



MCDGV4 – IEC60870-5-103
HighPROTEC

Data point list

Manual MCDGV4 R3.6 (Build 41594)

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This manual applies to devices (version):

Version 3.6.b

Build: 41581

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
(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

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 |
|---|--|

Application layer

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"/> 20 Blocking of Monitor Direction | <input checked="" type="checkbox"/> 21 Test mode |
| <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 checked="" type="checkbox"/> Test mode | <input checked="" type="checkbox"/> Blocking of monitor direction |
| <input checked="" type="checkbox"/> Disturbance data | <input type="checkbox"/> Generic services |
| <input checked="" type="checkbox"/> Private data | |

Miscellaneous

Measurand	max. value = rated value x	
	1.2	2.4
Current L ₁	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Current L ₂	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Current L ₃	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L _{1-E}	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L _{2-E}	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L _{3-E}	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage L ₁ – L ₂	<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

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Prot	active	1	178	18	GI	Signal: active
IEC103	Block MD active	1	178	20	GI	Signal: The blocking of IEC103 transmission in monitor direction has been activated.
IEC103	Test mode active	1	178	21	GI	Signal: IEC103 communication has been switched over into Test Mode.
PSet-Switch	min 1 param changed	1	178	22	GI	Signal: At least one parameter has been changed
DI Slot X1	DI 1	1	178	27	GI	Signal: Digital Input
DI Slot X1	DI 2	1	178	28	GI	Signal: Digital Input
DI Slot X1	DI 3	1	178	29	GI	Signal: Digital Input
DI Slot X1	DI 4	1	178	30	GI	Signal: Digital Input
CTS - 60L	Alarm	1	178	32	GI	Signal: Alarm Current Transformer Measuring Circuit Supervision
SSV	New warning	1	178	46	GI	Signal: A new warning message has been issued.
SSV	System Error	1	178	47	GI	Signal: Device Failure
Prot	IG meas dir fwd	1	178	51	GI	Signal: Ground fault (measured) forward
Prot	IG meas dir rev	1	178	52	GI	Signal: Ground fault (measured) reverse direction
Prot	Alarm L1	2	178	64	GI	Signal: General-Alarm L1

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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	I dir fwd	2	178	74		Signal: Phase current failure forward direction
Prot	I dir rev	2	178	75		Signal: Phase current failure reverse direction
Prot	Alarm	2	178	84	GI	Signal: General Alarm
CBF - 50BF, 62BF	Alarm	2	178	85		Signal: Circuit Breaker Failure
I[1] - 50, 51	TripCmd	2	178	90		Signal: Trip Command
I[2] - 50, 51	TripCmd	2	178	91		Signal: Trip Command
IG[1] - 50N, 51N	TripCmd	2	178	92		Signal: Trip Command
IG[2] - 50N, 51N	TripCmd	2	178	93		Signal: Trip Command
Ctrl	Local	1	178	160	GI	Switching Authority: Local
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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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 energized.
Id - 87	IH2 Blo L1	1	30	122	GI	Signal:Phase L1: Blocking of the Phase Differential Protection because of second Harmonic.
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.

Data Points List

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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
Q->&V<	Fuse Fail VT Blo	1	35	40	GI	Signal: Blocked by Fuse Failure (VT)
Q->&V<	active	1	35	50	GI	Signal: active
Q->&V<	Alarm	1	35	100	GI	Signal: Alarm Reactive Power Undervoltage Protection
Q->&V<	Decoupling Distr. Generator	1	35	120	GI	Signal: Decoupling of the (local) Energy Generator/Resource
Q->&V<	Decoupling PCC	1	35	121	GI	Signal: Decoupling at the Point of Common Coupling
ReCon[1]	Blo by Meas Circuit Superv	1	37	40	GI	Signal: Module blocked by measuring circuit supervision
ReCon[1]	active	1	37	50	GI	Signal: active
ReCon[1]	Release Energy Resource	1	37	111	GI	Signal: Release Energy Resource.
ReCon[1]	V Ext Release PCC-I	1	37	112	GI	Module input state: Release signal is being generated by the PCC (External Release)

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
ReCon[2]	Blo by Meas Circuit Superv	1	38	40	GI	Signal: Module blocked by measuring circuit supervision
ReCon[2]	active	1	38	50	GI	Signal: active
ReCon[2]	Release Energy Resource	1	38	111	GI	Signal: Release Energy Resource.
ReCon[2]	V Ext Release PCC-I	1	38	112	GI	Module input state: Release signal is being generated by the PCC (External Release)
RTD	TripCmd	2	46	90		Signal: Trip Command
RTD	Alarm	2	46	100	GI	Alarm RTD Temperature Protection
Prot	IG calc dir fwd	1	100	51	GI	Signal: Ground fault (calculated) forward
Prot	IG calc dir rev	1	100	52	GI	Signal: Ground fault (calculated) reverse direction
IEC103	Failure Event lost	1	100	100		Failure event lost
I[1] - 50, 51	active	1	101	50	GI	Signal: active
I[2] - 50, 51	active	1	101	51	GI	Signal: active
I[3] - 50, 51	active	1	101	52	GI	Signal: active
I[4] - 50, 51	active	1	101	53	GI	Signal: active
I[5] - 50, 51	active	1	101	54	GI	Signal: active
I[6] - 50, 51	active	1	101	55	GI	Signal: active
IG[1] - 50N, 51N	active	1	101	56	GI	Signal: active
IG[2] - 50N, 51N	active	1	101	57	GI	Signal: active
IG[3] - 50N, 51N	active	1	101	58	GI	Signal: active
IG[4] - 50N, 51N	active	1	101	59	GI	Signal: active
I[1] - 50, 51	Blo TripCmd	1	101	60	GI	Signal: Trip Command blocked

Data Points List

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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
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
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
I2>G[1] - 46G	active	1	103	58	GI	Signal: active
I2>G[2] - 46G	active	1	103	59	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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
I2>[2] - 46	Blo TripCmd	1	103	67	GI	Signal: Trip Command blocked
I2>G[1] - 46G	Blo TripCmd	1	103	68	GI	Signal: Trip Command blocked
I2>G[2] - 46G	Blo TripCmd	1	103	69	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>G[1] - 46G	TripCmd	2	103	98		Signal: Trip Command
I2>G[2] - 46G	TripCmd	2	103	99		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
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
I2>G[1] - 46G	Alarm	2	103	108	GI	Signal: Alarm Negative Sequence
I2>G[2] - 46G	Alarm	2	103	109	GI	Signal: Alarm Negative Sequence

Data Points List

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

Data Points List

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

Data Points List

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

Data Points List

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

Data Points List

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Ext Temp Superv[2]	TripCmd	2	113	93		Signal: Trip Command
Ext Temp Superv[3]	TripCmd	2	113	94		Signal: Trip Command
Ext 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
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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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
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
PQS[4] - 32, 37	TripCmd	2	116	93		Signal: Trip Command

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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
DI Slot X5	DI 1	1	121	31	GI	Signal: Digital Input
DI Slot X5	DI 2	1	121	32	GI	Signal: Digital Input
DI Slot X5	DI 3	1	121	33	GI	Signal: Digital Input
DI Slot X5	DI 4	1	121	34	GI	Signal: Digital Input
DI Slot X5	DI 5	1	121	35	GI	Signal: Digital Input

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
DI Slot X5	DI 6	1	121	36	GI	Signal: Digital Input
DI Slot X5	DI 7	1	121	37	GI	Signal: Digital Input
DI Slot X5	DI 8	1	121	38	GI	Signal: Digital Input
DI Slot X6	DI 1	1	122	31	GI	Signal: Digital Input
DI Slot X6	DI 2	1	122	32	GI	Signal: Digital Input
DI Slot X6	DI 3	1	122	33	GI	Signal: Digital Input
DI Slot X6	DI 4	1	122	34	GI	Signal: Digital Input
DI Slot X6	DI 5	1	122	35	GI	Signal: Digital Input
DI Slot X6	DI 6	1	122	36	GI	Signal: Digital Input
DI Slot X6	DI 7	1	122	37	GI	Signal: Digital Input
DI Slot X6	DI 8	1	122	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	172	GI	Signal: Binary Output Relay
BO Slot X5	BO 2	1	123	173	GI	Signal: Binary Output Relay
BO Slot X5	BO 3	1	123	174	GI	Signal: Binary Output Relay
BO Slot X5	BO 4	1	123	175	GI	Signal: Binary Output Relay
BO Slot X6	BO 1	1	123	178	GI	Signal: Binary Output Relay
BO Slot X6	BO 2	1	123	179	GI	Signal: Binary Output Relay

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
BO Slot X6	BO 3	1	123	180	GI	Signal: Binary Output Relay
BO Slot X6	BO 4	1	123	181	GI	Signal: Binary Output Relay
BO Slot X6	BO 5	1	123	182	GI	Signal: Binary Output Relay
LB	active	1	135	50	GI	Signal: active
LB	Operate	1	135	60	GI	Signal that the measured system impedance is within the Load Blinder area for at least the duration t-Delay.
OST - 78	active	1	136	50	GI	Signal: active
OST - 78	Alarm	1	136	60	GI	Signal that the module has started, i. e. the impedance has entered the MHO circle and crossed the first blinder. »Alarm« is reset when the measured impedance has left the MHO circle without an »Operate«, or when the »Trip« signal is reset. If »Max.Num.Pole Slips« is greater than 1, the »Alarm« signal stays active until the »Trip« signal is reset or the »Reset Time« has expired.
OST - 78	Pole slipping	1	136	61	GI	Signal, that pole slipping has been detected. The state of this signal becomes true as soon as the impedance reaches 180°, and it gets reset when the characteristic area is left.
OST - 78	Start	1	136	62	GI	Signal, that a power swing (or an Out-of-step event) has been detected. The state of this signal becomes true as soon as the impedance traverses the first blinder, and it gets reset when the characteristic area is left.
OST - 78	TripCmd	2	136	90		Signal: Trip Command

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Z[1] - 21P	active	1	137	50	GI	Signal: active
Z[1] - 21P	Trip	1	137	60	GI	Trip
Z[1] - 21P	TripCmd	2	137	90		Signal: Trip Command
Z[1] - 21P	Alarm	2	137	100	GI	Alarm
Z[1] - 21P	Started	1	137	101	GI	Signal: Distance Protection has been started.
Z[1] - 21P	Fault type L1-L2	1	137	110	GI	Fault type: L1-L2
Z[1] - 21P	Fault type L1-L2-L3	1	137	111	GI	Fault type: L1-L2-L3
Z[1] - 21P	Fault type L2-L3	1	137	112	GI	Fault type: L2-L3
Z[1] - 21P	Fault type L3-L1	1	137	113	GI	Fault type: L3-L1
Z[2] - 21P	active	1	138	50	GI	Signal: active
Z[2] - 21P	Trip	1	138	60	GI	Trip
Z[2] - 21P	TripCmd	2	138	90		Signal: Trip Command
Z[2] - 21P	Alarm	2	138	100	GI	Alarm
Z[2] - 21P	Started	1	138	101	GI	Signal: Distance Protection has been started.
Z[2] - 21P	Fault type L1-L2	1	138	110	GI	Fault type: L1-L2
Z[2] - 21P	Fault type L1-L2-L3	1	138	111	GI	Fault type: L1-L2-L3
Z[2] - 21P	Fault type L2-L3	1	138	112	GI	Fault type: L2-L3
Z[2] - 21P	Fault type L3-L1	1	138	113	GI	Fault type: L3-L1
PSB - 68	active	1	139	50	GI	Signal: active
PSB - 68	Pickup Mho	1	139	70	GI	Signal: The impedance is within the characteristic.

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
PSB - 68	Swinging	1	139	80	GI	Signal: The impedance is within the instable swing zone (i. e. within the characteristic and inside the borders defined by Blinders A and B).
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	LE2.Gate Out	1	162	167	GI	Signal: Output of the logic gate
Logics	LE2.Timer Out	1	162	168	GI	Signal: Timer Output
Logics	LE2.Out	1	162	169	GI	Signal: Latched Output (Q)
Logics	LE3.Gate Out	1	162	174	GI	Signal: Output of the logic gate
Logics	LE3.Timer Out	1	162	175	GI	Signal: Timer Output
Logics	LE3.Out	1	162	176	GI	Signal: Latched Output (Q)
Logics	LE4.Gate Out	1	162	181	GI	Signal: Output of the logic gate
Logics	LE4.Timer Out	1	162	182	GI	Signal: Timer Output
Logics	LE4.Out	1	162	183	GI	Signal: Latched Output (Q)
Logics	LE5.Gate Out	1	162	188	GI	Signal: Output of the logic gate
Logics	LE5.Timer Out	1	162	189	GI	Signal: Timer Output
Logics	LE5.Out	1	162	190	GI	Signal: Latched Output (Q)
Logics	LE6.Gate Out	1	162	195	GI	Signal: Output of the logic gate
Logics	LE6.Timer Out	1	162	196	GI	Signal: Timer Output
Logics	LE6.Out	1	162	197	GI	Signal: Latched Output (Q)
Logics	LE7.Gate Out	1	162	202	GI	Signal: Output of the logic gate
Logics	LE7.Timer Out	1	162	203	GI	Signal: Timer Output

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Logics	LE7.Out	1	162	204	GI	Signal: Latched Output (Q)
Logics	LE8.Gate Out	1	162	209	GI	Signal: Output of the logic gate
Logics	LE8.Timer Out	1	162	210	GI	Signal: Timer Output
Logics	LE8.Out	1	162	211	GI	Signal: Latched Output (Q)
Logics	LE9.Gate Out	1	162	216	GI	Signal: Output of the logic gate
Logics	LE9.Timer Out	1	162	217	GI	Signal: Timer Output
Logics	LE9.Out	1	162	218	GI	Signal: Latched Output (Q)
Logics	LE10.Gate Out	1	162	223	GI	Signal: Output of the logic gate
Logics	LE10.Timer Out	1	162	224	GI	Signal: Timer Output
Logics	LE10.Out	1	162	225	GI	Signal: Latched Output (Q)
Logics	LE11.Gate Out	1	163	160	GI	Signal: Output of the logic gate
Logics	LE11.Timer Out	1	163	161	GI	Signal: Timer Output
Logics	LE11.Out	1	163	162	GI	Signal: Latched Output (Q)
Logics	LE11.Gate In1-I	1	163	163	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In2-I	1	163	164	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In3-I	1	163	165	GI	State of the module input: Assignment of the Input Signal
Logics	LE11.Gate In4-I	1	163	166	GI	State of the module input: Assignment of the Input Signal
Logics	LE12.Gate Out	1	163	167	GI	Signal: Output of the logic gate
Logics	LE12.Timer Out	1	163	168	GI	Signal: Timer Output
Logics	LE12.Out	1	163	169	GI	Signal: Latched Output (Q)

Data Points List

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

Data Points List

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

Data Points List

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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
InEn - 50/27	active	1	165	50	GI	Signal: active
InEn - 50/27	TripCmd	2	165	90		Signal: Trip Command
InEn - 50/27	Alarm	2	165	100	GI	Signal: Inadvertent Energization
Intertripping	active	1	166	50	GI	Signal: active
Intertripping	TripCmd	2	166	90		Signal: Trip Command
Intertripping	Alarm	2	166	100	GI	Signal: Alarm

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
LoE-Z1[1] - 40	active	1	167	50	GI	Signal: active
LoE-Z1[1] - 40	TripCmd	2	167	90		Signal: Trip Command
LoE-Z1[1] - 40	Alarm	2	167	100	GI	Signal: Alarm Loss of Excitation
LoE-Z2[1] - 40	active	1	167	51	GI	Signal: active
LoE-Z2[1] - 40	TripCmd	2	167	91		Signal: Trip Command
LoE-Z2[1] - 40	Alarm	2	167	101	GI	Signal: Alarm Loss of Excitation
LoE-Z1[2] - 40	active	1	167	52	GI	Signal: active
LoE-Z1[2] - 40	TripCmd	2	167	92		Signal: Trip Command
LoE-Z1[2] - 40	Alarm	2	167	102	GI	Signal: Alarm Loss of Excitation
LoE-Z2[2] - 40	active	1	167	53	GI	Signal: active
LoE-Z2[2] - 40	TripCmd	2	167	93		Signal: Trip Command
LoE-Z2[2] - 40	Alarm	2	167	103	GI	Signal: Alarm Loss of Excitation
delta phi - 78V	active	1	169	50	GI	Signal: active
delta phi - 78V	TripCmd	2	169	90		Signal: Trip Command
delta phi - 78V	Alarm	2	169	100	GI	Signal: Alarm Frequency Protection (collective signal)
LVRT[1] - 27	active	1	170	50	GI	Signal: active
LVRT[2] - 27	active	1	170	51	GI	Signal: active
LVRT[1] - 27	TripCmd	2	170	90		Signal: Trip Command
LVRT[2] - 27	TripCmd	2	170	91		Signal: Trip Command
LVRT[1] - 27	Alarm	2	170	100	GI	Signal: Alarm voltage stage
LVRT[2] - 27	Alarm	2	170	101	GI	Signal: Alarm voltage stage
V/f>[1] - 24	active	1	171	50	GI	Signal: active

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
V/f>[1] - 24	TripCmd	2	171	90		Signal: Trip Command
V/f>[1] - 24	Alarm	2	171	100	GI	Signal: Alarm Overexcitation
V/f>[2] - 24	active	1	172	50	GI	Signal: active
V/f>[2] - 24	TripCmd	2	172	90		Signal: Trip Command
V/f>[2] - 24	Alarm	2	172	100	GI	Signal: Alarm Overexcitation
P[1] - 32R	active	1	173	50	GI	Signal: active
P[2] - 32R	active	1	173	51	GI	Signal: active
P[3] - 32R	active	1	173	52	GI	Signal: active
P[1] - 32R	TripCmd	2	173	90		Signal: Trip Command
P[2] - 32R	TripCmd	2	173	91		Signal: Trip Command
P[3] - 32R	TripCmd	2	173	92		Signal: Trip Command
P[1] - 32R	Alarm	2	173	100	GI	Signal: Alarm Power Protection
P[2] - 32R	Alarm	2	173	101	GI	Signal: Alarm Power Protection
P[3] - 32R	Alarm	2	173	102	GI	Signal: Alarm Power Protection
Q - 32	active	1	174	50	GI	Signal: active
Q - 32	TripCmd	2	174	90		Signal: Trip Command
Q - 32	Alarm	2	174	100	GI	Signal: Alarm Power Protection
df/dt - 81R	active	1	175	50	GI	Signal: active
df/dt - 81R	TripCmd	2	175	90		Signal: Trip Command
df/dt - 81R	Alarm	2	175	100	GI	Signal: Alarm Frequency Protection (collective signal)
IH2	active	1	180	50	GI	Signal: active
IH2	Blo L1	1	180	60		Signal: Blocked L1

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
IH2	Blo L2	1	180	61		Signal: Blocked L2
IH2	Blo L3	1	180	62		Signal: Blocked L3
IH2	Blo IG meas	1	180	63		Signal: Blocking of the ground (earth) protection module (measured ground current)
IH2	3-ph Blo	1	180	64		Signal: Inrush was detected in at least one phase - trip command blocked.
IH2	Blo IG calc	1	180	65		Signal: Blocking of the ground (earth) protection module (calculated ground current)
SysA	active	1	182	50	GI	Signal: active
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

Data Points List

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
PQSCr	Cr Oflw 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
AnaP[1]	active	1	226	50	GI	Signal: active
AnaP[2]	active	1	226	51	GI	Signal: active
AnaP[3]	active	1	226	52	GI	Signal: active
AnaP[4]	active	1	226	53	GI	Signal: active
AnaP[1]	TripCmd	2	226	90		Signal: Trip Command
AnaP[2]	TripCmd	2	226	91		Signal: Trip Command
AnaP[3]	TripCmd	2	226	92		Signal: Trip Command
AnaP[4]	TripCmd	2	226	93		Signal: Trip Command
AnaP[1]	Pickup	2	226	100	GI	Signal: Alarm Analog Input
AnaP[2]	Pickup	2	226	101	GI	Signal: Alarm Analog Input
AnaP[3]	Pickup	2	226	102	GI	Signal: Alarm Analog Input
AnaP[4]	Pickup	2	226	103	GI	Signal: Alarm Analog Input
TCS - 74TC	active	1	241	50	GI	Signal: active
TCS - 74TC	ExBlo	1	241	80		Signal: External Blocking
TCS - 74TC	Alarm	1	241	100	GI	Signal: Alarm Trip Circuit Supervision

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
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: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[2]	Operations Alarm	1	242	109		Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[3]	Operations Alarm	1	242	114		Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[4]	Operations Alarm	1	242	119		Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[5]	Operations Alarm	1	242	124		Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[6]	Operations Alarm	1	242	129		Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)
SG[1]	WearLevel Alarm	1	242	130	GI	Signal: Threshold for the Alarm
SG[1]	WearLevel Lockout	1	242	131	GI	Signal: Threshold for the Lockout Level
SG[2]	WearLevel Alarm	1	242	132	GI	Signal: Threshold for the Alarm

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
SG[2]	WearLevel Lockout	1	242	133	GI	Signal: Threshold for the Lockout Level
SG[3]	WearLevel Alarm	1	242	134	GI	Signal: Threshold for the Alarm
SG[3]	WearLevel Lockout	1	242	135	GI	Signal: Threshold for the Lockout Level
SG[4]	WearLevel Alarm	1	242	136	GI	Signal: Threshold for the Alarm
SG[4]	WearLevel Lockout	1	242	137	GI	Signal: Threshold for the Lockout Level
SG[5]	WearLevel Alarm	1	242	138	GI	Signal: Threshold for the Alarm
SG[5]	WearLevel Lockout	1	242	139	GI	Signal: Threshold for the Lockout Level
SG[6]	WearLevel Alarm	1	242	140	GI	Signal: Threshold for the Alarm
SG[6]	WearLevel Lockout	1	242	141	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
Sync - 25	active	1	244	50	GI	Signal: active
Sync - 25	ExBlo	1	244	80		Signal: External Blocking
Sync - 25	AngleDiffTooHigh	1	244	110	GI	Signal: Phase Angle difference between bus and line voltages too high.
Sync - 25	Sys-in-Sync	1	244	111	GI	Signal: Bus and line voltages are in synchronism according to the system synchronism criteria.

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Sync - 25	LiveBus	1	244	112	GI	Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold
Sync - 25	LiveLine	1	244	113	GI	Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold
Sync - 25	SlipTooHigh	1	244	114	GI	Signal: Frequency difference (slip frequency) between bus and line voltages too high.
Sync - 25	Ready to Close	1	244	115	GI	Signal: Ready to Close
Sync - 25	SynchronFailed	1	244	116	GI	Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out.
Sync - 25	VDiffTooHigh	1	244	117	GI	Signal: Voltage difference between bus and line too high.
Ctrl	SG Disturb	1	246	32	GI	(At least one) Switchgear is disturbed.
Ctrl	SG Indeterm	1	246	33	GI	(At least one) Switchgear is moving (Position cannot be determined).
SG[1]	Prot ON	1	246	113		Signal: ON Command issued by the Prot module
SG[1]	TripCmd	2	246	114		Signal: Trip Command
SG[1]	Ready	1	246	120	GI	Signal: Circuit breaker is ready for operation.
SG[2]	Prot ON	1	247	113		Signal: ON Command issued by the Prot module
SG[2]	TripCmd	2	247	114		Signal: Trip Command
SG[2]	Ready	1	247	120	GI	Signal: Circuit breaker is ready for operation.
SG[3]	Prot ON	1	248	113		Signal: ON Command issued by the Prot module

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
SG[3]	TripCmd	2	248	114		Signal: Trip Command
SG[3]	Ready	1	248	120	GI	Signal: Circuit breaker is ready for operation.
SG[4]	Prot ON	1	249	113		Signal: ON Command issued by the Prot module
SG[4]	TripCmd	2	249	114		Signal: Trip Command
SG[4]	Ready	1	249	120	GI	Signal: Circuit breaker is ready for operation.
SG[5]	Prot ON	1	250	113		Signal: ON Command issued by the Prot module
SG[5]	TripCmd	2	250	114		Signal: Trip Command
SG[5]	Ready	1	250	120	GI	Signal: Circuit breaker is ready for operation.
SG[6]	Prot ON	1	251	113		Signal: ON Command issued by the Prot module
SG[6]	TripCmd	2	251	114		Signal: Trip Command
SG[6]	Ready	1	251	120	GI	Signal: Circuit breaker is ready for operation.
Scada Cmd	PS 1	1	178	23	GI	Signal: The currently active Parameter Set is PS 1
Scada Cmd	PS 2	1	178	24	GI	Signal: The currently active Parameter Set is PS 2
Scada Cmd	PS 3	1	178	25	GI	Signal: The currently active Parameter Set is PS 3
Scada Cmd	PS 4	1	178	26	GI	Signal: The currently active Parameter Set is PS 4
SG[1]	Pos	1	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)

Data Points List

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)
SG[3]	Pos	1	131	34	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[4]	Pos	1	131	35	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[5]	Pos	1	131	36	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[6]	Pos	1	131	37	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 Ntrl	IL1 [%]	9	178	148	2.4	0	Measured value: Phase current (fundamental)
CT Ntrl	IL2 [%]	9	178	148	2.4	1	Measured value: Phase current (fundamental)
CT Ntrl	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

Module (- ANSI / IEEE Device Number)	Subgroup Names Functions	Function type ASDU	Function code (FUN)	Information Number (INF)	Factor	Position	Description
VT	f [%]	9	178	148	1.2	8	Measured value: Frequency
CT Ntrl	IL1 [%]	9	152	148	2.4	0	Measured value: Phase current (fundamental)
CT Ntrl	IL2 [%]	9	152	148	2.4	1	Measured value: Phase current (fundamental)
CT Ntrl	IL3 [%]	9	152	148	2.4	2	Measured value: Phase current (fundamental)
CT Ntrl	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

Module (- ANSI / IEEE Device Number)	Subgroup Names Functions	Function type ASDU	Function code (FUN)	Information Number (INF)	Factor	Position	Description
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
CT Mains	IL1 [%]	9	152	148	2.4	15	Measured value: Phase current (fundamental)
CT Mains	IL2 [%]	9	152	148	2.4	16	Measured value: Phase current (fundamental)
CT Mains	IL3 [%]	9	152	148	2.4	17	Measured value: Phase current (fundamental)
CT Mains	IG meas [%]	9	152	148	2.4	18	Measured value (measured): IG (fundamental)

Fault Values

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
CT Ntrl	IL1	4	92	150		Measured value: Phase current (fundamental)
CT Ntrl	IL2	4	92	151		Measured value: Phase current (fundamental)
CT Ntrl	IL3	4	92	152		Measured value: Phase current (fundamental)
CT Mains	IL1	4	92	153		Measured value: Phase current (fundamental)
CT Mains	IL2	4	92	154		Measured value: Phase current (fundamental)
CT Mains	IL3	4	92	155		Measured value: Phase current (fundamental)
CT Ntrl	IG meas	4	92	186		Measured value (measured): IG (fundamental)
CT Mains	IG meas	4	92	187		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)

Data Points List

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

Energy Values

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Measured Values	Wp+	195	177	20		Positive Active Power is consumed active energy

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
Measured Values	Wp-	195	177	21		Negative Active Power (Fed Energy)
Measured Values	Wq+	195	177	22		Positive Reactive Power is consumed Reactive Energy
Measured Values	Wq-	195	177	23		Negative Reactive Power (Fed Energy)

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

Function type ASDU 195:

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

Commands

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

Data Points List

Module (- ANSI / IEEE Device Number)	Subgroups Names Functions	Function Type ASDU	Function (FUN)	Information Number (INF)	Device Interrogation	Description
SG[1]	Pos	20	131	32	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[2]	Pos	20	131	33	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[3]	Pos	20	131	34	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[4]	Pos	20	131	35	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[5]	Pos	20	131	36	GI	Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
SG[6]	Pos	20	131	37	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
IdG (X3)	78	Measured value (calculated): Ground Differential Current IdG slot X3
IdG (X4)	79	Measured value (calculated): Ground Differential Current IdG slot X4
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
IsG (X3)	83	Measured value (calculated): Ground Stabilizing Current slot X3
IsG (X4)	84	Measured value (calculated): Ground Stabilizing Current slot X4
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
V L1 / V L12	88	Analog trace V L1 / V L12
V L2 / V L23	89	Analog trace V L2 / V L23
V L3 / V L31	90	Analog trace V L3 / V L31

Data Points List

Module	IEC60870-5-103 Channel Number	Desc
VX	91	Analog trace VX

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