MRDT4 – IEC60870-5-103
HighPROTEC

Data point list

Manual DOK-TD-MRDT4IDE

Table of Contents

This manual applies to devices (version):

Version 3.0.c

Build: 28185

Physical layer

Electrical interface

- [x] EIA RS-485
- [x] Number of loads for one equipment: 32

Optical interface

- [x] Glass fibre
- [ ] F-SMA type connector
- [x] Plastic fibre
- [x] BFOC/2,5 type connector

Transmission speed

- [x] 9600 bit/s
- [x] 19200 bit/s
- [x] 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

- [x] 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

- [x] 0 = End of general interrogation
- [x] 0 = Time synchronization
- [x] 2 = Reset FCB
- [x] 3 = Reset CU
- [x] 4 = Start/Restart
- [x] 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

- [x] 16 Auto-recloser on/off
- [x] 17 Teleprotection on/off
- [x] 18 Protection on/off
- [x] 19 LED reset
- [x] 23 Activate characteristic 1
- [x] 24 Activate characteristic 2
- [x] 25 Activate characteristic 3
- [x] 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
- [x] Disturbance data
- [ ] Generic services
- [x] 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	176	18	GI	Signal: active
PSet-Switch	min 1 param changed	1	176	22	GI	Signal: At least one parameter has been changed
DI Slot X1	DI 1	1	176	27	GI	Signal: Digital Input
DI Slot X1	DI 2	1	176	28	GI	Signal: Digital Input
DI Slot X1	DI 3	1	176	29	GI	Signal: Digital Input
DI Slot X1	DI 4	1	176	30	GI	Signal: Digital Input
SSV	System Error	1	176	46	GI	Signal: Device Failure
Prot	Alarm L1	2	176	64	GI	Signal: General-Alarm L1
Prot	Alarm L2	2	176	65	GI	Signal: General-Alarm L2
Prot	Alarm L3	2	176	66	GI	Signal: General-Alarm L3
Prot	Alarm G	2	176	67	GI	Signal: General-Alarm - Earth fault
Prot	Trip	2	176	68		Signal: General Trip
Prot	Trip L1	2	176	69		Signal: General Trip L1
Prot	Trip L2	2	176	70		Signal: General Trip L2
Prot	Trip L3	2	176	71		Signal: General Trip L3
Prot	Alarm	2	176	84	GI	Signal: General Alarm
I[1] - 50, 51	TripCmd	2	176	90		Signal: Trip Command

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
I[2] - 50, 51	TripCmd	2	176	91		Signal: Trip Command
IG[1] - 50N, 51N	TripCmd	2	176	92		Signal: Trip Command
IG[2] - 50N, 51N	TripCmd	2	176	93		Signal: Trip Command
Ctrl	Local	1	176	160	GI	Switching Authority: Local
Id - 87	active	1	30	50	GI	Signal: active
Id - 87	Blo TripCmd	1	30	60	GI	Signal: Trip Command blocked
Id - 87	Trip L1	2	30	90		Signal: Trip System Phase L1
Id - 87	Trip L2	2	30	91		Signal: Trip System Phase L2
Id - 87	Trip L3	2	30	92		Signal: Trip System Phase L3
Id - 87	TripCmd	2	30	93		Signal: Trip Command
Id - 87	Alarm	2	30	100	GI	Signal: Alarm
Id - 87	Alarm L1	2	30	101	GI	Signal: Alarm System Phase L1
Id - 87	Alarm L2	2	30	102	GI	Signal: Alarm System Phase L2
Id - 87	Alarm L3	2	30	103	GI	Signal: Alarm System L3
Id - 87	Restraining	1	30	120	GI	Signal: Restraining of the differential protection by means of rising the tripping curve.
Id - 87	Transient	1	30	121	GI	Signal: Temporary stabilization of the differential protection afterwards the transformer is being engergized.
Id - 87	IH2 Blo L1	1	30	122	GI	Signal:Phase L1: Blocking of the Phase Differential Protection because of second Harmonic.

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
Id - 87	IH2 Blo L2	1	30	123	GI	Signal:Phase L2: Blocking of the Phase Differential Protection because of second Harmonic.
Id - 87	IH2 Blo L3	1	30	124	GI	Signal:Phase L3: Blocking of the Phase Differential Protection because of second Harmonic.
Id - 87	IH4 Blo L1	1	30	125	GI	Signal:Phase L1: Blocking of the Phase Differential Protection because of fourth Harmonic.
Id - 87	IH4 Blo L2	1	30	126	GI	Signal:Phase L2: Blocking of the Phase Differential Protection because of fourth Harmonic.
Id - 87	IH4 Blo L3	1	30	127	GI	Signal:Phase L3: Blocking of the Phase Differential Protection because of fourth Harmonic.
Id - 87	IH5 Blo L1	1	30	128	GI	Signal:Phase L1: Blocking of the Phase Differential Protection because of fifth Harmonic.
Id - 87	IH5 Blo L2	1	30	129	GI	Signal:Phase L2: Blocking of the Phase Differential Protection because of fifth Harmonic.
Id - 87	IH5 Blo L3	1	30	130	GI	Signal:Phase L3: Blocking of the Phase Differential Protection because of fifth Harmonic.
IdH - 87	active	1	31	50	GI	Signal: active
IdH - 87	Blo TripCmd	1	31	60	GI	Signal: Trip Command blocked
IdH - 87	Trip L1	2	31	90		Signal: Trip System Phase L1
IdH - 87	Trip L2	2	31	91		Signal: Trip System Phase L2

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
IdH - 87	Trip L3	2	31	92		Signal: Trip System Phase L3
IdH - 87	TripCmd	2	31	93		Signal: Trip Command
IdH - 87	Alarm	2	31	100	GI	Signal: Alarm
IdH - 87	Alarm L1	2	31	101	GI	Signal: Alarm System Phase L1
IdH - 87	Alarm L2	2	31	102	GI	Signal: Alarm System Phase L2
IdH - 87	Alarm L3	2	31	103	GI	Signal: Alarm System L3
IdG[1] - 87N	active	1	32	50	GI	Signal: active
IdG[2] - 87N	active	1	32	51	GI	Signal: active
IdGH[1] - 87N	active	1	32	52	GI	Signal: active
IdGH[2] - 87N	active	1	32	53	GI	Signal: active
IdG[1] - 87N	Blo TripCmd	1	32	60	GI	Signal: Trip Command blocked
IdG[2] - 87N	Blo TripCmd	1	32	61	GI	Signal: Trip Command blocked
IdGH[1] - 87N	Blo TripCmd	1	32	62	GI	Signal: Trip Command blocked
IdGH[2] - 87N	Blo TripCmd	1	32	63	GI	Signal: Trip Command blocked
IdG[1] - 87N	TripCmd	2	32	92		Signal: Trip Command
IdG[2] - 87N	TripCmd	2	32	93		Signal: Trip Command
IdGH[1] - 87N	TripCmd	2	32	94		Signal: Trip Command
IdGH[2] - 87N	TripCmd	2	32	95		Signal: Trip Command
IdG[1] - 87N	Alarm	2	32	100	GI	Signal: Alarm
IdG[2] - 87N	Alarm	2	32	101	GI	Signal: Alarm
IdGH[1] - 87N	Alarm	2	32	102	GI	Signal: Alarm
IdGH[2] - 87N	Alarm	2	32	103	GI	Signal: Alarm
RTD	TripCmd	2	46	90		Signal: Trip Command

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

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
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
ThR - 49	active	1	102	50	GI	Signal: active
ThR - 49	Blo TripCmd	1	102	60	GI	Signal: Trip Command blocked
ThR - 49	TripCmd	2	102	90		Signal: Trip Command
ThR - 49	Alarm	2	102	100	GI	Signal: Alarm Thermal Overload
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
I2>[2] - 46	Blo TripCmd	1	103	67	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>[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[1] - 50BF, 62BF	active	1	108	50	GI	Signal: active
CBF[2] - 50BF, 62BF	active	1	108	51	GI	Signal: active
CBF[1] - 50BF, 62BF	running	1	108	60	GI	Signal: CBF-Module started
CBF[2] - 50BF, 62BF	running	1	108	61	GI	Signal: CBF-Module started
CBF[1] - 50BF, 62BF	Alarm	1	108	85		Signal: Circuit Breaker Failure
CBF[2] - 50BF, 62BF	Alarm	1	108	86		Signal: Circuit Breaker Failure
CBF[1] - 50BF, 62BF	Trigger1-I	1	108	100	GI	Module Input: Trigger that will start the CBF
CBF[1] - 50BF, 62BF	Trigger2-I	1	108	101	GI	Module Input: Trigger that will start the CBF
CBF[1] - 50BF, 62BF	Trigger3-I	1	108	102	GI	Module Input: Trigger that will start the CBF
CBF[2] - 50BF, 62BF	Trigger1-I	1	108	103	GI	Module Input: Trigger that will start the CBF
CBF[2] - 50BF, 62BF	Trigger2-I	1	108	104	GI	Module Input: Trigger that will start the CBF
CBF[2] - 50BF, 62BF	Trigger3-I	1	108	105	GI	Module Input: Trigger that will start the CBF
CBF[1] - 50BF, 62BF	Lockout	1	108	106	GI	Signal: Lockout
CBF[1] - 50BF, 62BF	Waiting for Trigger	1	108	107	GI	Waiting for Trigger
CBF[2] - 50BF, 62BF	Lockout	1	108	108	GI	Signal: Lockout
CBF[2] - 50BF, 62BF	Waiting for Trigger	1	108	109	GI	Waiting for Trigger
Ex Oil Temp	Trip-I	2	113	40	GI	Module input state: Trip
Ext Sudd Press	Trip-I	2	113	41	GI	Module input state: Trip
Ext Temp Superv[1]	Trip-I	2	113	42	GI	Module input state: Trip

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
Ext Temp Superv[2]	Trip-I	2	113	43	GI	Module input state: Trip
Ext Temp Superv[3]	Trip-I	2	113	44	GI	Module input state: Trip
Ex Oil Temp	active	1	113	50	GI	Signal: active
Ext Sudd Press	active	1	113	51	GI	Signal: active
Ext Temp Superv[1]	active	1	113	52	GI	Signal: active
Ext Temp Superv[2]	active	1	113	53	GI	Signal: active
Ext Temp Superv[3]	active	1	113	54	GI	Signal: active
Ex Oil Temp	Blo TripCmd	1	113	60	GI	Signal: Trip Command blocked
Ext Sudd Press	Blo TripCmd	1	113	61	GI	Signal: Trip Command blocked
Ext Temp Superv[1]	Blo TripCmd	1	113	62	GI	Signal: Trip Command blocked
Ext Temp Superv[2]	Blo TripCmd	1	113	63	GI	Signal: Trip Command blocked
Ext Temp Superv[3]	Blo TripCmd	1	113	64	GI	Signal: Trip Command blocked
Ex Oil Temp	TripCmd	2	113	90		Signal: Trip Command
Ext Sudd Press	TripCmd	2	113	91		Signal: Trip Command
Ext Temp Superv[1]	TripCmd	2	113	92		Signal: Trip Command
Ext Temp Superv[2]	TripCmd	2	113	93		Signal: Trip Command
Ext Temp Superv[3]	TripCmd	2	113	94		Signal: Trip Command
Ex Oil Temp	Alarm	2	113	100	GI	Signal: Alarm
Ext Sudd Press	Alarm	2	113	101	GI	Signal: Alarm
Ext Temp Superv[1]	Alarm	2	113	102	GI	Signal: Alarm
Ext Temp Superv[2]	Alarm	2	113	103	GI	Signal: Alarm
Ext Temp Superv[3]	Alarm	2	113	104	GI	Signal: Alarm
ExP[1]	active	1	114	50	GI	Signal: active

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
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
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
SOTF	active	1	115	50	GI	Signal: active
CLPU	active	1	115	51	GI	Signal: active
CLPU	enabled	2	115	91		Signal: Cold Load enabled
CTS[1] - 60L	active	1	118	50	GI	Signal: active
CTS[2] - 60L	active	1	118	51	GI	Signal: active
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

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
DI Slot X1	DI 8	1	121	30	GI	Signal: Digital Input
DI Slot X6	DI 1	1	121	31	GI	Signal: Digital Input
DI Slot X6	DI 2	1	121	32	GI	Signal: Digital Input
DI Slot X6	DI 3	1	121	33	GI	Signal: Digital Input
DI Slot X6	DI 4	1	121	34	GI	Signal: Digital Input
DI Slot X6	DI 5	1	121	35	GI	Signal: Digital Input
DI Slot X6	DI 6	1	121	36	GI	Signal: Digital Input
DI Slot X6	DI 7	1	121	37	GI	Signal: Digital Input
DI Slot X6	DI 8	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 6	1	123	165	GI	Signal: Binary Output Relay
BO Slot X5	BO 1	1	123	166	GI	Signal: Binary Output Relay
BO Slot X5	BO 2	1	123	167	GI	Signal: Binary Output Relay
BO Slot X5	BO 3	1	123	168	GI	Signal: Binary Output Relay
BO Slot X5	BO 4	1	123	169	GI	Signal: Binary Output Relay
BO Slot X5	BO 5	1	123	170	GI	Signal: Binary Output Relay
BO Slot X5	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

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	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
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

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

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

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

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
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
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
IH2[1]	active	1	180	50	GI	Signal: active
IH2[1]	Blo L1	1	180	60		Signal: Blocked L1
IH2[1]	Blo L2	1	180	61		Signal: Blocked L2
IH2[1]	Blo L3	1	180	62		Signal: Blocked L3
IH2[1]	Blo IG meas	1	180	63		Signal: Blocking of the ground (earth) protection module (measured ground current)
IH2[1]	3-ph Blo	1	180	64		Signal: Inrush was detected in at least one phase - trip command blocked.
IH2[1]	Blo IG calc	1	180	65		Signal: Blocking of the ground (earth) protection module (calculated ground current)
IH2[2]	active	1	181	50	GI	Signal: active

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
IH2[2]	Blo L1	1	181	60		Signal: Blocked L1
IH2[2]	Blo L2	1	181	61		Signal: Blocked L2
IH2[2]	Blo L3	1	181	62		Signal: Blocked L3
IH2[2]	Blo IG meas	1	181	63		Signal: Blocking of the ground (earth) protection module (measured ground current)
IH2[2]	3-ph Blo	1	181	64		Signal: Inrush was detected in at least one phase - trip command blocked.
IH2[2]	Blo IG calc	1	181	65		Signal: Blocking of the ground (earth) protection module (calculated ground current)
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[1] - 74TC	active	1	241	50	GI	Signal: active
TCS[2] - 74TC	active	1	241	51	GI	Signal: active
TCS[1] - 74TC	ExBlo	1	241	80		Signal: External Blocking
TCS[2] - 74TC	ExBlo	1	241	81		Signal: External Blocking
TCS[1] - 74TC	Alarm	1	241	100	GI	Signal: Alarm Trip Circuit Supervision
TCS[2] - 74TC	Alarm	1	241	101	GI	Signal: Alarm Trip Circuit Supervision

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
TCS[1] - 74TC	Not Possible	1	241	110	GI	Not possible because no state indicator assigned to the breaker.
TCS[2] - 74TC	Not Possible	1	241	111	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[2]	Operations Alarm	1	242	109		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
SG[2]	WearLevel Alarm	1	242	132	GI	Signal: Threshold for the Alarm
SG[2]	WearLevel Lockout	1	242	133	GI	Signal: Threshold for the Lockout Level
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
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

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
SG[1]	Position Ind manipul	1	246	112	GI	Signal: Position Indicators faked
SG[1]	Prot ON	1	246	113	GI	Signal: ON Command issued by the Prot module
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.
SG[2]	Removed-I	1	247	34	GI	State of the module input: The withdrawable circuit breaker is Removed
SG[2]	CES SG removed	1	247	35	GI	Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.
SG[2]	Removed	1	247	36	GI	Signal: The withdrawable circuit breaker is Removed
SG[2]	SCmd OFF-I	1	247	110	GI	State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input

Module (- ANSI / IEEE Device Number)	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
SG[2]	SCmd ON-I	1	247	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[2]	Position Ind manipul	1	247	112	GI	Signal: Position Indicators faked
SG[2]	Prot ON	1	247	113	GI	Signal: ON Command issued by the Prot module
SG[2]	TripCmd	2	247	114		Signal: Trip Command
SG[2]	OFF Cmd	1	247	115		Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.
SG[2]	ON Cmd	1	247	116		Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.
SG[2]	CES succesf	1	247	117	GI	Signal: Command Execution Supervision: Switching command executed successfully.
SG[2]	Interl OFF	1	247	118	GI	Signal: One or more IL_Off inputs are active.
SG[2]	Interl ON	1	247	119	GI	Signal: One or more IL_On inputs are active.
SG[2]	Ready	1	247	120	GI	Signal: Circuit breaker is ready for operation.
Scada Cmd	PS 1	1	176	23	GI	Signal: Parameter Set 1
Scada Cmd	PS 2	1	176	24	GI	Signal: Parameter Set 2
Scada Cmd	PS 3	1	176	25	GI	Signal: Parameter Set 3
Scada Cmd	PS 4	1	176	26	GI	Signal: Parameter Set 4
SG[1]	Pos	1	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

Module ***(- ANSI / IEEE Device Number)***	***Subgroups*** ***Names*** ***Functions***	***Function Type*** ***ASDU***	***Function*** ***(FUN)***	***Information*** ***Number (INF)***	***Device*** ***Interrogation***	***Description***
SG[2]	Pos	1	131	33	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 W1	IL1 [%]	9	176	148	2.4	0	Measured value: Phase current (fundamental)
CT W1	IL2 [%]	9	176	148	2.4	1	Measured value: Phase current (fundamental)
CT W1	IL3 [%]	9	176	148	2.4	2	Measured value: Phase current (fundamental)
CT W1	IL1 [%]	9	152	148	2.4	0	Measured value: Phase current (fundamental)
CT W1	IL2 [%]	9	152	148	2.4	1	Measured value: Phase current (fundamental)
CT W1	IL3 [%]	9	152	148	2.4	2	Measured value: Phase current (fundamental)
CT W1	IG meas [%]	9	152	148	2.4	3	Measured value (measured): IG (fundamental)
CT W2	IL1 [%]	9	152	148	2.4	15	Measured value: Phase current (fundamental)
CT W2	IL2 [%]	9	152	148	2.4	16	Measured value: Phase current (fundamental)
CT W2	IL3 [%]	9	152	148	2.4	17	Measured value: Phase current (fundamental)

Module *(- ANSI / IEEE Device Number)*	*Subgroup Names* Functions	*Function type* ASDU	*Function code* (FUN)	*Information* Number (INF)	*Factor*	*Position*	*Description*
CT W2	IG meas [%]	9	152	148	2.4	18	Measured value (measured): IG (fundamental)

Module *(- ANSI / IEEE Device Number)*	*Subgroups Names Functions*	*Function Type ASDU*	*Function (FUN)*	*Information Number (INF)*	*Device Interrogation*	*Description*
CT W1	IL1	4	92	150		Measured value: Phase current (fundamental)
CT W1	IL2	4	92	151		Measured value: Phase current (fundamental)
CT W1	IL3	4	92	152		Measured value: Phase current (fundamental)
CT W2	IL1	4	92	153		Measured value: Phase current (fundamental)
CT W2	IL2	4	92	154		Measured value: Phase current (fundamental)
CT W2	IL3	4	92	155		Measured value: Phase current (fundamental)
CT W1	IG meas	4	92	186		Measured value (measured): IG (fundamental)
CT W2	IG meas	4	92	187		Measured value (measured): IG (fundamental)
Id	Id L1	4	93	150		Measured value (calculated): Differential Current Phase L1
Id	Id L2	4	93	151		Measured value (calculated): Differential Current Phase L2

Module ***(- ANSI / IEEE Device Number)***	***Subgroups*** ***Names*** ***Functions***	***Function Type*** ***ASDU***	***Function*** ***(FUN)***	***Information*** ***Number (INF)***	***Device*** ***Interrogation***	***Description***
Id	Id L3	4	93	152		Measured value (calculated): Differential Current Phase L3
Id	IS L1	4	93	153		Measured value (calculated): Restraint Current Phase L1
Id	IS L2	4	93	154		Measured value (calculated): Restraint Current Phase L2
Id	IS L3	4	93	155		Measured value (calculated): Restraint Current Phase L3

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	176	19		Signal: LEDs acknowledgement
Scada Cmd	PS 1	20	176	23	GI	Signal: Parameter Set 1
Scada Cmd	PS 2	20	176	24	GI	Signal: Parameter Set 2
Scada Cmd	PS 3	20	176	25	GI	Signal: Parameter Set 3
Scada Cmd	PS 4	20	176	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)

Module ***(- ANSI / IEEE Device Number)***	***Subgroups*** ***Names*** ***Functions***	***Function Type*** ***ASDU***	***Function*** ***(FUN)***	***Information*** ***Number (INF)***	***Device*** ***Interrogation***	***Description***
SG[2]	Pos	20	131	33	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

Analog Traces

Module	*IEC60870-5-103 Channel Number*	*Desc*
I L1	70	Analog trace I L1
I L2	71	Analog trace I L2
I L3	72	Analog trace I L3
IG	73	Analog trace IG
I L1	74	Analog trace I L1
I L2	75	Analog trace I L2
I L3	76	Analog trace I L3
IG	77	Analog trace IG
W1.Idg	78	Winding 1.Measured value (calculated): Ground Differential Current
W2.Idg	79	Winding 2.Measured value (calculated): Ground Differential Current
Id L1	80	Measured value (calculated): Differential Current Phase L1
Id L2	81	Measured value (calculated): Differential Current Phase L2
Id L3	82	Measured value (calculated): Differential Current Phase L3
W1.ISG	83	Winding 1.Measured value (calculated): Ground Stabilizing Current
W2.ISG	84	Winding 2.Measured value (calculated): Ground Stabilizing Current
IS L1	85	Measured value (calculated): Restraint Current Phase L1
IS L2	86	Measured value (calculated): Restraint Current Phase L2
IS L3	87	Measured value (calculated): Restraint Current Phase L3

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