1	42	161	GI	RTD effective
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
I<[3] - 37	TripCmd	2	45	92		Signal: Trip Command

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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
IEC 103	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
IG[1] - 50N, 51N	Blo TripCmd	1	101	66	GI	Signal: Trip Command blocked

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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
V012[1] - 47	active	1	103	50	GI	Signal: active
V012[2] - 47	active	1	103	51	GI	Signal: active
V012[3] - 47	active	1	103	52	GI	Signal: active
V012[4] - 47	active	1	103	53	GI	Signal: active

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
V012[5] - 47	active	1	103	54	GI	Signal: active
V012[6] - 47	active	1	103	55	GI	Signal: active
I2>[1] - 46	active	1	103	56	GI	Signal: active
I2>[2] - 46	active	1	103	57	GI	Signal: active
V012[1] - 47	Blo TripCmd	1	103	60	GI	Signal: Trip Command blocked
V012[2] - 47	Blo TripCmd	1	103	61	GI	Signal: Trip Command blocked
V012[3] - 47	Blo TripCmd	1	103	62	GI	Signal: Trip Command blocked
V012[4] - 47	Blo TripCmd	1	103	63	GI	Signal: Trip Command blocked
V012[5] - 47	Blo TripCmd	1	103	64	GI	Signal: Trip Command blocked
V012[6] - 47	Blo TripCmd	1	103	65	GI	Signal: Trip Command blocked
I2>[1] - 46	Blo TripCmd	1	103	66	GI	Signal: Trip Command blocked
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
V012[1] - 47	TripCmd	2	103	92		Signal: Trip Command
V012[2] - 47	TripCmd	2	103	93		Signal: Trip Command
V012[3] - 47	TripCmd	2	103	94		Signal: Trip Command
V012[4] - 47	TripCmd	2	103	95		Signal: Trip Command
V012[5] - 47	TripCmd	2	103	96		Signal: Trip Command
V012[6] - 47	TripCmd	2	103	97		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
V012[1] - 47	Alarm	2	103	102	GI	Signal: Alarm voltage asymmetry



Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
V012[2] - 47	Alarm	2	103	103	GI	Signal: Alarm voltage asymmetry
V012[3] - 47	Alarm	2	103	104	GI	Signal: Alarm voltage asymmetry
V012[4] - 47	Alarm	2	103	105	GI	Signal: Alarm voltage asymmetry
V012[5] - 47	Alarm	2	103	106	GI	Signal: Alarm voltage asymmetry
V012[6] - 47	Alarm	2	103	107	GI	Signal: Alarm voltage asymmetry
V[1] - 27, 59	active	1	104	50	GI	Signal: active
V[2] - 27, 59	active	1	104	51	GI	Signal: active
V[3] - 27, 59	active	1	104	52	GI	Signal: active
V[4] - 27, 59	active	1	104	53	GI	Signal: active
VG[1] - 27A, 59N,A	active	1	104	54	GI	Signal: active
VG[2] - 27A, 59N,A	active	1	104	55	GI	Signal: active
V[5] - 27, 59	active	1	104	56	GI	Signal: active
V[6] - 27, 59	active	1	104	57	GI	Signal: active
V[1] - 27, 59	Blo TripCmd	1	104	60	GI	Signal: Trip Command blocked
V[2] - 27, 59	Blo TripCmd	1	104	61	GI	Signal: Trip Command blocked
V[3] - 27, 59	Blo TripCmd	1	104	62	GI	Signal: Trip Command blocked
V[4] - 27, 59	Blo TripCmd	1	104	63	GI	Signal: Trip Command blocked
VG[1] - 27A, 59N,A	Blo TripCmd	1	104	64	GI	Signal: Trip Command blocked
VG[2] - 27A, 59N,A	Blo TripCmd	1	104	65	GI	Signal: Trip Command blocked
V[5] - 27, 59	Blo TripCmd	1	104	66	GI	Signal: Trip Command blocked
V[6] - 27, 59	Blo TripCmd	1	104	67	GI	Signal: Trip Command blocked
V[1] - 27, 59	TripCmd	2	104	90		Signal: Trip Command
V[2] - 27, 59	TripCmd	2	104	91		Signal: Trip Command

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
V[3] - 27, 59	TripCmd	2	104	92		Signal: Trip Command
V[4] - 27, 59	TripCmd	2	104	93		Signal: Trip Command
VG[1] - 27A, 59N,A	TripCmd	2	104	94		Signal: Trip Command
VG[2] - 27A, 59N,A	TripCmd	2	104	95		Signal: Trip Command
V[5] - 27, 59	TripCmd	2	104	96		Signal: Trip Command
V[6] - 27, 59	TripCmd	2	104	97		Signal: Trip Command
V[1] - 27, 59	Alarm	2	104	100	GI	Signal: Alarm voltage stage
V[2] - 27, 59	Alarm	2	104	101	GI	Signal: Alarm voltage stage
V[3] - 27, 59	Alarm	2	104	102	GI	Signal: Alarm voltage stage
V[4] - 27, 59	Alarm	2	104	103	GI	Signal: Alarm voltage stage
VG[1] - 27A, 59N,A	Alarm	2	104	104	GI	Signal: Alarm Residual Voltage Supervision- stage
VG[2] - 27A, 59N,A	Alarm	2	104	105	GI	Signal: Alarm Residual Voltage Supervision- stage
V[5] - 27, 59	Alarm	2	104	106	GI	Signal: Alarm voltage stage
V[6] - 27, 59	Alarm	2	104	107	GI	Signal: Alarm voltage stage
f[1] - 81	active	1	105	50	GI	Signal: active
f[2] - 81	active	1	105	51	GI	Signal: active
f[3] - 81	active	1	105	52	GI	Signal: active
f[4] - 81	active	1	105	53	GI	Signal: active
f[5] - 81	active	1	105	54	GI	Signal: active
f[6] - 81	active	1	105	55	GI	Signal: active
f[1] - 81	Blo TripCmd	1	105	60	GI	Signal: Trip Command blocked
f[2] - 81	Blo TripCmd	1	105	61	GI	Signal: Trip Command blocked

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
f[3] - 81	Blo TripCmd	1	105	62	GI	Signal: Trip Command blocked
f[4] - 81	Blo TripCmd	1	105	63	GI	Signal: Trip Command blocked
f[5] - 81	Blo TripCmd	1	105	64	GI	Signal: Trip Command blocked
f[6] - 81	Blo TripCmd	1	105	65	GI	Signal: Trip Command blocked
f[1] - 81	TripCmd	2	105	90		Signal: Trip Command
f[2] - 81	TripCmd	2	105	91		Signal: Trip Command
f[3] - 81	TripCmd	2	105	92		Signal: Trip Command
f[4] - 81	TripCmd	2	105	93		Signal: Trip Command
f[5] - 81	TripCmd	2	105	94		Signal: Trip Command
f[6] - 81	TripCmd	2	105	95		Signal: Trip Command
f[1] - 81	Alarm	2	105	100	GI	Signal: Alarm Frequency Protection (collective signal)
f[2] - 81	Alarm	2	105	101	GI	Signal: Alarm Frequency Protection (collective signal)
f[3] - 81	Alarm	2	105	102	GI	Signal: Alarm Frequency Protection (collective signal)
f[4] - 81	Alarm	2	105	103	GI	Signal: Alarm Frequency Protection (collective signal)
f[5] - 81	Alarm	2	105	104	GI	Signal: Alarm Frequency Protection (collective signal)
f[6] - 81	Alarm	2	105	105	GI	Signal: Alarm Frequency Protection (collective signal)
f[1] - 81	Alarm df/dt   DF/DT	2	105	110	GI	Alarm instantaneous or average value of the rate-of-frequency-change

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
f[2] - 81	Alarm df/dt   DF/DT	2	105	111	GI	Alarm instantaneous or average value of the rate-of-frequency-change
f[3] - 81	Alarm df/dt   DF/DT	2	105	112	GI	Alarm instantaneous or average value of the rate-of-frequency-change
f[4] - 81	Alarm df/dt   DF/DT	2	105	113	GI	Alarm instantaneous or average value of the rate-of-frequency-change
f[5] - 81	Alarm df/dt   DF/DT	2	105	114	GI	Alarm instantaneous or average value of the rate-of-frequency-change
f[6] - 81	Alarm df/dt   DF/DT	2	105	115	GI	Alarm instantaneous or average value of the rate-of-frequency-change
f[1] - 81	Alarm delta phi	2	105	120	GI	Signal: Alarm Vector Surge
f[2] - 81	Alarm delta phi	2	105	121	GI	Signal: Alarm Vector Surge
f[3] - 81	Alarm delta phi	2	105	122	GI	Signal: Alarm Vector Surge
f[4] - 81	Alarm delta phi	2	105	123	GI	Signal: Alarm Vector Surge
f[5] - 81	Alarm delta phi	2	105	124	GI	Signal: Alarm Vector Surge
f[6] - 81	Alarm delta phi	2	105	125	GI	Signal: Alarm Vector Surge
f[1] - 81	Trip df/dt   DF/DT	2	105	130		Signal: Trip df/dt or DF/DT
f[2] - 81	Trip df/dt   DF/DT	2	105	131		Signal: Trip df/dt or DF/DT
f[3] - 81	Trip df/dt   DF/DT	2	105	132		Signal: Trip df/dt or DF/DT
f[4] - 81	Trip df/dt   DF/DT	2	105	133		Signal: Trip df/dt or DF/DT
f[5] - 81	Trip df/dt   DF/DT	2	105	134		Signal: Trip df/dt or DF/DT
f[6] - 81	Trip df/dt   DF/DT	2	105	135		Signal: Trip df/dt or DF/DT
f[1] - 81	Trip delta phi	2	105	140		Signal: Trip Vector Surge
f[2] - 81	Trip delta phi	2	105	141		Signal: Trip Vector Surge

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<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
f[3] - 81	Trip delta phi	2	105	142		Signal: Trip Vector Surge
f[4] - 81	Trip delta phi	2	105	143		Signal: Trip Vector Surge
f[5] - 81	Trip delta phi	2	105	144		Signal: Trip Vector Surge
f[6] - 81	Trip delta phi	2	105	145		Signal: Trip Vector Surge
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
ExP[4]	TripCmd	2	114	93		Signal: Trip Command

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<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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
PQS[1] - 32, 37	active	1	116	50	GI	Signal: active
PQS[2] - 32, 37	active	1	116	51	GI	Signal: active
PQS[3] - 32, 37	active	1	116	52	GI	Signal: active
PQS[4] - 32, 37	active	1	116	53	GI	Signal: active
PQS[5] - 32, 37	active	1	116	54	GI	Signal: active
PQS[6] - 32, 37	active	1	116	55	GI	Signal: active
PF[1] - 55	active	1	116	56	GI	Signal: active
PF[2] - 55	active	1	116	57	GI	Signal: active
PQS[1] - 32, 37	Blo TripCmd	1	116	60	GI	Signal: Trip Command blocked
PQS[2] - 32, 37	Blo TripCmd	1	116	61	GI	Signal: Trip Command blocked
PQS[3] - 32, 37	Blo TripCmd	1	116	62	GI	Signal: Trip Command blocked
PQS[4] - 32, 37	Blo TripCmd	1	116	63	GI	Signal: Trip Command blocked
PQS[5] - 32, 37	Blo TripCmd	1	116	64	GI	Signal: Trip Command blocked
PQS[6] - 32, 37	Blo TripCmd	1	116	65	GI	Signal: Trip Command blocked
PF[1] - 55	Blo TripCmd	1	116	66	GI	Signal: Trip Command blocked
PF[2] - 55	Blo TripCmd	1	116	67	GI	Signal: Trip Command blocked
PQS[1] - 32, 37	TripCmd	2	116	90		Signal: Trip Command
PQS[2] - 32, 37	TripCmd	2	116	91		Signal: Trip Command
PQS[3] - 32, 37	TripCmd	2	116	92		Signal: Trip Command

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
PQS[4] - 32, 37	TripCmd	2	116	93		Signal: Trip Command
PQS[5] - 32, 37	TripCmd	2	116	94		Signal: Trip Command
PQS[6] - 32, 37	TripCmd	2	116	95		Signal: Trip Command
PF[1] - 55	TripCmd	2	116	96		Signal: Trip Command
PF[2] - 55	TripCmd	2	116	97		Signal: Trip Command
PQS[1] - 32, 37	Alarm	2	116	100	GI	Signal: Alarm Power Protection
PQS[2] - 32, 37	Alarm	2	116	101	GI	Signal: Alarm Power Protection
PQS[3] - 32, 37	Alarm	2	116	102	GI	Signal: Alarm Power Protection
PQS[4] - 32, 37	Alarm	2	116	103	GI	Signal: Alarm Power Protection
PQS[5] - 32, 37	Alarm	2	116	104	GI	Signal: Alarm Power Protection
PQS[6] - 32, 37	Alarm	2	116	105	GI	Signal: Alarm Power Protection
PF[1] - 55	Alarm	2	116	106	GI	Signal: Alarm Power Factor
PF[2] - 55	Alarm	2	116	107	GI	Signal: Alarm Power Factor
PF[1] - 55	Compensator	2	116	110	GI	Signal: Compensation Signal
PF[2] - 55	Compensator	2	116	111	GI	Signal: Compensation Signal
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
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

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
BO Slot X2	BO 5	1	123	164	GI	Signal: Binary Output Relay
BO Slot X2	BO 6	1	123	165	GI	Signal: Binary Output Relay
BO Slot X6	BO 1	1	123	166	GI	Signal: Binary Output Relay
BO Slot X6	BO 2	1	123	167	GI	Signal: Binary Output Relay
BO Slot X6	BO 3	1	123	168	GI	Signal: Binary Output Relay
BO Slot X6	BO 4	1	123	169	GI	Signal: Binary Output Relay
BO Slot X6	BO 5	1	123	170	GI	Signal: Binary Output Relay
BO Slot X6	BO 6	1	123	171	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
Logics	LE1.Out	1	162	162	GI	Signal: Latched Output (Q)
Logics	LE1.Gate In1-I	1	162	163	GI	State of the module input: Assignment of the Input Signal
Logics	LE1.Gate In2-I	1	162	164	GI	State of the module input: Assignment of the Input Signal
Logics	LE1.Gate In3-I	1	162	165	GI	State of the module input: Assignment of the Input Signal
Logics	LE1.Gate In4-I	1	162	166	GI	State of the module input: Assignment of the Input Signal
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	LE2.Gate In1-I	1	162	170	GI	State of the module input: Assignment of the Input Signal



Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
Logics	LE2.Gate In2-I	1	162	171	GI	State of the module input: Assignment of the Input Signal
Logics	LE2.Gate In3-I	1	162	172	GI	State of the module input: Assignment of the Input Signal
Logics	LE2.Gate In4-I	1	162	173	GI	State of the module input: Assignment of the Input Signal
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	LE3.Gate In1-I	1	162	177	GI	State of the module input: Assignment of the Input Signal
Logics	LE3.Gate In2-I	1	162	178	GI	State of the module input: Assignment of the Input Signal
Logics	LE3.Gate In3-I	1	162	179	GI	State of the module input: Assignment of the Input Signal
Logics	LE3.Gate In4-I	1	162	180	GI	State of the module input: Assignment of the Input Signal
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	LE4.Gate In1-I	1	162	184	GI	State of the module input: Assignment of the Input Signal
Logics	LE4.Gate In2-I	1	162	185	GI	State of the module input: Assignment of the Input Signal
Logics	LE4.Gate In3-I	1	162	186	GI	State of the module input: Assignment of the Input Signal

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<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
Logics	LE4.Gate In4-I	1	162	187	GI	State of the module input: Assignment of the Input Signal
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	LE5.Gate In1-I	1	162	191	GI	State of the module input: Assignment of the Input Signal
Logics	LE5.Gate In2-I	1	162	192	GI	State of the module input: Assignment of the Input Signal
Logics	LE5.Gate In3-I	1	162	193	GI	State of the module input: Assignment of the Input Signal
Logics	LE5.Gate In4-I	1	162	194	GI	State of the module input: Assignment of the Input Signal
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	LE6.Gate In1-I	1	162	198	GI	State of the module input: Assignment of the Input Signal
Logics	LE6.Gate In2-I	1	162	199	GI	State of the module input: Assignment of the Input Signal
Logics	LE6.Gate In3-I	1	162	200	GI	State of the module input: Assignment of the Input Signal
Logics	LE6.Gate In4-I	1	162	201	GI	State of the module input: Assignment of the Input Signal
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

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
Logics	LE7.Out	1	162	204	GI	Signal: Latched Output (Q)
Logics	LE7.Gate In1-I	1	162	205	GI	State of the module input: Assignment of the Input Signal
Logics	LE7.Gate In2-I	1	162	206	GI	State of the module input: Assignment of the Input Signal
Logics	LE7.Gate In3-I	1	162	207	GI	State of the module input: Assignment of the Input Signal
Logics	LE7.Gate In4-I	1	162	208	GI	State of the module input: Assignment of the Input Signal
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	LE8.Gate In1-I	1	162	212	GI	State of the module input: Assignment of the Input Signal
Logics	LE8.Gate In2-I	1	162	213	GI	State of the module input: Assignment of the Input Signal
Logics	LE8.Gate In3-I	1	162	214	GI	State of the module input: Assignment of the Input Signal
Logics	LE8.Gate In4-I	1	162	215	GI	State of the module input: Assignment of the Input Signal
Logics	LE9.Gate Out	1	162	216	GI	Signal: Output of the logic gate
Logics	LE9.Timer Out	1	162	217	GI	Signal: Timer Output
Logics	LE9.Out	1	162	218	GI	Signal: Latched Output (Q)
Logics	LE9.Gate In1-I	1	162	219	GI	State of the module input: Assignment of the Input Signal

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<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
Logics	LE9.Gate In2-I	1	162	220	GI	State of the module input: Assignment of the Input Signal
Logics	LE9.Gate In3-I	1	162	221	GI	State of the module input: Assignment of the Input Signal
Logics	LE9.Gate In4-I	1	162	222	GI	State of the module input: Assignment of the Input Signal
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	LE10.Gate In1-I	1	162	226	GI	State of the module input: Assignment of the Input Signal
Logics	LE10.Gate In2-I	1	162	227	GI	State of the module input: Assignment of the Input Signal
Logics	LE10.Gate In3-I	1	162	228	GI	State of the module input: Assignment of the Input Signal
Logics	LE10.Gate In4-I	1	162	229	GI	State of the module input: Assignment of the Input Signal
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

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

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

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

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



Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
SysA	Alarm Watt Power	2	182	100	GI	Signal: Alarm permitted Active Power exceeded
SysA	Alarm VAr Power	2	182	101	GI	Signal: Alarm permitted Reactive Power exceeded
SysA	Alarm VA Power	2	182	102	GI	Signal: Alarm permitted Apparent Power exceeded
SysA	Alarm Watt Demand	2	182	103	GI	Signal: Alarm averaged Active Power exceeded
SysA	Alarm VAr Demand	2	182	104	GI	Signal: Alarm averaged Reactive Power exceeded
SysA	Alarm VA Demand	2	182	105	GI	Signal: Alarm averaged Apparent Power exceeded
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	Alarm V THD	2	182	108	GI	Signal: Alarm Total Harmonic Distortion Voltage
SysA	Trip Watt Power	2	182	90		Signal: Trip permitted Active Power exceeded
SysA	Trip VAr Power	2	182	91		Signal: Trip permitted Reactive Power exceeded
SysA	Trip VA Power	2	182	92		Signal: Trip permitted Apparent Power exceeded
SysA	Trip Watt Demand	2	182	93		Signal: Trip averaged Active Power exceeded
SysA	Trip VAr Demand	2	182	94		Signal: Trip averaged Reactive Power exceeded

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
SysA	Trip VA Demand	2	182	95		Signal: Trip averaged Apparent Power exceeded
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
SysA	Trip V THD	2	182	98		Signal: Trip Total Harmonic Distortion Voltage
PQSCr	Cr OflwW Wp Net	1	183	30		Signal: Counter Wp Net will overflow soon
PQSCr	Cr OflwW Wp-	1	183	31		Signal: Counter Wp- will overflow soon
PQSCr	Cr OflwW Wp+	1	183	32		Signal: Counter Wp+ will overflow soon
PQSCr	Cr OflwW Wq Net	1	183	33		Signal: Counter Wq Net will overflow soon
PQSCr	Cr OflwW Wq-	1	183	34		Signal: Counter Wq- will overflow soon
PQSCr	Cr OflwW Wq+	1	183	35		Signal: Counter Wq+ will overflow soon
PQSCr	Cr OflwW Ws Net	1	183	36		Signal: Counter Ws Net will overflow soon
PQSCr	Cr Oflw Wp-	1	183	37		Signal: Counter Overflow Wp-
PQSCr	Cr Oflw Wp+	1	183	38		Signal: Counter Overflow Wp+
PQSCr	Cr Oflw Wq-	1	183	39		Signal: Counter Overflow Wq-
PQSCr	Cr Oflw Wq+	1	183	40		Signal: Counter Overflow Wq+
PQSCr	Cr Oflw Wp Net	1	183	41		Signal: Counter Overflow Wp Net
PQSCr	Cr Oflw Wq Net	1	183	42		Signal: Counter Overflow Wq Net
PQSCr	Cr Oflw Ws Net	1	183	43		Signal: Counter Overflow Ws Net
TCS - 74TC	active	1	241	50	GI	Signal: active
TCS - 74TC	ExBlo	1	241	80		Signal: External Blocking

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
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.
SG[1]	Operations Alarm	1	242	104	GI	Signal: Service Alarm, too many Operations
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
LOP	active	1	243	50	GI	Signal: active
LOP	ExBlo	1	243	80	GI	Signal: External Blocking
LOP	Alarm	1	243	100	GI	Signal: Alarm Loss of Potential
LOP	LOP Blo	1	243	110	GI	Signal: Loss of Potential blocks other elements.
LOP	Ex FF EVT	1	243	111	GI	Signal: Alarm Fuse Failure Earth Voltage Transformers
LOP	Ex FF VT	1	243	112	GI	Signal: Ex FF VT
Ctrl	SG Disturb	1	246	32	GI	Minimum one Switchgear is disturbed.
Ctrl	SG Indeterm	1	246	33	GI	Minimum one Switchgear is moving (Position cannot be determined).
SG[1]	Removed-I	1	246	34	GI	State of the module input: The withdrawable circuit breaker is Removed
SG[1]	CES SG removed	1	246	35	GI	Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.
SG[1]	Removed	1	246	36	GI	Signal: The withdrawable circuit breaker is Removed

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
SG[1]	SCmd OFF-I	1	246	110	GI	State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input
SG[1]	SCmd ON-I	1	246	111	GI	State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input
SG[1]	Position Ind manipul	1	246	112	GI	Signal: Position Indicators faked
SG[1]	TripCmd	2	246	114		Signal: Trip Command
SG[1]	OFF Cmd	1	246	115		Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.
SG[1]	ON Cmd	1	246	116		Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.
SG[1]	CES succesf	1	246	117	GI	Signal: Command Execution Supervision: Switching command executed successfully.
SG[1]	Interl OFF	1	246	118	GI	Signal: One or more IL_Off inputs are active.
SG[1]	Interl ON	1	246	119	GI	Signal: One or more IL_On inputs are active.
SG[1]	Ready	1	246	120	GI	Signal: Circuit breaker is ready for operation.
Scada Cmd	PS 1	1	178	23	GI	Signal: Parameter Set 1
Scada Cmd	PS 2	1	178	24	GI	Signal: Parameter Set 2
Scada Cmd	PS 3	1	178	25	GI	Signal: Parameter Set 3
Scada Cmd	PS 4	1	178	26	GI	Signal: Parameter Set 4

Data Points List

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

## Measuring Values

<b>Module</b> ( - ANSI / IEEE Device Number )	<b>Subgroup Names</b> <b>Functions</b>	<b>Function type</b> <b>ASDU</b>	<b>Function code</b> <b>(FUN)</b>	<b>Information</b> <b>Number (INF)</b>	<b>Factor</b>	<b>Position</b>	<b>Description</b>
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)
VT	VL1 [%]	9	178	148	2.4	3	Measured value: Phase-to-neutral voltage (fundamental)
VT	VL2 [%]	9	178	148	2.4	4	Measured value: Phase-to-neutral voltage (fundamental)
VT	VL3 [%]	9	178	148	2.4	5	Measured value: Phase-to-neutral voltage (fundamental)
PQSCr	P [%]	9	178	148	2.4	6	Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (fundamental)
PQSCr	Q [%]	9	178	148	2.4	7	Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (fundamental)

Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroup Names Functions</b>	<b>Function type ASDU</b>	<b>Function code (FUN)</b>	<b>Information Number (INF)</b>	<b>Factor</b>	<b>Position</b>	<b>Description</b>
VT	f [%]	9	178	148	1.2	8	Measured value: Frequency
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)
VT	VL1 [%]	9	152	148	2.4	4	Measured value: Phase-to-neutral voltage (fundamental)
VT	VL2 [%]	9	152	148	2.4	5	Measured value: Phase-to-neutral voltage (fundamental)
VT	VL3 [%]	9	152	148	2.4	6	Measured value: Phase-to-neutral voltage (fundamental)
VT	VX meas [%]	9	152	148	2.4	7	Measured value (measured): VX measured (fundamental)
VT	VL12 [%]	9	152	148	2.4	8	Measured value: Phase-to-phase voltage (fundamental)
VT	VL23 [%]	9	152	148	2.4	9	Measured value: Phase-to-phase voltage (fundamental)

Data Points List

<b>Module</b> ( - ANSI / IEEE Device Number )	<b>Subgroup Names Functions</b>	<b>Function type ASDU</b>	<b>Function code (FUN)</b>	<b>Information Number (INF)</b>	<b>Factor</b>	<b>Position</b>	<b>Description</b>
VT	VL31 [%]	9	152	148	2.4	10	Measured value: Phase-to-phase voltage (fundamental)
PQSCr	P [%]	9	152	148	2.4	11	Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumted Active Power) (fundamental)
PQSCr	Q [%]	9	152	148	2.4	12	Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumted Reactive Power) (fundamental)
PQSCr	cos phi [%]	9	152	148	1.0	13	Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )
VT	f [%]	9	152	148	1.2	14	Measured value: Frequency

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



Data Points List

<b>Module ( - ANSI / IEEE Device Number )</b>	<b>Subgroups Names Functions</b>	<b>Function Type ASDU</b>	<b>Function (FUN)</b>	<b>Information Number (INF)</b>	<b>Device Interrogation</b>	<b>Description</b>
CT	IG meas	4	92	186		Measured value (measured): IG (fundamental)
VT	VL12	4	92	190		Measured value: Phase-to-phase voltage (fundamental)
VT	VL23	4	92	191		Measured value: Phase-to-phase voltage (fundamental)
VT	VL31	4	92	192		Measured value: Phase-to-phase voltage (fundamental)
VT	VL1	4	92	193		Measured value: Phase-to-neutral voltage (fundamental)
VT	VL2	4	92	194		Measured value: Phase-to-neutral voltage (fundamental)
VT	VL3	4	92	195		Measured value: Phase-to-neutral voltage (fundamental)
VT	VX meas	4	92	196		Measured value (measured): VX measured (fundamental)

## Commands

<b>Module</b> ( - ANSI / IEEE Device Number )	<b>Subgroups</b> <b>Names</b> <b>Functions</b>	<b>Function Type</b> <b>ASDU</b>	<b>Function</b> <b>(FUN)</b>	<b>Information</b> <b>Number (INF)</b>	<b>Device</b> <b>Interrogation</b>	<b>Description</b>
Scada Cmd	Ack LED	20	178	19		Signal: LEDs acknowledgement
Scada Cmd	PS 1	20	178	23	GI	Signal: Parameter Set 1
Scada Cmd	PS 2	20	178	24	GI	Signal: Parameter Set 2
Scada Cmd	PS 3	20	178	25	GI	Signal: Parameter Set 3
Scada Cmd	PS 4	20	178	26	GI	Signal: Parameter Set 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
SG[1]	Pos	20	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

## Analog Traces

<b>Module</b>	<b>IEC60870-5-103 Channel Number</b>	<b>Desc</b>
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
V L1 / V L12	5	Analog trace V L1 / V L12
V L2 / V L23	6	Analog trace V L2 / V L23
V L3 / V L31	7	Analog trace V L3 / V L31
VX	8	Analog trace VX

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