Relion® 620 series

Motor Protection and Control REM620 ANSI DNP3 Point List Manual

Power and productivity for a better world™

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This product complies with the directive of the Council of the European Communities on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive 2004/108/EC) and concerning electrical equipment for use within specified voltage limits (Low-voltage directive 2006/95/EC). This conformity is the result of tests conducted by ABB in accordance with the product standards EN 50263 and EN 60255-26 for the EMC directive, and with the product standards EN 60255-6 and EN 60255-27 for the low voltage directive. The IED is designed in accordance with the international standards of the IEC 60255 series and ANSI C37.90. The DNP protocol implementation in the IED conforms to "DNP3 Intelligent Electronic Device (IED) Certification Procedure Subset Level 2", available at www.dnp.org .

Section 1 Introduction

1.1 This manual

The point list manual describes the outlook and properties of the data points specific to the IED. The manual should be used in conjunction with the corresponding communication protocol manual.

1.2 Intended audience

This manual addresses the communication system engineer or system integrator responsible for pre-engineering and engineering for communication setup in a substation from an IED perspective.

The system engineer or system integrator must have a basic knowledge of communication in protection and control systems and thorough knowledge of the specific communication protocol.

1.3 Product documentation

1.3.1 Product documentation set

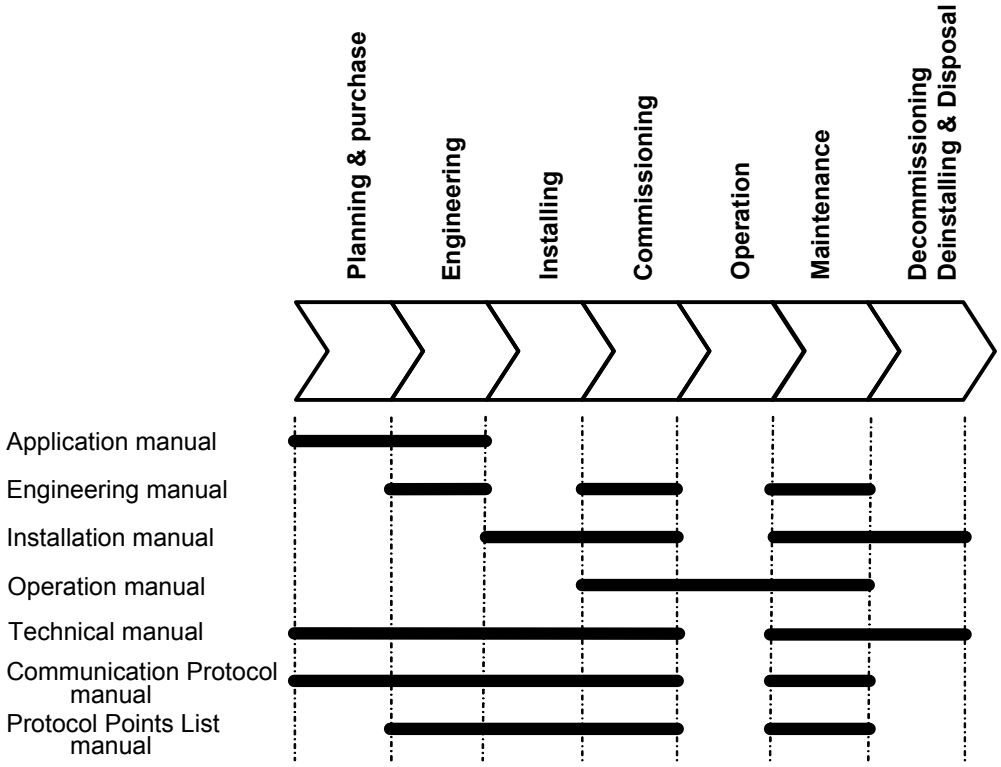

Figure 1: The intended use of manuals in different lifecycles

The engineering manual contains instructions on how to engineer the IEDs using the different tools in PCM600. The manual provides instructions on how to set up a PCM600 project and insert IEDs to the project structure. The manual also recommends a sequence for engineering of protection and control functions, LHMI functions as well as communication engineering for IEC 61850 and DNP3.

The installation manual contains instructions on how to install the IED. The manual provides procedures for mechanical and electrical installation. The chapters are organized in chronological order in which the IED should be installed.

The operation manual contains instructions on how to operate the IED once it has been commissioned. The manual provides instructions for monitoring, controlling and setting the IED. The manual also describes how to identify disturbances and how to view calculated and measured power grid data to determine the cause of a fault.

The application manual contains application descriptions and setting guidelines sorted per function. The manual can be used to find out when and for what purpose a typical protection function can be used. The manual can also be used when calculating settings.

The technical manual contains application and functionality descriptions and lists function blocks, logic diagrams, input and output signals, setting parameters and technical data

sorted per function. The manual can be used as a technical reference during the engineering phase, installation and commissioning phase, and during normal service.

The communication protocol manual describes a communication protocol supported by the IED. The manual concentrates on vendor-specific implementations. The point list manual describes the outlook and properties of the data points specific to the IED. The manual should be used in conjunction with the corresponding communication protocol manual.

1.3.2 Document revision history

Document revision/date	Product series version	History
A/10/26/2012	2.0	First release

Download the latest documents from the ABB web site http://www.abb.com/substationautomation.

1.3.3 Related documentation

Name of the document	Document ID
DNP3 Communication Protocol Manual	1MAC607050-IB

1.4 Symbols and conventions

1.4.1 Safety indication symbols

The caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.

The information icon alerts the reader to important facts and conditions.

The tip icon indicates advice on, for example, how to design your project or how to use a certain function.

Although warning hazards are related to personal injury, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

1.4.2 Manual conventions

Conventions used in IED manuals. A particular convention may not be used in this manual.

- Abbreviations and acronyms in this manual are spelled out in the glossary. The glossary also contains definitions of important terms.
- Push button navigation in the LHMI menu structure is presented by using the push button icons, for example:

  To navigate between the options, use  and  .
- HMI menu paths are presented in bold, for example:

  Select **Main menu > Settings**.
- LHMI messages are shown in Courier font, for example:

  To save the changes in non-volatile memory, select `Yes` and press  .
- Parameter names are shown in italics, for example:

  The function can be enabled and disabled with the *Operation* setting.
- Parameter values are indicated with quotation marks, for example:

  The corresponding parameter values are "Enabled" and "Disabled".
- IED input/output messages and monitored data names are shown in Courier font, for example:

  When the function picks up, the `PICKUP` output is set to TRUE.
- Dimensions are provided both in inches and mm. If it is not specifically mentioned then the dimension is in mm.

1.4.3 Functions, codes and symbols

Table 1: REF620 functions, codes and symbols

Function	IEC 61850	ANSI/C37.2	IEC60617
Protection			
Three-phase non-directional overcurrent protection, low stage, instance 1	PHLPTOC1	51P	3I> (1)
Three-phase non-directional overcurrent protection, high stage, instance 1	PHHPTOC1	50P	3I>> (1)
Non-directional ground-fault protection, low stage, instance 1	EFLPTOC1	51G	Io> (1)
Non-directional ground-fault protection, high stage, instance 1	EFHPTOC1	50G	Io>> (1)
Directional ground-fault protection, low stage, instance 1	DEFLPDEF1	67/51N	Io> -> (1)
Residual overvoltage protection, instance 1	ROVPTOV1	59G	Uo> (1)
Residual overvoltage protection, instance 2	ROVPTOV2	59N	Uo> (2)
Three-phase under-voltage protection, instance 1	PHPTUV1	27	3U< (1)
Three-phase overvoltage protection, instance 1	PHPTOV1	59	3U> (1)
Positive-sequence undervoltage protection, instance 1	PSPTUV1	27PS	U1<(1)

Function	IEC 61850	ANSI/C37.2	IEC60617
Negative-sequence overvoltage protection, instance 1	NSPTOV1	47	U2>(1)
Frequency protection, instance 1	FRPFRQ1	81	f>/f<,df/dt(1)
Negative-sequence overcurrent protection for motors, instance 1	MNSPTOC1	46M-1	I2>M(1)
Negative-sequence overcurrent protection for motors, instance 2	MNSPTOC2	46M-2	I2>M(2)
Loss of load supervision, instance 1	LOFLPTUC1	37M-1	3I<(1)
Loss of load supervision, instance 2	LOFLPTUC2	37M-2	3I<(2)
Motor load jam protection	JAMPTOC1	51LR	1st>
Motor start-up supervision	STTPMSU1	66/51LRS	Is2t n<
Phase reversal protection	PREVPTOC1	46R	I2>>
Thermal overload protection for motors	MPTTR1	49M	3Ith>M
Motor differential protection	MPDIF1	87M	3dI>M
Circuit breaker failure protection, instance 1	CCBRBRF1	50BF	3I>/Io>BF(1)
Master trip, instance 1	TRPPTRC1	86/94-1	Master Trip(1)
Master trip, instance 2	TRPPTRC2	86/94-2	Master Trip (2)
Arc protection, instance 1	ARCSARC1	AFD-1	ARC (1)
Arc protection, instance 2	ARCSARC2	AFD-2	ARC (2)
Arc protection, instance 3	ARCSARC3	AFD-3	ARC (3)
RTD based thermal protection, instance 1	MAPGAPC1	38-1	MAP(1)
RTD based thermal protection, instance 2	MAPGAPC2	38-2	MAP(2)
RTD based thermal protection, instance 3	MAPGAPC3	38-3	MAP(3)
RTD based thermal protection, instance 4	MAPGAPC4	38-4	MAP(4)
RTD based thermal protection, instance 5	MAPGAPC5	38-5	MAP(5)
RTD based thermal protection, instance 6	MAPGAPC6	38-6	MAP(6)
RTD based thermal protection, instance 7	MAPGAPC7	38-7	MAP(7)
Control			
Circuit-breaker control, instance 1	CBXCBR1	52	I <-> O CB (1)
Emergency startup	ESMGAPC1	62EST	ESTART
Condition Monitoring			
Circuit-breaker condition monitoring, instance 1	SSCBR1	52CM	CBCM(1)
Trip circuit supervision, instance 1	TCSSCBR1	TCM-1	TCS(1)
Trip circuit supervision, instance 2	TCSSCBR2	TCM-2	TCS(2)
Current circuit supervision	CCRDIF1	CCM	MCS 3I
Fuse Failure supervision, instance 1	SEQRFUF1	60	FUSEF(1)
Runtime counter for machines and devices, instance 1	MDSOPT1	OPTM-1	OPTS(1)
Runtime counter for machines and devices, instance 2	MDSOPT2	OPTM-2	OPTS(2)
Measurement			
Three-phase current measurement, instance 1	CMMXU1	IA, IB, IC	3I

Function	IEC 61850	ANSI/C37.2	IEC60617
Three-phase current measurement, instance 2	CMMXU2	IA, IB, IC (2)	3I(B)
Sequence current measurement, instance 1	CSMSQI1	I1, I2, I0	I1, I2, I0
Sequence current measurement, instance 2	CSMSQI2	I1, I2, I0 (2)	I1, I2, I0(B)
Residual current measurement, instance 1	RESCMMXU1	IG	Io
Three-phase voltage measurement, instance 1	VMMXU1	VA, VB, VC	3U
Residual voltage measurement	RESVMMXU1	VG	Uo
Sequence voltage measurement, instance 1	VSMSQI1	V1, V2, V0	U1, U2, U0
Single-phase power and energy measurement, instance 1	SPEMMXU1	SP, SE	SP, SE
Three-phase power and energy measurement, instance 1	PEMMXU1	P, E	P, E
Load profile	LDPMSTA1	LoadProf	LoadProf
Frequency measurement	FMMXU1	f	f
Recorder			
Disturbance recorder	RDRE1	DFR	DR
Fault recorder	FLTMSTA1	FR	FR
Sequence event recorder	SER	SER	SER
Other Functions			
Minimum pulse timer (2 pcs), instance 1	TPGAPC1	TP-1	TP (1)
Minimum pulse timer (2 pcs), instance 2	TPGAPC2	TP-2	TP (2)
Minimum pulse timer (2 pcs), instance 3	TPGAPC3	TP-3	TP (3)
Minimum pulse timer (2 pcs), instance 4	TPGAPC4	TP-4	TP (4)
Pulse timer (8 pcs), instance 1	PTGAPC1	PT-1	PT (1)
Pulse timer (8 pcs), instance 2	PTGAPC2	PT-2	PT (2)
Time delay off (8 pcs), instance 1	TOFGAPC1	TOF-1	TOF (1)
Time delay off (8 pcs), instance 2	TOFGAPC2	TOF-2	TOF (2)
Time delay off (8 pcs), instance 3	TOFGAPC3	TOF-3	TOF (3)
Time delay off (8 pcs), instance 4	TOFGAPC4	TOF-4	TOF (4)
Time delay on (8 pcs), instance 1	TONGAPC1	TON -1	TON (1)
Time delay on (8 pcs), instance 2	TONGAPC2	TON -2	TON (2)
Time delay on (8 pcs), instance 3	TONGAPC3	TON -3	TON (3)
Time delay on (8 pcs), instance 4	TONGAPC4	TON -4	TON (4)
Set reset (8 pcs), instance 1	SRGAPC1	SR-1	SR (1)
Set reset (8 pcs), instance 2	SRGAPC2	SR-2	SR (2)
Set reset (8 pcs), instance 3	SRGAPC3	SR-3	SR (3)
Set reset (8 pcs), instance 4	SRGAPC4	SR-4	SR (4)
Move (8 pcs), instance 1	MVGAPC1	MV-1	MV (1)
Move (8 pcs), instance 2	MVGAPC2	MV-2	MV (2)
Move (8 pcs), instance 3	MVGAPC3	MV-3	MV (3)
Move (8 pcs), instance 4	MVGAPC4	MV-4	MV (4)
Move (8 pcs), instance 5	MVGAPC5	MV-5	MV (5)
Move (8 pcs), instance 6	MVGAPC6	MV-6	MV (6)

Function	IEC 61850	ANSI/C37.2	IEC60617
Move (8 pcs), instance 7	MVGAPC7	MV-7	MV (7)
Move (8 pcs), instance 8	MVGAPC8	MV-8	MV (8)
Generic control points, instance 1	SPCGGIO1	CNTRL-1	SPC(1)
Generic control points, instance 2	SPCGGIO2	CNTRL-2	SPC(2)
Generic control points, instance 3	SPCGGIO3	CNTRL-3	SPC(3)
Remote Generic control points, instance 1	SPCRGGIO1	RCNTRL-1	SPCR(1)
Local Generic control points, instance 1	SPCLGGIO1	LCNTRL-1	SPCL(1)
Generic Up-Down Counters, instance 1	UDFCNT1	CTR-1	CTR(1)
Generic Up-Down Counters, instance 2	UDFCNT2	CTR-2	CTR(2)
Generic Up-Down Counters, instance 3	UDFCNT3	CTR-3	CTR(3)
Generic Up-Down Counters, instance 4	UDFCNT4	CTR-4	CTR(4)
Generic Up-Down Counters, instance 5	UDFCNT5	CTR-5	CTR(5)
Generic Up-Down Counters, instance 6	UDFCNT6	CTR-6	CTR(6)
Generic Up-Down Counters, instance 7	UDFCNT7	CTR-7	CTR(7)
Generic Up-Down Counters, instance 8	UDFCNT8	CTR-8	CTR(8)
Generic Up-Down Counters, instance 9	UDFCNT9	CTR-9	CTR(9)
Generic Up-Down Counters, instance 10	UDFCNT10	CTR-10	CTR(10)
Generic Up-Down Counters, instance 11	UDFCNT11	CTR-11	CTR(11)
Generic Up-Down Counters, instance 12	UDFCNT12	CTR-12	CTR(12)
Programmable buttons (16 buttons), instance 1	FKEYGGIO1	FKEY	FKEY

Section 2 DNP3 data mappings

2.1 Overview

This document describes the DNP3 data points and structures available in REM620 Ver. 2.0 ANSI IED.

The point tables show all the available DNP3 data points in this IED. The data objects in the point tables are listed based on the IEC61850 logical node name. Also the default point indexes, class assignments and scaling configurations are shown. The DNP3 points can be freely inserted, removed, reorganized and reconfigured using PCM600.

This list represents the superset of DNP3 points. The actual set of available points is determined by the IED's ordercode. A “Yes” in a “No Events” column indicates that no events can be generated for that point regardless of class assignment. A “No” in “Enabled” column indicates that the point is not active. Inactive points can be made active through PCM600.

Since only integer values are supported in DNP analog inputs, to keep two decimals of a floating point analog input (i.e. current, voltage, power), the multiplicative scaling mode is selected with default scale factor 100. For integer analog input, (i.e., counter, multiple state status), the scale factor 0 hints no scaling is taken.

2.2 Binary/Analog Inputs

Table 2: LED Status (LEDGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		356	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 1	0	LD0.LEDGGIO1.ISCSO1.stVal
AI		357	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 2	0	LD0.LEDGGIO1.ISCSO2.stVal
AI		358	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 3	0	LD0.LEDGGIO1.ISCSO3.stVal
AI		359	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 4	0	LD0.LEDGGIO1.ISCSO4.stVal
AI		360	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 5	0	LD0.LEDGGIO1.ISCSO5.stVal
AI		361	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 6	0	LD0.LEDGGIO1.ISCSO6.stVal
AI		362	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 7	0	LD0.LEDGGIO1.ISCSO7.stVal
AI		363	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 8	0	LD0.LEDGGIO1.ISCSO8.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		364	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 9	0	LD0.LEDGGIO1.ISCSO9.stVal
AI		365	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 10	0	LD0.LEDGGIO1.ISCSO10.stVal
AI		366	Class 2 and 0	Yes	Programmable LEDs Status of programmable LED 11	0	LD0.LEDGGIO1.ISCSO11.stVal

Table 3: LED Condition monitoring (LEDPTRC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		520	Class 1 and 0	Yes	Global conditioning Trip general		LD0.LEDPTRC1.Op.general
BI		521	Class 1 and 0	Yes	Global conditioning Trip phsA		LD0.LEDPTRC1.Op.phsA
BI		522	Class 1 and 0	Yes	Global conditioning Trip phsB		LD0.LEDPTRC1.Op.phsB
BI		523	Class 1 and 0	Yes	Global conditioning Trip phsC		LD0.LEDPTRC1.Op.phsC

Table 4: General Device Information (LPHD1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI	Yes	335	Class 0	Yes	Physical device Number of composition changes	0	LD0.LPHD1.NumCmpChg.stVal
AI		336	Class 2 and 0	Yes	Physical device General state	0	LD0.LPHD1.PhyHealth.stVal
AI		337	Class 2 and 0	Yes	Physical device IED warning	0	LD0.LPHD1.PhyHealth1.stVal
AI		338	Class 2 and 0	Yes	Physical device IED internal fault	0	LD0.LPHD1.PhyHealth2.stVal

Table 5: General Device Information (LLN0)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		167	Class 1 and 0	Yes	Control LLN0 Local / Remote		CTRL.LLN0.Loc.stVal
BI		524	Class 1 and 0	Yes	Protection LLN0 Settings change		LD0.LLN0.SetChg.stVal
BI		525	Class 1 and 0	Yes	Protection LLN0 Settings reservation		LD0.LLN0.SetSeld.stVal
AI		315	Class 2 and 0	Yes	Control LLN0 LR state monitoring for PCM	0	CTRL.LLN0.LocRem.stVal
AI	Yes	334	Class 0	Yes	Protection LLN0 Phase rotation order	0	LD0.LLN0.PhRotSet.setVal

Table 6: DNP Setting Group (DNPGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1110	Class 0	Yes	DNP 3.0 Activate setting group 1		LD0.DNPGGIO1.ActSG1.stVal
BI	Yes	1111	Class 0	Yes	DNP 3.0 Activate setting group 2		LD0.DNPGGIO1.ActSG2.stVal
BI	Yes	1112	Class 0	Yes	DNP 3.0 Activate setting group 3		LD0.DNPGGIO1.ActSG3.stVal
BI	Yes	1113	Class 0	Yes	DNP 3.0 Activate setting group 4		LD0.DNPGGIO1.ActSG4.stVal
BI	Yes	1114	Class 0	Yes	DNP 3.0 Activate setting group 5		LD0.DNPGGIO1.ActSG5.stVal
BI	Yes	1115	Class 0	Yes	DNP 3.0 Activate setting group 6		LD0.DNPGGIO1.ActSG6.stVal

Table 7: 51P : Three-phase non-directional overcurrent protection low stage instance 1 (PHLPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	444	Class 0	Yes	51P Enable signal for current multiplier		LD0.PHLPTOC1.InEnaMult.stVal
BI		445	Class 1 and 0	Yes	51P Trip		LD0.PHLPTOC1.Op.general
BI		446	Class 1 and 0	Yes	51P Trip phsA		LD0.PHLPTOC1.Op.phsA
BI		447	Class 1 and 0	Yes	51P Trip phsB		LD0.PHLPTOC1.Op.phsB
BI		448	Class 1 and 0	Yes	51P Trip phsC		LD0.PHLPTOC1.Op.phsC

Table 8: 50P: Three-phase non-directional overcurrent protection high stage instance 1 (PHHPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	409	Class 0	Yes	50P Enable signal for current multiplier		LD0.PHHPTOC1.InEnaMult.stVal
BI		410	Class 1 and 0	Yes	50P Trip		LD0.PHHPTOC1.Op.general
BI		411	Class 1 and 0	Yes	50P Trip phsA		LD0.PHHPTOC1.Op.phsA
BI		412	Class 1 and 0	Yes	50P Trip phsB		LD0.PHHPTOC1.Op.phsB
BI		413	Class 1 and 0	Yes	50P Trip phsC		LD0.PHHPTOC1.Op.phsC

Table 9: 51G: Non-directional earth-fault protection low stage instance 1 (EFLPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	395	Class 0	Yes	51G Enable signal for current multiplier		LD0.EFLPTOC1.InEnaMult.stVal
BI		396	Class 1 and 0	Yes	51G Trip		LD0.EFLPTOC1.Op.general

Table 10: 50G: Non-directional earth-fault protection high stage instance 1 (EFHPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	381	Class 0	Yes	50G Enable signal for current multiplier		LD0.EFHPTOC1.InEnaMult.stVal
BI		382	Class 1 and 0	Yes	50G Trip		LD0.EFHPTOC1.Op.general

Table 11: 67/51N: Directional earth-fault protection low stage instance 1 (DEFLPTOC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	359	Class 0	Yes	67/51N Enable signal for current multiplier		LD0.DEFLPTOC2.InEnaMult.stVal
BI		360	Class 1 and 0	Yes	67/51N Trip		LD0.DEFLPTOC2.Op.general

Table 12: 67/51N: Directional earth-fault protection low stage instance 1 (DEFLRDIR2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	494	Class 0	Yes	67/51N Relay characteristic angle control		LD0.DEFLRDIR2.InRcaCtl.stVal

Table 13: 59G: Residual overvoltage protection instance 1 (ROVPTOV1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		484	Class 1 and 0	Yes	59G Trip		LD0.ROVPTOV1.Op.general

Table 14: 59N: Residual overvoltage protection instance 2 (ROVPTOV2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		485	Class 1 and 0	Yes	59N Trip		LD0.ROVPTOV2.Op.general

Table 15: 27: Three-phase undervoltage protection instance 1 (PHPTUV1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		639	Class 1 and 0	Yes	27 Trip		LD0.PHPTUV1.Op.general
BI		640	Class 1 and 0	Yes	27 Trip phsA		LD0.PHPTUV1.Op.phsA
BI		641	Class 1 and 0	Yes	27 Trip phsB		LD0.PHPTUV1.Op.phsB
BI		642	Class 1 and 0	Yes	27 Trip phsC		LD0.PHPTUV1.Op.phsC

Table 16: 59: Three-phase overvoltage protection instance 1 (PHPTOV1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		471	Class 1 and 0	Yes	59 Trip		LD0.PHPTOV1.Op.general
BI		472	Class 1 and 0	Yes	59 Trip phsA		LD0.PHPTOV1.Op.phsA
BI		473	Class 1 and 0	Yes	59 Trip phsB		LD0.PHPTOV1.Op.phsB
BI		474	Class 1 and 0	Yes	59 Trip phsC		LD0.PHPTOV1.Op.phsC

Table 17: 27PS: Positive-sequence undervoltage protection instance 1 (PSPTUV1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		649	Class 1 and 0	Yes	27PS Trip		LD0.PSPTUV1.Op.general

Table 18: 47: Negative-sequence overvoltage protection instance 1 (NSPTOV1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		487	Class 1 and 0	Yes	47 Trip		LD0.NSPTOV1.Op.general

Table 19: 81: Frequency protection instance 1 (FRPTRC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	510	Class 0	Yes	81 Trip		LD0.FRPTRC1.Op.general
AI	Yes	347	Class 0	Yes	81 Pickup duration	100	LD0.FRPTRC1.StrDur.mag.f

Table 20: 81: Frequency protection instance 1 (FRPTOF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		506	Class 1 and 0	Yes	81 Trip signal for overfrequency		LD0.FRPTOF1.Op.general
AI	Yes	343	Class 0	Yes	81 Pickup duration	100	LD0.FRPTOF1.StrDur.mag.f

Table 21: 81: Frequency protection instance 1 (FRPTUF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		514	Class 1 and 0	Yes	81 Trip signal for underfrequency		LD0.FRPTUF1.Op.general
AI	Yes	351	Class 0	Yes	81 Pickup duration	100	LD0.FRPTUF1.StrDur.mag.f

Table 22: 81: Frequency protection instance 1 (FRPFRC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		502	Class 1 and 0	Yes	81 Trip signal for frequency gradient		LD0.FRPFRC1.Op.general
AI	Yes	339	Class 0	Yes	81 Pickup duration	100	LD0.FRPFRC1.StrDur.mag.f

Table 23: 46M-1: Negative-sequence overcurrent protection for motors instance 1 (MNSPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		465	Class 1 and 0	Yes	46M-1 Trip		LD0.MNSPTOC1.Op.general
BI	Yes	466	Class 0	Yes	46M-1 Overheated machine reconnection blocking		LD0.MNSPTOC1.StrInh.stVal

Table 24: 46M-2: Negative-sequence overcurrent protection for motors instance 2 (MNSPTOC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		467	Class 1 and 0	Yes	46M-2 Trip		LD0.MNSPTOC2.Op.general
BI	Yes	468	Class 0	Yes	46M-2 Overheated machine reconnection blocking		LD0.MNSPTOC2.StrInh.stVal

Table 25: 37M-1: Loss of load supervision instance 1 (LOFLPTUC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		526	Class 1 and 0	Yes	37M-1 Trip		LD0.LOFLPTUC1.Op.general

Table 26: 37M-2: Loss of load supervision instance 2 (LOFLPTUC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		527	Class 1 and 0	Yes	37M-2 Trip		LD0.LOFLPTUC2.Op.general

Table 27: 51LR: Motor load jam protection (JAMPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		470	Class 1 and 0	Yes	51LR Trip		LD0.JAMPTOC1.Op.general
BI		1104	Class 1 and 0	Yes	51LR Trip phsA		LD0.JAMPTOC1.Op.phsA
BI		1105	Class 1 and 0	Yes	51LR Trip phsB		LD0.JAMPTOC1.Op.phsB
BI		1106	Class 1 and 0	Yes	51LR Trip phsC		LD0.JAMPTOC1.Op.phsC

Table 28: 66/51LRS : Motor start-up supervision (STTPMSS1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	778	Class 0	Yes	66/51LRS Blocks lock out condition for restart of motor		LD0.STTPMSS1.BlkLOStr.stVal
BI	Yes	779	Class 0	Yes	66/51LRS Enable emergency start to disable lock of start of motor		LD0.STTPMSS1.EnaEmgStr.stVal
BI		780	Class 1 and 0	Yes	66/51LRS Trip signal for thermal stress.		LD0.STTPMSS1.Op.general
BI		781	Class 1 and 0	Yes	66/51LRS Signal to show that motor startup is in progress		LD0.STTPMSS1.Str.general

Table 29: 66/51LRS : Motor start-up supervision (STTPMRI1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		776	Class 1 and 0	Yes	66/51LRS Trip signal for stalling protection.		LD0.STTPMRI1.Op.general
BI		777	Class 1 and 0	Yes	66/51LRS Lock out condition for restart of motor.		LD0.STTPMRI1.StrInh.stVal

Table 30: 46R: Phase reversal protection (PREVPTOC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		464	Class 1 and 0	Yes	46R Trip		LD0.PREVPTOC1.Op.general

Table 31: 49M: Thermal overload protection for motors (MPTTR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		594	Class 1 and 0	Yes	49M Thermal Alarm		LD0.MPTTR1.AlmThm.general
BI	Yes	595	Class 0	Yes	49M Signal for indicating the need for emergency start		LD0.MPTTR1.EnaEmgStr.stVal
BI		596	Class 1 and 0	Yes	49M Trip		LD0.MPTTR1.Op.general
BI		597	Class 1 and 0	Yes	49M Thermal overload indicator to inhibit restart		LD0.MPTTR1.StrInh.stVal
AI	Yes	369	Class 0	Yes	49M Estimated time to reset of block restart	0	LD0.MPTTR1.StrInhTms.stVal
AI	Yes	370	Class 0	Yes	49M Thermal level at the end of motor startup situation	100	LD0.MPTTR1.ThmLevEnd.mag.f
AI	Yes	371	Class 0	Yes	49M Thermal level at beginning of motor startup	100	LD0.MPTTR1.ThmLevSt.mag.f
AI		372	Class 2 and 0	Yes	49M The calculated temperature of the protected object relative to the trip level	100	LD0.MPTTR1.TmpRl.mag.f
AI	Yes	373	Class 0	Yes	49M The ambient temperature used in the calculation	100	LD0.MPTTR1.TmpUsed.mag.f

Table 32: 87M: Motor differential protection (MPDIF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	590	Class 0	Yes	87M Internal block status		LD0.MPDIF1.BlkInSt.general

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		591	Class 1 and 0	Yes	87M Trip		LD0.MPDIF1.Op.general
BI	Yes	592	Class 0	Yes	87M Trip from high set		LD0.MPDIF1.OpHiSet.general
BI	Yes	593	Class 0	Yes	87M Trip from low set		LD0.MPDIF1.OpLoSet.general

Table 33: 50BF: Circuit breaker failure protection instance 1 (CCBRBRF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	224	Class 0	Yes	50BF CB faulty and unable to trip		LD0.CCBRBRF1.InCBFlt.stVal
BI	Yes	225	Class 0	Yes	50BF CB in closed position		LD0.CCBRBRF1.InPosCls.stVal
BI	Yes	226	Class 0	Yes	50BF CBFP pickup command		LD0.CCBRBRF1.InStr.stVal
BI		227	Class 1 and 0	Yes	50BF Backup trip		LD0.CCBRBRF1.OpEx.general
BI		228	Class 1 and 0	Yes	50BF Retrip		LD0.CCBRBRF1.OpIn.general
BI		229	Class 1 and 0	Yes	50BF Delayed CB failure alarm		LD0.CCBRBRF1.Str.general

Table 34: 86/94-1: Master trip instance 1 (TRPPTRC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1033	Class 0	Yes	86/94-1 Circuit breaker lockout output (set until reset)		LD0.TRPPTRC1.ClsLO.stVal
BI	Yes	1034	Class 0	Yes	86/94-1 Input for resetting the circuit breaker lockout function		LD0.TRPPTRC1.LORs.stVal
BI		1035	Class 1 and 0	Yes	86/94-1 Trip		LD0.TRPPTRC1.Op.general
BI		1036	Class 1 and 0	Yes	86/94-1 General trip output signal		LD0.TRPPTRC1.Tr.general

Table 35: 86/94-1: Master trip instance 2 (TRPPTRC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1037	Class 0	Yes	86/94-2 Circuit breaker lockout output (set until reset)		LD0.TRPPTRC2.ClsLO.stVal
BI	Yes	1038	Class 0	Yes	86/94-2 Input for resetting the circuit breaker lockout function		LD0.TRPPTRC2.LORs.stVal
BI		1039	Class 1 and 0	Yes	86/94-2 Trip		LD0.TRPPTRC2.Op.general
BI		1040	Class 1 and 0	Yes	86/94-2 General trip output signal		LD0.TRPPTRC2.Tr.general

Table 36: AFD-1: Arc protection instance 1 (ARCSARC11)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		249	Class 1 and 0	Yes	AFD-1 Fault arc detected=light signal output		LD0.ARCSARC11.FADet.stVal
BI	Yes	250	Class 0	Yes	AFD-1 Remote Fault arc detected		LD0.ARCSARC11.InRemFA.stVal

Table 37: AFD-1: Arc protection instance 1 (ARCPTRC11)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	243	Class 0	Yes	AFD-1 Operation mode input		LD0.ARCPTRC11.InOpMod.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		244	Class 1 and 0	Yes	AFD-1 Trip		LD0.ARCPTRC11.Op.general

Table 38: AFD-2: Arc protection instance 2 (ARCSARC21)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		251	Class 1 and 0	Yes	AFD-2 Fault arc detected=light signal output		LD0.ARCSARC21.FADet.stVal
BI	Yes	252	Class 0	Yes	AFD-2 Remote Fault arc detected		LD0.ARCSARC21.InRemFA.stVal

Table 39: AFD-2: Arc protection instance 2 (ARCPTRC21)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	245	Class 0	Yes	AFD-2 Operation mode input		LD0.ARCPTRC21.InOpMod.stVal
BI		246	Class 1 and 0	Yes	AFD-2 Trip		LD0.ARCPTRC21.Op.general

Table 40: AFD-3: Arc protection instance 3 (ARCSARC31)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		253	Class 1 and 0	Yes	AFD-3 Fault arc detected=light signal output		LD0.ARCSARC31.FADet.stVal
BI	Yes	254	Class 0	Yes	AFD-3 Remote Fault arc detected		LD0.ARCSARC31.InRemFA.stVal

Table 41: AFD-3: Arc protection instance 3 (ARCPTRC31)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	247	Class 0	Yes	AFD-3 Operation mode input		LD0.ARCPTRC31.InOpMod.stVal
BI		248	Class 1 and 0	Yes	AFD-3 Trip		LD0.ARCPTRC31.Op.general

Table 42: 38-1: RTD based thermal protection instance 1 (MAPGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	791	Class 0	Yes	38-1 Enable pickup added		LD0.MAPGAPC1.InEnaAdd.stVal
BI		792	Class 1 and 0	Yes	38-1 Trip		LD0.MAPGAPC1.Op.general

Table 43: 38-2: RTD based thermal protection instance 2 (MAPGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	793	Class 0	Yes	38-2 Enable pickup added		LD0.MAPGAPC2.InEnaAdd.stVal
BI		794	Class 1 and 0	Yes	38-2 Trip		LD0.MAPGAPC2.Op.general

Table 44: 38-3: RTD based thermal protection instance 3 (MAPGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	795	Class 0	Yes	38-3 Enable pickup added		LD0.MAPGAPC3.InEnaAdd.stVal
BI		796	Class 1 and 0	Yes	38-3 Trip		LD0.MAPGAPC3.Op.general

Table 45: 38-4: RTD based thermal protection instance 4 (MAPGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	797	Class 0	Yes	38-4 Enable pickup added		LD0.MAPGAPC4.InEnaAdd.stVal
BI		798	Class 1 and 0	Yes	38-4 Trip		LD0.MAPGAPC4.Op.general

Table 46: 38-5: RTD based thermal protection instance 5 (MAPGAPC5)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	799	Class 0	Yes	38-5 Enable pickup added		LD0.MAPGAPC5.InEnaAdd.stVal
BI		800	Class 1 and 0	Yes	38-5 Trip		LD0.MAPGAPC5.Op.general

Table 47: 38-6: RTD based thermal protection instance 6 (MAPGAPC6)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	801	Class 0	Yes	38-6 Enable pickup added		LD0.MAPGAPC6.InEnaAdd.stVal
BI		802	Class 1 and 0	Yes	38-6 Trip		LD0.MAPGAPC6.Op.general

Table 48: 38-7: RTD based thermal protection instance 7 (MAPGAPC7)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	803	Class 0	Yes	38-7 Enable pickup added		LD0.MAPGAPC7.InEnaAdd.stVal
BI		804	Class 1 and 0	Yes	38-7 Trip		LD0.MAPGAPC7.Op.general

Table 49: 52: Circuit-breaker control instance 1 (CBCILO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		128	Class 1 and 0	Yes	52 Enables closing		CTRL.CBCILO1.EnaCls.stVal
BI		129	Class 1 and 0	Yes	52 Enables opening		CTRL.CBCILO1.EnaOpn.stVal
BI		130	Class 1 and 0	Yes	52 Discards ENA_OPEN and ENA_CLOSE interlocking when TRUE		CTRL.CBCILO1.ItlByPss.stVal

Table 50: 52: Circuit-breaker control instance 1 (CBCSWI1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	137	Class 0	Yes	52 Closing is enabled based on the input status		CTRL.CBCSWI1.ClsEna.stVal
BI	Yes	138	Class 0	Yes	52 Executes the command for close direction		CTRL.CBCSWI1.OpCls.general
BI	Yes	139	Class 0	Yes	52 Opening is enabled based on the input status		CTRL.CBCSWI1.OpnEna.stVal
BI	Yes	140	Class 0	Yes	52 Executes the command for open direction		CTRL.CBCSWI1.OpOpn.general
BI		141	Class 1 and 0	Yes	52 Object selected		CTRL.CBCSWI1.Pos.stSeld
BI	Yes	142	Class 0	Yes	52 Apparatus closed position		CTRL.CBCSWI1.PosCls.stVal
BI	Yes	143	Class 0	Yes	52 Apparatus position is ok		CTRL.CBCSWI1.PosOk.stVal
BI	Yes	144	Class 0	Yes	52 Apparatus open position		CTRL.CBCSWI1.PosOpn.stVal
AI		374	Class 2 and 0	Yes	52 Apparatus position indication	0	CTRL.CBCSWI1.Pos.stVal

Table 51: 52: Circuit-breaker control instance 1 (CBXCBR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		161	Class 1 and 0	Yes	52 Blocks closing		CTRL.CBXCBR1.BlkCls.stVal
BI		162	Class 1 and 0	Yes	52 Blocks opening		CTRL.CBXCBR1.BlkOpn.stVal

Table 52: 62EST: Emergergency startup (ESMGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	789	Class 0	Yes	62EST Emergency start input		LD0.ESMGAPC1.RqEmgStr.stVal
BI		790	Class 1 and 0	Yes	62EST Emergency start		LD0.ESMGAPC1.Str.general

Table 53: 52CM: Circuit-breaker condition monitoring instance 1 (SSCBR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		168	Class 1 and 0	Yes	52CM Accumulated currents power (Iyt) exceeded alarm limit		LD0.SSCBR1.APwrAlm.stVal
BI		169	Class 1 and 0	Yes	52CM Accumulated currents power (Iyt) exceeded lockout limit		LD0.SSCBR1.APwrLO.stVal
BI		170	Class 1 and 0	Yes	52CM Remaining life of CB exceeded alarm limit		LD0.SSCBR1.CBLifAlm.stVal
BI		171	Class 1 and 0	Yes	52CM CB close travel time exceeded set value		LD0.SSCBR1.ClsAlm.stVal
BI	Yes	172	Class 0	Yes	52CM Signal for closeposition of apparatus from I/O		LD0.SSCBR1.InPosCls.stVal
BI	Yes	173	Class 0	Yes	52CM Signal for open position of apparatus from I/O		LD0.SSCBR1.InPosOpn.stVal
BI	Yes	174	Class 0	Yes	52CM Binary pressure alarm input		LD0.SSCBR1.InPresAlm.stVal
BI	Yes	175	Class 0	Yes	52CM Binary pressure input for lockout indication		LD0.SSCBR1.InPresLO.stVal
BI	Yes	176	Class 0	Yes	52CM CB spring charged input		LD0.SSCBR1.InSprCha.stVal
BI	Yes	177	Class 0	Yes	52CM CB spring charging started input		LD0.SSCBR1.InSprChStr.stVal
BI		178	Class 1 and 0	Yes	52CM CB 'not tripped for long time' alarm		LD0.SSCBR1.LonTmAlm.stVal
BI		179	Class 1 and 0	Yes	52CM CB open travel time exceeded set value		LD0.SSCBR1.OpnAlm.stVal
BI		180	Class 1 and 0	Yes	52CM Number of CB operations exceeds alarm limit		LD0.SSCBR1.OpNumAlm.stVal
BI		181	Class 1 and 0	Yes	52CM Number of CB operations exceeds lockout limit		LD0.SSCBR1.OpNumLO.stVal
BI	Yes	182	Class 0	Yes	52CM CB is in closed position		LD0.SSCBR1.PosCls.stVal
BI	Yes	183	Class 0	Yes	52CM CB is in invalid position (not positively open or closed)		LD0.SSCBR1.PosIvd.stVal
BI	Yes	184	Class 0	Yes	52CM CB is in open position		LD0.SSCBR1.PosOpn.stVal
BI		185	Class 1 and 0	Yes	52CM Pressure below alarm level		LD0.SSCBR1.PresAlm.stVal
BI		186	Class 1 and 0	Yes	52CM Pressure below lockout level		LD0.SSCBR1.PresLO.stVal
BI	Yes	187	Class 0	Yes	52CM Reset accumulation energy		LD0.SSCBR1.RsAccAPwr.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	188	Class 0	Yes	52CM Reset input for CB remaining life and operation counter		LD0.SSCBR1.RsCBWear.stVal
BI	Yes	189	Class 0	Yes	52CM Reset input for the charging time of the CB spring		LD0.SSCBR1.RsSprChaTm.stVal
BI	Yes	190	Class 0	Yes	52CM Reset input for CB closing and opening travel times		LD0.SSCBR1.RsTrvTm.stVal
BI		191	Class 1 and 0	Yes	52CM Spring charging time has crossed the set value		LD0.SSCBR1.SprChaAlm.stVal
AI	Yes	181	Class 0	Yes	52CM Accumulated currents power (Iyt) phase A	100	LD0.SSCBR1.AccAPwrPhA.mag.f
AI	Yes	182	Class 0	Yes	52CM Accumulated currents power (Iyt) phase B	100	LD0.SSCBR1.AccAPwrPhB.mag.f
AI	Yes	183	Class 0	Yes	52CM Accumulated currents power (Iyt) phase C	100	LD0.SSCBR1.AccAPwrPhC.mag.f
AI	Yes	184	Class 0	Yes	52CM The number of days CB has been inactive	0	LD0.SSCBR1.InaTmdCnt.stVal
AI	Yes	185	Class 0	Yes	52CM CB Remaining life phase A	0	LD0.SSCBR1.RmnLifPhA.stVal
AI	Yes	186	Class 0	Yes	52CM CB Remaining life phase B	0	LD0.SSCBR1.RmnLifPhB.stVal
AI	Yes	187	Class 0	Yes	52CM CB Remaining life phase C	0	LD0.SSCBR1.RmnLifPhC.stVal
AI	Yes	188	Class 0	Yes	52CM Travel time of the CB during closing operation	100	LD0.SSCBR1.TmmsCls.mag.f
AI	Yes	189	Class 0	Yes	52CM Travel time of the CB during opening operation	100	LD0.SSCBR1.TmmsOpn.mag.f
AI	Yes	190	Class 0	Yes	52CM The charging time of the CB spring	100	LD0.SSCBR1.TmsSprCha.mag.f

Table 54: TCM-1: Trip circuit supervision instance 1 (TCSSCBR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		239	Class 1 and 0	Yes	TCM-1 Alarm output		LD0.TCSSCBR1.CirAlm.stVal

Table 55: TCM-2: Trip circuit supervision instance 2 (TCSSCBR2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		240	Class 1 and 0	Yes	TCM-2 Alarm output		LD0.TCSSCBR2.CirAlm.stVal

Table 56: CCM: Current circuit supervision (CCRDIF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		255	Class 1 and 0	Yes	CCM Alarm output		LD0.CCRDIF1.Alm.stVal
BI		256	Class 1 and 0	Yes	CCM Fail output		LD0.CCRDIF1.Op.general

Table 57: 60: Fuse failure supervision instance 1 (SEQRFUF1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		690	Class 1 and 0	Yes	60 General pickup of function		LD0.SEQRFUF1.Str.general
BI		691	Class 1 and 0	Yes	60 Three-phase pickup of function		LD0.SEQRFUF1.Str3Ph.general

Table 58: OPTM-1: Runtime counter for machines and devices instance 1 (MDSOPT1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		586	Class 1 and 0	Yes	OPTM-1 Alarm accumulated operation time exceeds Alarm value		LD0.MDSOPT1.OpTmAlm.stVal
BI		587	Class 1 and 0	Yes	OPTM-1 Warning accumulated operation time exceeds Warning value		LD0.MDSOPT1.OpTmWrn.stVal

Table 59: OPTM-2: Runtime counter for machines and devices instance 2 (MDSOPT2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		588	Class 1 and 0	Yes	OPTM-2 Alarm accumulated operation time exceeds Alarm value		LD0.MDSOPT2.OpTmAlm.stVal
BI		589	Class 1 and 0	Yes	OPTM-2 Warning accumulated operation time exceeds Warning value		LD0.MDSOPT2.OpTmWrn.stVal

Table 60: IA IB IC: Three-phase current measurement instance 1 (CMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		258	Class 1 and 0	Yes	IA IB IC High alarm		LD0.CMMXU1.HiAlm.stVal
BI		259	Class 1 and 0	Yes	IA IB IC High warning		LD0.CMMXU1.HiWrn.stVal
BI		260	Class 1 and 0	Yes	IA IB IC Low alarm		LD0.CMMXU1.LoAlm.stVal
BI		261	Class 1 and 0	Yes	IA IB IC Low warning		LD0.CMMXU1.LoWrn.stVal
AI		0	Class 2 and 0	Yes	IA IB IC IA Amplitude magnitude of instantaneous value	100	LD0.CMMXU1.A.phsA.instCVal.mag.f
AI		1	Class 2 and 0	Yes	IA IB IC IB Amplitude magnitude of instantaneous value	100	LD0.CMMXU1.A.phsB.instCVal.mag.f
AI		2	Class 2 and 0	Yes	IA IB IC IC Amplitude magnitude of instantaneous value	100	LD0.CMMXU1.A.phsC.instCVal.mag.f

Table 61: IA IB IC: Three-phase current measurement instance 1 (CMSTA1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI	Yes	9	Class 0	Yes	IA IB IC Demand value of IA current	100	LD0.CMSTA1.AvAmpsA.mag.f
AI	Yes	10	Class 0	Yes	IA IB IC Demand value of IB current	100	LD0.CMSTA1.AvAmpsB.mag.f
AI	Yes	11	Class 0	Yes	IA IB IC Demand value of IC current	100	LD0.CMSTA1.AvAmpsC.mag.f
AI	Yes	12	Class 0	Yes	IA IB IC Maximum demand for Phase A	100	LD0.CMSTA1.MaxAmpsA.mag.f
AI	Yes	13	Class 0	Yes	IA IB IC Maximum demand for Phase B	100	LD0.CMSTA1.MaxAmpsB.mag.f
AI	Yes	14	Class 0	Yes	IA IB IC Maximum demand for Phase C	100	LD0.CMSTA1.MaxAmpsC.mag.f

Table 62: IA IB IC(2): Three-phase current measurement instance 2 (CMMXU2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		262	Class 1 and 0	Yes	IA IB IC(2) High alarm		LD0.CMMXU2.HiAlm.stVal
BI		263	Class 1 and 0	Yes	IA IB IC(2) High warning		LD0.CMMXU2.HiWrn.stVal
BI		264	Class 1 and 0	Yes	IA IB IC(2) Low alarm		LD0.CMMXU2.LoAlm.stVal
BI		265	Class 1 and 0	Yes	IA IB IC(2) Low warning		LD0.CMMXU2.LoWrn.stVal
AI		3	Class 2 and 0	Yes	IA IB IC(2) IA Amplitude magnitude of instantaneous value	100	LD0.CMMXU2.A.phsA.instCVal.mag.f
AI		4	Class 2 and 0	Yes	IA IB IC(2) IB Amplitude magnitude of instantaneous value	100	LD0.CMMXU2.A.phsB.instCVal.mag.f
AI		5	Class 2 and 0	Yes	IA IB IC(2) IC Amplitude magnitude of instantaneous value	100	LD0.CMMXU2.A.phsC.instCVal.mag.f

Table 63: IA IB IC(2): Three-phase current measurement instance 2 (CMSTA2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI	Yes	15	Class 0	Yes	IA IB IC(2) Demand value of IA current	100	LD0.CMSTA2.AvAmpsA.mag.f
AI	Yes	16	Class 0	Yes	IA IB IC(2) Demand value of IB current	100	LD0.CMSTA2.AvAmpsB.mag.f
AI	Yes	17	Class 0	Yes	IA IB IC(2) Demand value of IC current	100	LD0.CMSTA2.AvAmpsC.mag.f
AI	Yes	18	Class 0	Yes	IA IB IC(2) Maximum demand for Phase A	100	LD0.CMSTA2.MaxAmpsA.mag.f
AI	Yes	19	Class 0	Yes	IA IB IC(2) Maximum demand for Phase B	100	LD0.CMSTA2.MaxAmpsB.mag.f
AI	Yes	20	Class 0	Yes	IA IB IC(2) Maximum demand for Phase C	100	LD0.CMSTA2.MaxAmpsC.mag.f

Table 64: I1 I2 I0: Sequence current measurement instance 1 (CSMSQI1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		27	Class 2 and 0	Yes	I1 I2 I0 Positive sequence current amplitude instantaneous value	100	LD0.CSMSQI1.SeqA.c1.instCVal.mag.f
AI		28	Class 2 and 0	Yes	I1 I2 I0 Negative sequence current amplitude instantaneous value	100	LD0.CSMSQI1.SeqA.c2.instCVal.mag.f
AI		29	Class 2 and 0	Yes	I1 I2 I0 Zero sequence current amplitude instantaneous value	100	LD0.CSMSQI1.SeqA.c3.instCVal.mag.f

Table 65: I1 I2 I0(2): Sequence current measurement instance 2 (CSMSQI2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		30	Class 2 and 0	Yes	I1 I2 I0(2) Positive sequence current amplitude instantaneous value	100	LD0.CSMSQI2.SeqA.c1.instCVal.mag.f

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		31	Class 2 and 0	Yes	I1 I2 I0(2) Negative sequence current amplitude instantaneous value	100	LD0.CSMSQI2.SeqA.c2.instCVal.mag.f
AI		32	Class 2 and 0	Yes	I1 I2 I0(2) Zero sequence current amplitude instantaneous value	100	LD0.CSMSQI2.SeqA.c3.instCVal.mag.f

Table 66: IG: Residual current measurement instance 1 (RESCMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		270	Class 1 and 0	Yes	IG High alarm		LD0.RESCMMXU1.HiAlm.stVal
BI		271	Class 1 and 0	Yes	IG High warning		LD0.RESCMMXU1.HiWrn.stVal
AI		36	Class 2 and 0	Yes	IG Ground current Amplitude magnitude of instantaneous value	100	LD0.RESCMMXU1.A.res.instCVal.mag.f

Table 67: VA VB VC: Three-phase voltage measurement instance 1 (VMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		274	Class 1 and 0	Yes	VA VB VC High alarm		LD0.VMMXU1.HiAlm.stVal
BI		275	Class 1 and 0	Yes	VA VB VC High warning		LD0.VMMXU1.HiWrn.stVal
BI		276	Class 1 and 0	Yes	VA VB VC Low alarm		LD0.VMMXU1.LoAlm.stVal
BI		277	Class 1 and 0	Yes	VA VB VC Low warning		LD0.VMMXU1.LoWrn.stVal
AI		48	Class 2 and 0	Yes	VA VB VC VA Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PhV.phsA.cVal.mag.f
AI		49	Class 2 and 0	Yes	VA VB VC VB Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PhV.phsB.cVal.mag.f
AI		50	Class 2 and 0	Yes	VA VB VC VC Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PhV.phsC.cVal.mag.f
AI		51	Class 2 and 0	Yes	VA VB VC VAB Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PPV.phsAB.instCVal.mag.f
AI		52	Class 2 and 0	Yes	VA VB VC VBC Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PPV.phsBC.instCVal.mag.f
AI		53	Class 2 and 0	Yes	VA VB VC VCA Amplitude magnitude of instantaneous value	100	LD0.VMMXU1.PPV.phsCA.instCVal.mag.f

Table 68: VG: Residual voltage measurement instance 1 (RESVMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		282	Class 1 and 0	Yes	VG High alarm		LD0.RESVMMXU1.HiAlm.stVal
BI		283	Class 1 and 0	Yes	VG High warning		LD0.RESVMMXU1.HiWrn.stVal
AI		46	Class 2 and 0	Yes	VG Ground voltage Amplitude magnitude of instantaneous value	100	LD0.RESVMMXU1.PhV.res.instCVal.mag.f

Table 69: V1 V2 V0: Sequence voltage measurement instance 1 (VSMSQI1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		60	Class 2 and 0	Yes	V1 V2 V0 Positive sequence voltage amplitude instantaneous value	100	LD0.VSMSQI1.SeqV.c1.instCVal.mag.f
AI		61	Class 2 and 0	Yes	V1 V2 V0 Negative sequence voltage amplitude instantaneous value	100	LD0.VSMSQI1.SeqV.c2.instCVal.mag.f
AI		62	Class 2 and 0	Yes	V1 V2 V0 Zero sequence voltage amplitude instantaneous value	100	LD0.VSMSQI1.SeqV.c3.instCVal.mag.f

Table 70: P E: Three-phase power and energy measurement instance 1 (PEMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		90	Class 2 and 0	Yes	P E Average Power factor	100	LD0.PEMMXU1.TotPF.instMag.f
AI		91	Class 2 and 0	Yes	P E Total Apparent Power	100	LD0.PEMMXU1.TotVA.instMag.f
AI		92	Class 2 and 0	Yes	P E Total Reactive Power	100	LD0.PEMMXU1.TotVAr.instMag.f
AI		93	Class 2 and 0	Yes	P E Active power magnitude of instantaneous value	100	LD0.PEMMXU1.TotW.instMag.f

Table 71: P E: Three-phase power and energy measurement instance 1 (PEMMTR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	610	Class 0	Yes	P E Reset of accumulated energy reading		LD0.PEMMTR1.SupDmdRs.stVal
AI	Yes	86	Class 0	Yes	P E Accumulated forward reactive energy value	0	LD0.PEMMTR1.DmdVArh.actVal
AI	Yes	87	Class 0	Yes	P E Accumulated forward active energy value	0	LD0.PEMMTR1.DmdWh.actVal
AI	Yes	88	Class 0	Yes	P E Accumulated reverse reactive energy value	0	LD0.PEMMTR1.SupVArh.actVal
AI	Yes	89	Class 0	Yes	P E Accumulated reverse active energy value	0	LD0.PEMMTR1.SupWh.actVal

Table 72: LoadProf: Load profile instance 1 (LDPMSTA1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		518	Class 1 and 0	Yes	LoadProf Recording memory alarm status		LD0.LDPMSTA1.MemAlm.stVal
BI		519	Class 1 and 0	Yes	LoadProf Recording memory warning status		LD0.LDPMSTA1.MemWrn.stVal
AI	Yes	355	Class 0	Yes	LoadProf How much recording memory is currently used	0	LD0.LDPMSTA1.MemUsed.stVal

Table 73: f: Frequency measurement instance 1 (FMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		84	Class 2 and 0	Yes	f Frequency instantaneous value	100	LD0.FMMXU1.Hz.instMag.f

Table 74: SP SE: Single-phase power and energy measurement instance 1 (SPEMMXU1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		110	Class 2 and 0	Yes	SP SE Power factor magnitude of reported value Phase A	100	LD0.SPEMMXU1.PF.phsA.cVal.mag.f
AI		111	Class 2 and 0	Yes	SP SE Power factor magnitude of reported value Phase B	100	LD0.SPEMMXU1.PF.phsB.cVal.mag.f
AI		112	Class 2 and 0	Yes	SP SE Power factor magnitude of reported value Phase C	100	LD0.SPEMMXU1.PF.phsC.cVal.mag.f
AI		113	Class 2 and 0	Yes	SP SE Apparent power magnitude of reported value Phase A	100	LD0.SPEMMXU1.VA.phsA.cVal.mag.f
AI		114	Class 2 and 0	Yes	SP SE Apparent power magnitude of reported value Phase B	100	LD0.SPEMMXU1.VA.phsB.cVal.mag.f
AI		115	Class 2 and 0	Yes	SP SE Apparent power magnitude of reported value Phase C	100	LD0.SPEMMXU1.VA.phsC.cVal.mag.f
AI		116	Class 2 and 0	Yes	SP SE Reactive power magnitude of reported value Phase A	100	LD0.SPEMMXU1.VAr.phsA.cVal.mag.f
AI		117	Class 2 and 0	Yes	SP SE Reactive power magnitude of reported value Phase B	100	LD0.SPEMMXU1.VAr.phsB.cVal.mag.f
AI		118	Class 2 and 0	Yes	SP SE Reactive power magnitude of reported value Phase C	100	LD0.SPEMMXU1.VAr.phsC.cVal.mag.f
AI		119	Class 2 and 0	Yes	SP SE Active power magnitude of reported value Phase A	100	LD0.SPEMMXU1.W.phsA.cVal.mag.f
AI		120	Class 2 and 0	Yes	SP SE Active power magnitude of reported value Phase B	100	LD0.SPEMMXU1.W.phsB.cVal.mag.f
AI		121	Class 2 and 0	Yes	SP SE Active power magnitude of reported value Phase C	100	LD0.SPEMMXU1.W.phsC.cVal.mag.f

Table 75: SP SE: Single-phase power and energy measurement instance 1 (SPEMMTR1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	774	Class 0	Yes	SP SE Reset of accumulated energy reading		LD0.SPEMMTR1.SupDmdRs.stVal
AI	Yes	98	Class 0	Yes	SP SE Accumulated forward reactive energy value Phase A	0	LD0.SPEMMTR1.DmdVArhA.actVal
AI	Yes	99	Class 0	Yes	SP SE Accumulated forward reactive energy value Phase B	0	LD0.SPEMMTR1.DmdVArhB.actVal
AI	Yes	100	Class 0	Yes	SP SE Accumulated forward reactive energy value Phase C	0	LD0.SPEMMTR1.DmdVArhC.actVal
AI	Yes	101	Class 0	Yes	SP SE Accumulated forward active energy value Phase A	0	LD0.SPEMMTR1.DmdWhA.actVal
AI	Yes	102	Class 0	Yes	SP SE Accumulated forward active energy value Phase B	0	LD0.SPEMMTR1.DmdWhB.actVal
AI	Yes	103	Class 0	Yes	SP SE Accumulated forward active energy value Phase C	0	LD0.SPEMMTR1.DmdWhC.actVal
AI	Yes	104	Class 0	Yes	SP SE Accumulated reverse reactive energy value Phase A	0	LD0.SPEMMTR1.SupVArhA.actVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI	Yes	105	Class 0	Yes	SP SE Accumulated reverse reactive energy value Phase B	0	LD0.SPEMMTR1.SupVArhB.actVal
AI	Yes	106	Class 0	Yes	SP SE Accumulated reverse reactive energy value Phase C	0	LD0.SPEMMTR1.SupVArhC.actVal
AI	Yes	107	Class 0	Yes	SP SE Accumulated reverse active energy value Phase A	0	LD0.SPEMMTR1.SupWhA.actVal
AI	Yes	108	Class 0	Yes	SP SE Accumulated reverse active energy value Phase B	0	LD0.SPEMMTR1.SupWhB.actVal
AI	Yes	109	Class 0	Yes	SP SE Accumulated reverse active energy value Phase C	0	LD0.SPEMMTR1.SupWhC.actVal

Table 76: TP-1: Minimum pulse timer (2 pcs) instance 1 (TPGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1013	Class 0	Yes	TP-1 Output 2 status		LD0.TPGAPC1.Op.general
BI	Yes	1014	Class 0	Yes	TP-1 Output 1 status		LD0.TPGAPC1.Str.general

Table 77: TP-2: Minimum pulse timer (2 pcs) instance 2 (TPGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1015	Class 0	Yes	TP-2 Output 2 status		LD0.TPGAPC2.Op.general
BI	Yes	1016	Class 0	Yes	TP-2 Output 1 status		LD0.TPGAPC2.Str.general

Table 78: TP-3: Minimum pulse timer (2 pcs) instance 3 (TPGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1017	Class 0	Yes	TP-3 Output 2 status		LD0.TPGAPC3.Op.general
BI	Yes	1018	Class 0	Yes	TP-3 Output 1 status		LD0.TPGAPC3.Str.general

Table 79: TP-4: Minimum pulse timer (2 pcs) instance 4 (TPGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1019	Class 0	Yes	TP-4 Output 2 status		LD0.TPGAPC4.Op.general
BI	Yes	1020	Class 0	Yes	TP-4 Output 1 status		LD0.TPGAPC4.Str.general

Table 80: PT-1: Pulse timer (8 pcs) instance 1 (PTGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	837	Class 0	Yes	PT-1 Input 1 status		LD0.PTGAPC1.In1.stVal
BI	Yes	838	Class 0	Yes	PT-1 Input 2 status		LD0.PTGAPC1.In2.stVal
BI	Yes	839	Class 0	Yes	PT-1 Input 3 status		LD0.PTGAPC1.In3.stVal
BI	Yes	840	Class 0	Yes	PT-1 Input 4 status		LD0.PTGAPC1.In4.stVal
BI	Yes	841	Class 0	Yes	PT-1 Input 5 status		LD0.PTGAPC1.In5.stVal
BI	Yes	842	Class 0	Yes	PT-1 Input 6 status		LD0.PTGAPC1.In6.stVal
BI	Yes	843	Class 0	Yes	PT-1 Input 7 status		LD0.PTGAPC1.In7.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	844	Class 0	Yes	PT-1 Input 8 status		LD0.PTGAPC1.In8.stVal
BI	Yes	845	Class 0	Yes	PT-1 Output 1 status		LD0.PTGAPC1.Q1.stVal
BI	Yes	846	Class 0	Yes	PT-1 Output 2 status		LD0.PTGAPC1.Q2.stVal
BI	Yes	847	Class 0	Yes	PT-1 Output 3 status		LD0.PTGAPC1.Q3.stVal
BI	Yes	848	Class 0	Yes	PT-1 Output 4 status		LD0.PTGAPC1.Q4.stVal
BI	Yes	849	Class 0	Yes	PT-1 Output 5 status		LD0.PTGAPC1.Q5.stVal
BI	Yes	850	Class 0	Yes	PT-1 Output 6 status		LD0.PTGAPC1.Q6.stVal
BI	Yes	851	Class 0	Yes	PT-1 Output 7 status		LD0.PTGAPC1.Q7.stVal
BI	Yes	852	Class 0	Yes	PT-1 Output 8 status		LD0.PTGAPC1.Q8.stVal

Table 81: PT-2: Pulse timer (8 pcs) instance 2 (PTGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	853	Class 0	Yes	PT-2 Input 1 status		LD0.PTGAPC2.In1.stVal
BI	Yes	854	Class 0	Yes	PT-2 Input 2 status		LD0.PTGAPC2.In2.stVal
BI	Yes	855	Class 0	Yes	PT-2 Input 3 status		LD0.PTGAPC2.In3.stVal
BI	Yes	856	Class 0	Yes	PT-2 Input 4 status		LD0.PTGAPC2.In4.stVal
BI	Yes	857	Class 0	Yes	PT-2 Input 5 status		LD0.PTGAPC2.In5.stVal
BI	Yes	858	Class 0	Yes	PT-2 Input 6 status		LD0.PTGAPC2.In6.stVal
BI	Yes	859	Class 0	Yes	PT-2 Input 7 status		LD0.PTGAPC2.In7.stVal
BI	Yes	860	Class 0	Yes	PT-2 Input 8 status		LD0.PTGAPC2.In8.stVal
BI	Yes	861	Class 0	Yes	PT-2 Output 1 status		LD0.PTGAPC2.Q1.stVal
BI	Yes	862	Class 0	Yes	PT-2 Output 2 status		LD0.PTGAPC2.Q2.stVal
BI	Yes	863	Class 0	Yes	PT-2 Output 3 status		LD0.PTGAPC2.Q3.stVal
BI	Yes	864	Class 0	Yes	PT-2 Output 4 status		LD0.PTGAPC2.Q4.stVal
BI	Yes	865	Class 0	Yes	PT-2 Output 5 status		LD0.PTGAPC2.Q5.stVal
BI	Yes	866	Class 0	Yes	PT-2 Output 6 status		LD0.PTGAPC2.Q6.stVal
BI	Yes	867	Class 0	Yes	PT-2 Output 7 status		LD0.PTGAPC2.Q7.stVal
BI	Yes	868	Class 0	Yes	PT-2 Output 8 status		LD0.PTGAPC2.Q8.stVal

Table 82: TOF-1: Time delay off (8 pcs) instance 1 (TOFGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	917	Class 0	Yes	TOF-1 Input 1 status		LD0.TOFGAPC1.In1.stVal
BI	Yes	918	Class 0	Yes	TOF-1 Input 2 status		LD0.TOFGAPC1.In2.stVal
BI	Yes	919	Class 0	Yes	TOF-1 Input 3 status		LD0.TOFGAPC1.In3.stVal
BI	Yes	920	Class 0	Yes	TOF-1 Input 4 status		LD0.TOFGAPC1.In4.stVal
BI	Yes	921	Class 0	Yes	TOF-1 Input 5 status		LD0.TOFGAPC1.In5.stVal
BI	Yes	922	Class 0	Yes	TOF-1 Input 6 status		LD0.TOFGAPC1.In6.stVal
BI	Yes	923	Class 0	Yes	TOF-1 Input 7 status		LD0.TOFGAPC1.In7.stVal
BI	Yes	924	Class 0	Yes	TOF-1 Input 8 status		LD0.TOFGAPC1.In8.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	925	Class 0	Yes	TOF-1 Output 1 status		LD0.TOFGAPC1.Q1.stVal
BI	Yes	926	Class 0	Yes	TOF-1 Output 2 status		LD0.TOFGAPC1.Q2.stVal
BI	Yes	927	Class 0	Yes	TOF-1 Output 3 status		LD0.TOFGAPC1.Q3.stVal
BI	Yes	928	Class 0	Yes	TOF-1 Output 4 status		LD0.TOFGAPC1.Q4.stVal
BI	Yes	929	Class 0	Yes	TOF-1 Output 5 status		LD0.TOFGAPC1.Q5.stVal
BI	Yes	930	Class 0	Yes	TOF-1 Output 6 status		LD0.TOFGAPC1.Q6.stVal
BI	Yes	931	Class 0	Yes	TOF-1 Output 7 status		LD0.TOFGAPC1.Q7.stVal
BI	Yes	932	Class 0	Yes	TOF-1 Output 8 status		LD0.TOFGAPC1.Q8.stVal

Table 83: TOF-2: Time delay off (8 pcs) instance 2 (TOFGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	933	Class 0	Yes	TOF-2 Input 1 status		LD0.TOFGAPC2.In1.stVal
BI	Yes	934	Class 0	Yes	TOF-2 Input 2 status		LD0.TOFGAPC2.In2.stVal
BI	Yes	935	Class 0	Yes	TOF-2 Input 3 status		LD0.TOFGAPC2.In3.stVal
BI	Yes	936	Class 0	Yes	TOF-2 Input 4 status		LD0.TOFGAPC2.In4.stVal
BI	Yes	937	Class 0	Yes	TOF-2 Input 5 status		LD0.TOFGAPC2.In5.stVal
BI	Yes	938	Class 0	Yes	TOF-2 Input 6 status		LD0.TOFGAPC2.In6.stVal
BI	Yes	939	Class 0	Yes	TOF-2 Input 7 status		LD0.TOFGAPC2.In7.stVal
BI	Yes	940	Class 0	Yes	TOF-2 Input 8 status		LD0.TOFGAPC2.In8.stVal
BI	Yes	941	Class 0	Yes	TOF-2 Output 1 status		LD0.TOFGAPC2.Q1.stVal
BI	Yes	942	Class 0	Yes	TOF-2 Output 2 status		LD0.TOFGAPC2.Q2.stVal
BI	Yes	943	Class 0	Yes	TOF-2 Output 3 status		LD0.TOFGAPC2.Q3.stVal
BI	Yes	944	Class 0	Yes	TOF-2 Output 4 status		LD0.TOFGAPC2.Q4.stVal
BI	Yes	945	Class 0	Yes	TOF-2 Output 5 status		LD0.TOFGAPC2.Q5.stVal
BI	Yes	946	Class 0	Yes	TOF-2 Output 6 status		LD0.TOFGAPC2.Q6.stVal
BI	Yes	947	Class 0	Yes	TOF-2 Output 7 status		LD0.TOFGAPC2.Q7.stVal
BI	Yes	948	Class 0	Yes	TOF-2 Output 8 status		LD0.TOFGAPC2.Q8.stVal

Table 84: TOF-3: Time delay off (8 pcs) instance 3 (TOFGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	949	Class 0	Yes	TOF-3 Output 1 status		LD0.TOFGAPC3.Q1.stVal
BI	Yes	950	Class 0	Yes	TOF-3 Output 2 status		LD0.TOFGAPC3.Q2.stVal
BI	Yes	951	Class 0	Yes	TOF-3 Output 3 status		LD0.TOFGAPC3.Q3.stVal
BI	Yes	952	Class 0	Yes	TOF-3 Output 4 status		LD0.TOFGAPC3.Q4.stVal
BI	Yes	953	Class 0	Yes	TOF-3 Output 5 status		LD0.TOFGAPC3.Q5.stVal
BI	Yes	954	Class 0	Yes	TOF-3 Output 6 status		LD0.TOFGAPC3.Q6.stVal
BI	Yes	955	Class 0	Yes	TOF-3 Output 7 status		LD0.TOFGAPC3.Q7.stVal
BI	Yes	956	Class 0	Yes	TOF-3 Output 8 status		LD0.TOFGAPC3.Q8.stVal

Table 85: TOF-4: Time delay off (8 pcs) instance 4 (TOFGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	957	Class 0	Yes	TOF-4 Output 1 status		LD0.TOFGAPC4.Q1.stVal
BI	Yes	958	Class 0	Yes	TOF-4 Output 2 status		LD0.TOFGAPC4.Q2.stVal
BI	Yes	959	Class 0	Yes	TOF-4 Output 3 status		LD0.TOFGAPC4.Q3.stVal
BI	Yes	960	Class 0	Yes	TOF-4 Output 4 status		LD0.TOFGAPC4.Q4.stVal
BI	Yes	961	Class 0	Yes	TOF-4 Output 5 status		LD0.TOFGAPC4.Q5.stVal
BI	Yes	962	Class 0	Yes	TOF-4 Output 6 status		LD0.TOFGAPC4.Q6.stVal
BI	Yes	963	Class 0	Yes	TOF-4 Output 7 status		LD0.TOFGAPC4.Q7.stVal
BI	Yes	964	Class 0	Yes	TOF-4 Output 8 status		LD0.TOFGAPC4.Q8.stVal

Table 86: TON-1: Time delay on (8 pcs) instance 1 (TONGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	965	Class 0	Yes	TON -1 Input 1		LD0.TONGAPC1.In1.stVal
BI	Yes	966	Class 0	Yes	TON -1 Input 2		LD0.TONGAPC1.In2.stVal
BI	Yes	967	Class 0	Yes	TON -1 Input 3		LD0.TONGAPC1.In3.stVal
BI	Yes	968	Class 0	Yes	TON -1 Input 4		LD0.TONGAPC1.In4.stVal
BI	Yes	969	Class 0	Yes	TON -1 Input 5		LD0.TONGAPC1.In5.stVal
BI	Yes	970	Class 0	Yes	TON -1 Input 6		LD0.TONGAPC1.In6.stVal
BI	Yes	971	Class 0	Yes	TON -1 Input 7		LD0.TONGAPC1.In7.stVal
BI	Yes	972	Class 0	Yes	TON -1 Input 8		LD0.TONGAPC1.In8.stVal
BI	Yes	973	Class 0	Yes	TON -1 Output 1		LD0.TONGAPC1.Q1.stVal
BI	Yes	974	Class 0	Yes	TON -1 Output 2		LD0.TONGAPC1.Q2.stVal
BI	Yes	975	Class 0	Yes	TON -1 Output 3		LD0.TONGAPC1.Q3.stVal
BI	Yes	976	Class 0	Yes	TON -1 Output 4		LD0.TONGAPC1.Q4.stVal
BI	Yes	977	Class 0	Yes	TON -1 Output 5		LD0.TONGAPC1.Q5.stVal
BI	Yes	978	Class 0	Yes	TON -1 Output 6		LD0.TONGAPC1.Q6.stVal
BI	Yes	979	Class 0	Yes	TON -1 Output 7		LD0.TONGAPC1.Q7.stVal
BI	Yes	980	Class 0	Yes	TON -1 Output 8		LD0.TONGAPC1.Q8.stVal

Table 87: TON-2: Time delay on (8 pcs) instance 2 (TONGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	981	Class 0	Yes	TON -2 Input 1		LD0.TONGAPC2.In1.stVal
BI	Yes	982	Class 0	Yes	TON -2 Input 2		LD0.TONGAPC2.In2.stVal
BI	Yes	983	Class 0	Yes	TON -2 Input 3		LD0.TONGAPC2.In3.stVal
BI	Yes	984	Class 0	Yes	TON -2 Input 4		LD0.TONGAPC2.In4.stVal
BI	Yes	985	Class 0	Yes	TON -2 Input 5		LD0.TONGAPC2.In5.stVal
BI	Yes	986	Class 0	Yes	TON -2 Input 6		LD0.TONGAPC2.In6.stVal
BI	Yes	987	Class 0	Yes	TON -2 Input 7		LD0.TONGAPC2.In7.stVal
BI	Yes	988	Class 0	Yes	TON -2 Input 8		LD0.TONGAPC2.In8.stVal
BI	Yes	989	Class 0	Yes	TON -2 Output 1		LD0.TONGAPC2.Q1.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	990	Class 0	Yes	TON -2 Output 2		LD0.TONGAPC2.Q2.stVal
BI	Yes	991	Class 0	Yes	TON -2 Output 3		LD0.TONGAPC2.Q3.stVal
BI	Yes	992	Class 0	Yes	TON -2 Output 4		LD0.TONGAPC2.Q4.stVal
BI	Yes	993	Class 0	Yes	TON -2 Output 5		LD0.TONGAPC2.Q5.stVal
BI	Yes	994	Class 0	Yes	TON -2 Output 6		LD0.TONGAPC2.Q6.stVal
BI	Yes	995	Class 0	Yes	TON -2 Output 7		LD0.TONGAPC2.Q7.stVal
BI	Yes	996	Class 0	Yes	TON -2 Output 8		LD0.TONGAPC2.Q8.stVal

Table 88: TOF-3: Time delay on (8 pcs) instance 3 (TONGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	997	Class 0	Yes	TON -3 Output 1		LD0.TONGAPC3.Q1.stVal
BI	Yes	998	Class 0	Yes	TON -3 Output 2		LD0.TONGAPC3.Q2.stVal
BI	Yes	999	Class 0	Yes	TON -3 Output 3		LD0.TONGAPC3.Q3.stVal
BI	Yes	1000	Class 0	Yes	TON -3 Output 4		LD0.TONGAPC3.Q4.stVal
BI	Yes	1001	Class 0	Yes	TON -3 Output 5		LD0.TONGAPC3.Q5.stVal
BI	Yes	1002	Class 0	Yes	TON -3 Output 6		LD0.TONGAPC3.Q6.stVal
BI	Yes	1003	Class 0	Yes	TON -3 Output 7		LD0.TONGAPC3.Q7.stVal
BI	Yes	1004	Class 0	Yes	TON -3 Output 8		LD0.TONGAPC3.Q8.stVal

Table 89: TON-4: Time delay on (8 pcs) instance 4 (TONGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1005	Class 0	Yes	TON -4 Output 1		LD0.TONGAPC4.Q1.stVal
BI	Yes	1006	Class 0	Yes	TON -4 Output 2		LD0.TONGAPC4.Q2.stVal
BI	Yes	1007	Class 0	Yes	TON -4 Output 3		LD0.TONGAPC4.Q3.stVal
BI	Yes	1008	Class 0	Yes	TON -4 Output 4		LD0.TONGAPC4.Q4.stVal
BI	Yes	1009	Class 0	Yes	TON -4 Output 5		LD0.TONGAPC4.Q5.stVal
BI	Yes	1010	Class 0	Yes	TON -4 Output 6		LD0.TONGAPC4.Q6.stVal
BI	Yes	1011	Class 0	Yes	TON -4 Output 7		LD0.TONGAPC4.Q7.stVal
BI	Yes	1012	Class 0	Yes	TON -4 Output 8		LD0.TONGAPC4.Q8.stVal

Table 90: SR-1: Set reset (8 pcs) instance 1 (SRGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	869	Class 0	Yes	SR-1 Q1 status		LD0.SRGAPC1.Q1.stVal
BI	Yes	870	Class 0	Yes	SR-1 Q2 status		LD0.SRGAPC1.Q2.stVal
BI	Yes	871	Class 0	Yes	SR-1 Q3 status		LD0.SRGAPC1.Q3.stVal
BI	Yes	872	Class 0	Yes	SR-1 Q4 status		LD0.SRGAPC1.Q4.stVal
BI	Yes	873	Class 0	Yes	SR-1 Q5 status		LD0.SRGAPC1.Q5.stVal
BI	Yes	874	Class 0	Yes	SR-1 Q6 status		LD0.SRGAPC1.Q6.stVal
BI	Yes	875	Class 0	Yes	SR-1 Q7 status		LD0.SRGAPC1.Q7.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	876	Class 0	Yes	SR-1 Q8 status		LD0.SRGAPC1.Q8.stVal
BI	Yes	877	Class 0	Yes	SR-1 Set Q1 output when set		LD0.SRGAPC1.Set1.stVal
BI	Yes	878	Class 0	Yes	SR-1 Set Q2 output when set		LD0.SRGAPC1.Set2.stVal
BI	Yes	879	Class 0	Yes	SR-1 Set Q3 output when set		LD0.SRGAPC1.Set3.stVal
BI	Yes	880	Class 0	Yes	SR-1 Set Q4 output when set		LD0.SRGAPC1.Set4.stVal
BI	Yes	881	Class 0	Yes	SR-1 Set Q5 output when set		LD0.SRGAPC1.Set5.stVal
BI	Yes	882	Class 0	Yes	SR-1 Set Q6 output when set		LD0.SRGAPC1.Set6.stVal
BI	Yes	883	Class 0	Yes	SR-1 Set Q7 output when set		LD0.SRGAPC1.Set7.stVal
BI	Yes	884	Class 0	Yes	SR-1 Set Q8 output when set		LD0.SRGAPC1.Set8.stVal

Table 91: SR-2: Set reset (8 pcs) instance 2 (SRGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	885	Class 0	Yes	SR-2 Q1 status		LD0.SRGAPC2.Q1.stVal
BI	Yes	886	Class 0	Yes	SR-2 Q2 status		LD0.SRGAPC2.Q2.stVal
BI	Yes	887	Class 0	Yes	SR-2 Q3 status		LD0.SRGAPC2.Q3.stVal
BI	Yes	888	Class 0	Yes	SR-2 Q4 status		LD0.SRGAPC2.Q4.stVal
BI	Yes	889	Class 0	Yes	SR-2 Q5 status		LD0.SRGAPC2.Q5.stVal
BI	Yes	890	Class 0	Yes	SR-2 Q6 status		LD0.SRGAPC2.Q6.stVal
BI	Yes	891	Class 0	Yes	SR-2 Q7 status		LD0.SRGAPC2.Q7.stVal
BI	Yes	892	Class 0	Yes	SR-2 Q8 status		LD0.SRGAPC2.Q8.stVal
BI	Yes	893	Class 0	Yes	SR-2 Set Q1 output when set		LD0.SRGAPC2.Set1.stVal
BI	Yes	894	Class 0	Yes	SR-2 Set Q2 output when set		LD0.SRGAPC2.Set2.stVal
BI	Yes	895	Class 0	Yes	SR-2 Set Q3 output when set		LD0.SRGAPC2.Set3.stVal
BI	Yes	896	Class 0	Yes	SR-2 Set Q4 output when set		LD0.SRGAPC2.Set4.stVal
BI	Yes	897	Class 0	Yes	SR-2 Set Q5 output when set		LD0.SRGAPC2.Set5.stVal
BI	Yes	898	Class 0	Yes	SR-2 Set Q6 output when set		LD0.SRGAPC2.Set6.stVal
BI	Yes	899	Class 0	Yes	SR-2 Set Q7 output when set		LD0.SRGAPC2.Set7.stVal
BI	Yes	900	Class 0	Yes	SR-2 Set Q8 output when set		LD0.SRGAPC2.Set8.stVal

Table 92: SR-3: Set reset (8 pcs) instance 3 (SRGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	901	Class 0	Yes	SR-3 Q1 status		LD0.SRGAPC3.Q1.stVal
BI	Yes	902	Class 0	Yes	SR-3 Q2 status		LD0.SRGAPC3.Q2.stVal
BI	Yes	903	Class 0	Yes	SR-3 Q3 status		LD0.SRGAPC3.Q3.stVal
BI	Yes	904	Class 0	Yes	SR-3 Q4 status		LD0.SRGAPC3.Q4.stVal
BI	Yes	905	Class 0	Yes	SR-3 Q5 status		LD0.SRGAPC3.Q5.stVal
BI	Yes	906	Class 0	Yes	SR-3 Q6 status		LD0.SRGAPC3.Q6.stVal
BI	Yes	907	Class 0	Yes	SR-3 Q7 status		LD0.SRGAPC3.Q7.stVal
BI	Yes	908	Class 0	Yes	SR-3 Q8 status		LD0.SRGAPC3.Q8.stVal

Table 93: SR-4: Set reset (8 pcs) instance 4 (SRGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	909	Class 0	Yes	SR-4 Q1 status		LD0.SRGAPC4.Q1.stVal
BI	Yes	910	Class 0	Yes	SR-4 Q2 status		LD0.SRGAPC4.Q2.stVal
BI	Yes	911	Class 0	Yes	SR-4 Q3 status		LD0.SRGAPC4.Q3.stVal
BI	Yes	912	Class 0	Yes	SR-4 Q4 status		LD0.SRGAPC4.Q4.stVal
BI	Yes	913	Class 0	Yes	SR-4 Q5 status		LD0.SRGAPC4.Q5.stVal
BI	Yes	914	Class 0	Yes	SR-4 Q6 status		LD0.SRGAPC4.Q6.stVal
BI	Yes	915	Class 0	Yes	SR-4 Q7 status		LD0.SRGAPC4.Q7.stVal
BI	Yes	916	Class 0	Yes	SR-4 Q8 status		LD0.SRGAPC4.Q8.stVal

Table 94: MV-1: Move (8 pcs) instance 1 (MVGAPC1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		805	Class 1 and 0	Yes	MV-1 Q1 status		LD0.MVGAPC1.Q1.stVal
BI		806	Class 1 and 0	Yes	MV-1 Q2 status		LD0.MVGAPC1.Q2.stVal
BI		807	Class 1 and 0	Yes	MV-1 Q3 status		LD0.MVGAPC1.Q3.stVal
BI		808	Class 1 and 0	Yes	MV-1 Q4 status		LD0.MVGAPC1.Q4.stVal
BI		809	Class 1 and 0	Yes	MV-1 Q5 status		LD0.MVGAPC1.Q5.stVal
BI		810	Class 1 and 0	Yes	MV-1 Q6 status		LD0.MVGAPC1.Q6.stVal
BI		811	Class 1 and 0	Yes	MV-1 Q7 status		LD0.MVGAPC1.Q7.stVal
BI		812	Class 1 and 0	Yes	MV-1 Q8 status		LD0.MVGAPC1.Q8.stVal

Table 95: MV-2: Move (8 pcs) instance 2 (MVGAPC2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		813	Class 1 and 0	Yes	MV-2 Q1 status		LD0.MVGAPC2.Q1.stVal
BI		814	Class 1 and 0	Yes	MV-2 Q2 status		LD0.MVGAPC2.Q2.stVal
BI		815	Class 1 and 0	Yes	MV-2 Q3 status		LD0.MVGAPC2.Q3.stVal
BI		816	Class 1 and 0	Yes	MV-2 Q4 status		LD0.MVGAPC2.Q4.stVal
BI		817	Class 1 and 0	Yes	MV-2 Q5 status		LD0.MVGAPC2.Q5.stVal
BI		818	Class 1 and 0	Yes	MV-2 Q6 status		LD0.MVGAPC2.Q6.stVal
BI		819	Class 1 and 0	Yes	MV-2 Q7 status		LD0.MVGAPC2.Q7.stVal
BI		820	Class 1 and 0	Yes	MV-2 Q8 status		LD0.MVGAPC2.Q8.stVal

Table 96: MV-3: Move (8 pcs) instance 3 (MVGAPC3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		821	Class 1 and 0	Yes	MV-3 Q1 status		LD0.MVGAPC3.Q1.stVal
BI		822	Class 1 and 0	Yes	MV-3 Q2 status		LD0.MVGAPC3.Q2.stVal
BI		823	Class 1 and 0	Yes	MV-3 Q3 status		LD0.MVGAPC3.Q3.stVal
BI		824	Class 1 and 0	Yes	MV-3 Q4 status		LD0.MVGAPC3.Q4.stVal
BI		825	Class 1 and 0	Yes	MV-3 Q5 status		LD0.MVGAPC3.Q5.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		826	Class 1 and 0	Yes	MV-3 Q6 status		LD0.MVGAPC3.Q6.stVal
BI		827	Class 1 and 0	Yes	MV-3 Q7 status		LD0.MVGAPC3.Q7.stVal
BI		828	Class 1 and 0	Yes	MV-3 Q8 status		LD0.MVGAPC3.Q8.stVal

Table 97: MV-4: Move (8 pcs) instance 4 (MVGAPC4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		829	Class 1 and 0	Yes	MV-4 Q1 status		LD0.MVGAPC4.Q1.stVal
BI		830	Class 1 and 0	Yes	MV-4 Q2 status		LD0.MVGAPC4.Q2.stVal
BI		831	Class 1 and 0	Yes	MV-4 Q3 status		LD0.MVGAPC4.Q3.stVal
BI		832	Class 1 and 0	Yes	MV-4 Q4 status		LD0.MVGAPC4.Q4.stVal
BI		833	Class 1 and 0	Yes	MV-4 Q5 status		LD0.MVGAPC4.Q5.stVal
BI		834	Class 1 and 0	Yes	MV-4 Q6 status		LD0.MVGAPC4.Q6.stVal
BI		835	Class 1 and 0	Yes	MV-4 Q7 status		LD0.MVGAPC4.Q7.stVal
BI		836	Class 1 and 0	Yes	MV-4 Q8 status		LD0.MVGAPC4.Q8.stVal

Table 98: MV-5 : Move (8 pcs) instance 5 (MVGAPC5)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		1072	Class 1 and 0	Yes	MV-5 Q1 status		LD0.MVGAPC5.Q1.stVal
BI		1073	Class 1 and 0	Yes	MV-5 Q2 status		LD0.MVGAPC5.Q2.stVal
BI		1074	Class 1 and 0	Yes	MV-5 Q3 status		LD0.MVGAPC5.Q3.stVal
BI		1075	Class 1 and 0	Yes	MV-5 Q4 status		LD0.MVGAPC5.Q4.stVal
BI		1076	Class 1 and 0	Yes	MV-5 Q5 status		LD0.MVGAPC5.Q5.stVal
BI		1077	Class 1 and 0	Yes	MV-5 Q6 status		LD0.MVGAPC5.Q6.stVal
BI		1078	Class 1 and 0	Yes	MV-5 Q7 status		LD0.MVGAPC5.Q7.stVal
BI		1079	Class 1 and 0	Yes	MV-5 Q8 status		LD0.MVGAPC5.Q8.stVal

Table 99: MV-6 : Move (8 pcs) instance 6 (MVGAPC6)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		1080	Class 1 and 0	Yes	MV-6 Q1 status		LD0.MVGAPC6.Q1.stVal
BI		1081	Class 1 and 0	Yes	MV-6 Q2 status		LD0.MVGAPC6.Q2.stVal
BI		1082	Class 1 and 0	Yes	MV-6 Q3 status		LD0.MVGAPC6.Q3.stVal
BI		1083	Class 1 and 0	Yes	MV-6 Q4 status		LD0.MVGAPC6.Q4.stVal
BI		1084	Class 1 and 0	Yes	MV-6 Q5 status		LD0.MVGAPC6.Q5.stVal
BI		1085	Class 1 and 0	Yes	MV-6 Q6 status		LD0.MVGAPC6.Q6.stVal
BI		1086	Class 1 and 0	Yes	MV-6 Q7 status		LD0.MVGAPC6.Q7.stVal
BI		1087	Class 1 and 0	Yes	MV-6 Q8 status		LD0.MVGAPC6.Q8.stVal

Table 100: MV-7 : Move (8 pcs) instance 7 (MVGAPC7)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		1088	Class 1 and 0	Yes	MV-7 Q1 status		LD0.MVGAPC7.Q1.stVal
BI		1089	Class 1 and 0	Yes	MV-7 Q2 status		LD0.MVGAPC7.Q2.stVal
BI		1090	Class 1 and 0	Yes	MV-7 Q3 status		LD0.MVGAPC7.Q3.stVal
BI		1091	Class 1 and 0	Yes	MV-7 Q4 status		LD0.MVGAPC7.Q4.stVal
BI		1092	Class 1 and 0	Yes	MV-7 Q5 status		LD0.MVGAPC7.Q5.stVal
BI		1093	Class 1 and 0	Yes	MV-7 Q6 status		LD0.MVGAPC7.Q6.stVal
BI		1094	Class 1 and 0	Yes	MV-7 Q7 status		LD0.MVGAPC7.Q7.stVal
BI		1095	Class 1 and 0	Yes	MV-7 Q8 status		LD0.MVGAPC7.Q8.stVal

Table 101: MV-8 : Move (8 pcs) instance 8 (MVGAPC8)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		1096	Class 1 and 0	Yes	MV-8 Q1 status		LD0.MVGAPC8.Q1.stVal
BI		1097	Class 1 and 0	Yes	MV-8 Q2 status		LD0.MVGAPC8.Q2.stVal
BI		1098	Class 1 and 0	Yes	MV-8 Q3 status		LD0.MVGAPC8.Q3.stVal
BI		1099	Class 1 and 0	Yes	MV-8 Q4 status		LD0.MVGAPC8.Q4.stVal
BI		1100	Class 1 and 0	Yes	MV-8 Q5 status		LD0.MVGAPC8.Q5.stVal
BI		1101	Class 1 and 0	Yes	MV-8 Q6 status		LD0.MVGAPC8.Q6.stVal
BI		1102	Class 1 and 0	Yes	MV-8 Q7 status		LD0.MVGAPC8.Q7.stVal
BI		1103	Class 1 and 0	Yes	MV-8 Q8 status		LD0.MVGAPC8.Q8.stVal

Table 102: CNTRL-1: Generic control points instance 1 (SPCGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		694	Class 1 and 0	Yes	CNTRL-1 Output 1 status		LD0.SPCGGIO1.SPCSO1.stVal
BI		695	Class 1 and 0	Yes	CNTRL-1 Output 2 status		LD0.SPCGGIO1.SPCSO2.stVal
BI		696	Class 1 and 0	Yes	CNTRL-1 Output 3 status		LD0.SPCGGIO1.SPCSO3.stVal
BI		697	Class 1 and 0	Yes	CNTRL-1 Output 4 status		LD0.SPCGGIO1.SPCSO4.stVal
BI		698	Class 1 and 0	Yes	CNTRL-1 Output 5 status		LD0.SPCGGIO1.SPCSO5.stVal
BI		699	Class 1 and 0	Yes	CNTRL-1 Output 6 status		LD0.SPCGGIO1.SPCSO6.stVal
BI		700	Class 1 and 0	Yes	CNTRL-1 Output 7 status		LD0.SPCGGIO1.SPCSO7.stVal
BI		701	Class 1 and 0	Yes	CNTRL-1 Output 8 status		LD0.SPCGGIO1.SPCSO8.stVal
BI		702	Class 1 and 0	Yes	CNTRL-1 Output 9 status		LD0.SPCGGIO1.SPCSO9.stVal
BI		703	Class 1 and 0	Yes	CNTRL-1 Output 10 status		LD0.SPCGGIO1.SPCSO10.stVal
BI		704	Class 1 and 0	Yes	CNTRL-1 Output 11 status		LD0.SPCGGIO1.SPCSO11.stVal
BI		705	Class 1 and 0	Yes	CNTRL-1 Output 12 status		LD0.SPCGGIO1.SPCSO12.stVal
BI		706	Class 1 and 0	Yes	CNTRL-1 Output 13 status		LD0.SPCGGIO1.SPCSO13.stVal
BI		707	Class 1 and 0	Yes	CNTRL-1 Output 14 status		LD0.SPCGGIO1.SPCSO14.stVal
BI		708	Class 1 and 0	Yes	CNTRL-1 Output 15 status		LD0.SPCGGIO1.SPCSO15.stVal
BI		709	Class 1 and 0	Yes	CNTRL-1 Output 16 status		LD0.SPCGGIO1.SPCSO16.stVal

Table 103: CNTRL-2: Generic control points instance 2 (SPCGGIO2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		710	Class 1 and 0	Yes	CNTRL-2 Output 1 status		LD0.SPCGGIO2.SPCSO1.stVal
BI		711	Class 1 and 0	Yes	CNTRL-2 Output 2 status		LD0.SPCGGIO2.SPCSO2.stVal
BI		712	Class 1 and 0	Yes	CNTRL-2 Output 3 status		LD0.SPCGGIO2.SPCSO3.stVal
BI		713	Class 1 and 0	Yes	CNTRL-2 Output 4 status		LD0.SPCGGIO2.SPCSO4.stVal
BI		714	Class 1 and 0	Yes	CNTRL-2 Output 5 status		LD0.SPCGGIO2.SPCSO5.stVal
BI		715	Class 1 and 0	Yes	CNTRL-2 Output 6 status		LD0.SPCGGIO2.SPCSO6.stVal
BI		716	Class 1 and 0	Yes	CNTRL-2 Output 7 status		LD0.SPCGGIO2.SPCSO7.stVal
BI		717	Class 1 and 0	Yes	CNTRL-2 Output 8 status		LD0.SPCGGIO2.SPCSO8.stVal
BI		718	Class 1 and 0	Yes	CNTRL-2 Output 9 status		LD0.SPCGGIO2.SPCSO9.stVal
BI		719	Class 1 and 0	Yes	CNTRL-2 Output 10 status		LD0.SPCGGIO2.SPCSO10.stVal
BI		720	Class 1 and 0	Yes	CNTRL-2 Output 11 status		LD0.SPCGGIO2.SPCSO11.stVal
BI		721	Class 1 and 0	Yes	CNTRL-2 Output 12 status		LD0.SPCGGIO2.SPCSO12.stVal
BI		722	Class 1 and 0	Yes	CNTRL-2 Output 13 status		LD0.SPCGGIO2.SPCSO13.stVal
BI		723	Class 1 and 0	Yes	CNTRL-2 Output 14 status		LD0.SPCGGIO2.SPCSO14.stVal
BI		724	Class 1 and 0	Yes	CNTRL-2 Output 15 status		LD0.SPCGGIO2.SPCSO15.stVal
BI		725	Class 1 and 0	Yes	CNTRL-2 Output 16 status		LD0.SPCGGIO2.SPCSO16.stVal

Table 104: CNTRL-3: Generic control points instance 3 (SPCGGIO3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		726	Class 1 and 0	Yes	CNTRL-3 Output 1 status		LD0.SPCGGIO3.SPCSO1.stVal
BI		727	Class 1 and 0	Yes	CNTRL-3 Output 2 status		LD0.SPCGGIO3.SPCSO2.stVal
BI		728	Class 1 and 0	Yes	CNTRL-3 Output 3 status		LD0.SPCGGIO3.SPCSO3.stVal
BI		729	Class 1 and 0	Yes	CNTRL-3 Output 4 status		LD0.SPCGGIO3.SPCSO4.stVal
BI		730	Class 1 and 0	Yes	CNTRL-3 Output 5 status		LD0.SPCGGIO3.SPCSO5.stVal
BI		731	Class 1 and 0	Yes	CNTRL-3 Output 6 status		LD0.SPCGGIO3.SPCSO6.stVal
BI		732	Class 1 and 0	Yes	CNTRL-3 Output 7 status		LD0.SPCGGIO3.SPCSO7.stVal
BI		733	Class 1 and 0	Yes	CNTRL-3 Output 8 status		LD0.SPCGGIO3.SPCSO8.stVal
BI		734	Class 1 and 0	Yes	CNTRL-3 Output 9 status		LD0.SPCGGIO3.SPCSO9.stVal
BI		735	Class 1 and 0	Yes	CNTRL-3 Output 10 status		LD0.SPCGGIO3.SPCSO10.stVal
BI		736	Class 1 and 0	Yes	CNTRL-3 Output 11 status		LD0.SPCGGIO3.SPCSO11.stVal
BI		737	Class 1 and 0	Yes	CNTRL-3 Output 12 status		LD0.SPCGGIO3.SPCSO12.stVal
BI		738	Class 1 and 0	Yes	CNTRL-3 Output 13 status		LD0.SPCGGIO3.SPCSO13.stVal
BI		739	Class 1 and 0	Yes	CNTRL-3 Output 14 status		LD0.SPCGGIO3.SPCSO14.stVal
BI		740	Class 1 and 0	Yes	CNTRL-3 Output 15 status		LD0.SPCGGIO3.SPCSO15.stVal
BI		741	Class 1 and 0	Yes	CNTRL-3 Output 16 status		LD0.SPCGGIO3.SPCSO16.stVal

Table 105: RCNTRL-1: Remote Generic control points instance 1 (SPCRGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		758	Class 1 and 0	Yes	RCNTRL-1 Output 1 status		LD0.SPCRGGIO1.SPCSO1.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		759	Class 1 and 0	Yes	RCNTRL-1 Output 2 status		LD0.SPCRGGIO1.SPCSO2.stVal
BI		760	Class 1 and 0	Yes	RCNTRL-1 Output 3 status		LD0.SPCRGGIO1.SPCSO3.stVal
BI		761	Class 1 and 0	Yes	RCNTRL-1 Output 4 status		LD0.SPCRGGIO1.SPCSO4.stVal
BI		762	Class 1 and 0	Yes	RCNTRL-1 Output 5 status		LD0.SPCRGGIO1.SPCSO5.stVal
BI		763	Class 1 and 0	Yes	RCNTRL-1 Output 6 status		LD0.SPCRGGIO1.SPCSO6.stVal
BI		764	Class 1 and 0	Yes	RCNTRL-1 Output 7 status		LD0.SPCRGGIO1.SPCSO7.stVal
BI		765	Class 1 and 0	Yes	RCNTRL-1 Output 8 status		LD0.SPCRGGIO1.SPCSO8.stVal
BI		766	Class 1 and 0	Yes	RCNTRL-1 Output 9 status		LD0.SPCRGGIO1.SPCSO9.stVal
BI		767	Class 1 and 0	Yes	RCNTRL-1 Output 10 status		LD0.SPCRGGIO1.SPCSO10.stVal
BI		768	Class 1 and 0	Yes	RCNTRL-1 Output 11 status		LD0.SPCRGGIO1.SPCSO11.stVal
BI		769	Class 1 and 0	Yes	RCNTRL-1 Output 12 status		LD0.SPCRGGIO1.SPCSO12.stVal
BI		770	Class 1 and 0	Yes	RCNTRL-1 Output 13 status		LD0.SPCRGGIO1.SPCSO13.stVal
BI		771	Class 1 and 0	Yes	RCNTRL-1 Output 14 status		LD0.SPCRGGIO1.SPCSO14.stVal
BI		772	Class 1 and 0	Yes	RCNTRL-1 Output 15 status		LD0.SPCRGGIO1.SPCSO15.stVal
BI		773	Class 1 and 0	Yes	RCNTRL-1 Output 16 status		LD0.SPCRGGIO1.SPCSO16.stVal

Table 106: LCNTRL-1: Local Generic control points instance 1 (SPCLGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		742	Class 1 and 0	Yes	LCNTRL-1 Output 1 status		LD0.SPCLGGIO1.SPCSO1.stVal
BI		743	Class 1 and 0	Yes	LCNTRL-1 Output 2 status		LD0.SPCLGGIO1.SPCSO2.stVal
BI		744	Class 1 and 0	Yes	LCNTRL-1 Output 3 status		LD0.SPCLGGIO1.SPCSO3.stVal
BI		745	Class 1 and 0	Yes	LCNTRL-1 Output 4 status		LD0.SPCLGGIO1.SPCSO4.stVal
BI		746	Class 1 and 0	Yes	LCNTRL-1 Output 5 status		LD0.SPCLGGIO1.SPCSO5.stVal
BI		747	Class 1 and 0	Yes	LCNTRL-1 Output 6 status		LD0.SPCLGGIO1.SPCSO6.stVal
BI		748	Class 1 and 0	Yes	LCNTRL-1 Output 7 status		LD0.SPCLGGIO1.SPCSO7.stVal
BI		749	Class 1 and 0	Yes	LCNTRL-1 Output 8 status		LD0.SPCLGGIO1.SPCSO8.stVal
BI		750	Class 1 and 0	Yes	LCNTRL-1 Output 9 status		LD0.SPCLGGIO1.SPCSO9.stVal
BI		751	Class 1 and 0	Yes	LCNTRL-1 Output 10 status		LD0.SPCLGGIO1.SPCSO10.stVal
BI		752	Class 1 and 0	Yes	LCNTRL-1 Output 11 status		LD0.SPCLGGIO1.SPCSO11.stVal
BI		753	Class 1 and 0	Yes	LCNTRL-1 Output 12 status		LD0.SPCLGGIO1.SPCSO12.stVal
BI		754	Class 1 and 0	Yes	LCNTRL-1 Output 13 status		LD0.SPCLGGIO1.SPCSO13.stVal
BI		755	Class 1 and 0	Yes	LCNTRL-1 Output 14 status		LD0.SPCLGGIO1.SPCSO14.stVal
BI		756	Class 1 and 0	Yes	LCNTRL-1 Output 15 status		LD0.SPCLGGIO1.SPCSO15.stVal
BI		757	Class 1 and 0	Yes	LCNTRL-1 Output 16 status		LD0.SPCLGGIO1.SPCSO16.stVal

Table 107: CTR-1: Generic Up-Down Counters instance 1 (UDFCNT1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1045	Class 0	Yes	CTR-1 Status of the down counting		LD0.UDFCNT1.DnCntSt.stVal
BI	Yes	1046	Class 0	Yes	CTR-1 Status of the up counting		LD0.UDFCNT1.UpCntSt.stVal

Table 108: CTR-2: Generic Up-Down Counters instance 2 (UDFCNT2)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1047	Class 0	Yes	CTR-2 Status of the down counting		LD0.UDFCNT2.DnCntSt.stVal
BI	Yes	1048	Class 0	Yes	CTR-2 Status of the up counting		LD0.UDFCNT2.UpCntSt.stVal

Table 109: CTR-3: Generic Up-Down Counters instance 3 (UDFCNT3)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1049	Class 0	Yes	CTR-3 Status of the down counting		LD0.UDFCNT3.DnCntSt.stVal
BI	Yes	1050	Class 0	Yes	CTR-3 Status of the up counting		LD0.UDFCNT3.UpCntSt.stVal

Table 110: CTR-4: Generic Up-Down Counters instance 4 (UDFCNT4)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1051	Class 0	Yes	CTR-4 Status of the down counting		LD0.UDFCNT4.DnCntSt.stVal
BI	Yes	1052	Class 0	Yes	CTR-4 Status of the up counting		LD0.UDFCNT4.UpCntSt.stVal

Table 111: CTR-5: Generic Up-Down Counters instance 5 (UDFCNT5)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1053	Class 0	Yes	CTR-5 Status of the down counting		LD0.UDFCNT5.DnCntSt.stVal
BI	Yes	1054	Class 0	Yes	CTR-5 Status of the up counting		LD0.UDFCNT5.UpCntSt.stVal

Table 112: CTR-6: Generic Up-Down Counters instance 6 (UDFCNT6)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1055	Class 0	Yes	CTR-6 Status of the down counting		LD0.UDFCNT6.DnCntSt.stVal
BI	Yes	1056	Class 0	Yes	CTR-6 Status of the up counting		LD0.UDFCNT6.UpCntSt.stVal

Table 113: CTR-7: Generic Up-Down Counters instance 7 (UDFCNT7)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1057	Class 0	Yes	CTR-7 Status of the down counting		LD0.UDFCNT7.DnCntSt.stVal
BI	Yes	1058	Class 0	Yes	CTR-7 Status of the up counting		LD0.UDFCNT7.UpCntSt.stVal

Table 114: CTR-8: Generic Up-Down Counters instance 8 (UDFCNT8)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1059	Class 0	Yes	CTR-8 Status of the down counting		LD0.UDFCNT8.DnCntSt.stVal
BI	Yes	1060	Class 0	Yes	CTR-8 Status of the up counting		LD0.UDFCNT8.UpCntSt.stVal

Table 115: CTR-9: Generic Up-Down Counters instance 9 (UDFCNT9)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1061	Class 0	Yes	CTR-9 Status of the down counting		LD0.UDFCNT9.DnCntSt.stVal
BI	Yes	1062	Class 0	Yes	CTR-9 Status of the up counting		LD0.UDFCNT9.UpCntSt.stVal

Table 116: CTR-10: Generic Up-Down Counters instance 10 (UDFCNT10)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1063	Class 0	Yes	CTR-10 Status of the down counting		LD0.UDFCNT10.DnCntSt.stVal
BI	Yes	1064	Class 0	Yes	CTR-10 Status of the up counting		LD0.UDFCNT10.UpCntSt.stVal

Table 117: CTR-11: Generic Up-Down Counters instance 11 (UDFCNT11)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1065	Class 0	Yes	CTR-11 Status of the down counting		LD0.UDFCNT11.DnCntSt.stVal
BI	Yes	1066	Class 0	Yes	CTR-11 Status of the up counting		LD0.UDFCNT11.UpCntSt.stVal

Table 118: CTR-12: Generic Up-Down Counters instance 12 (UDFCNT12)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI	Yes	1067	Class 0	Yes	CTR-12 Status of the down counting		LD0.UDFCNT12.DnCntSt.stVal
BI	Yes	1068	Class 0	Yes	CTR-12 Status of the up counting		LD0.UDFCNT12.UpCntSt.stVal

Table 119: FKEY: Programmable buttons (16 buttons) instance 1 (FKEYGGIO1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		96	Class 1 and 0	Yes	FKEY KEY 1		LD0.FKEYGGIO1.Ind1.stVal
BI		97	Class 1 and 0	Yes	FKEY KEY 2		LD0.FKEYGGIO1.Ind2.stVal
BI		98	Class 1 and 0	Yes	FKEY KEY 3		LD0.FKEYGGIO1.Ind3.stVal
BI		99	Class 1 and 0	Yes	FKEY KEY 4		LD0.FKEYGGIO1.Ind4.stVal
BI		100	Class 1 and 0	Yes	FKEY KEY 5		LD0.FKEYGGIO1.Ind5.stVal
BI		101	Class 1 and 0	Yes	FKEY KEY 6		LD0.FKEYGGIO1.Ind6.stVal
BI		102	Class 1 and 0	Yes	FKEY KEY 7		LD0.FKEYGGIO1.Ind7.stVal
BI		103	Class 1 and 0	Yes	FKEY KEY 8		LD0.FKEYGGIO1.Ind8.stVal
BI		104	Class 1 and 0	Yes	FKEY KEY 9		LD0.FKEYGGIO1.Ind9.stVal
BI		105	Class 1 and 0	Yes	FKEY KEY 10		LD0.FKEYGGIO1.Ind10.stVal
BI		106	Class 1 and 0	Yes	FKEY KEY 11		LD0.FKEYGGIO1.Ind11.stVal
BI		107	Class 1 and 0	Yes	FKEY KEY 12		LD0.FKEYGGIO1.Ind12.stVal
BI		108	Class 1 and 0	Yes	FKEY KEY 13		LD0.FKEYGGIO1.Ind13.stVal
BI		109	Class 1 and 0	Yes	FKEY KEY 14		LD0.FKEYGGIO1.Ind14.stVal
BI		110	Class 1 and 0	Yes	FKEY KEY 15		LD0.FKEYGGIO1.Ind15.stVal
BI		111	Class 1 and 0	Yes	FKEY KEY 16		LD0.FKEYGGIO1.Ind16.stVal
BI		112	Class 1 and 0	Yes	FKEY LED 1		LD0.FKEYGGIO1.SPCSO1.stVal
BI		113	Class 1 and 0	Yes	FKEY LED 2		LD0.FKEYGGIO1.SPCSO2.stVal
BI		114	Class 1 and 0	Yes	FKEY LED 3		LD0.FKEYGGIO1.SPCSO3.stVal
BI		115	Class 1 and 0	Yes	FKEY LED 4		LD0.FKEYGGIO1.SPCSO4.stVal
BI		116	Class 1 and 0	Yes	FKEY LED 5		LD0.FKEYGGIO1.SPCSO5.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		117	Class 1 and 0	Yes	FKEY LED 6		LD0.FKEYGGIO1.SPCSO6.stVal
BI		118	Class 1 and 0	Yes	FKEY LED 7		LD0.FKEYGGIO1.SPCSO7.stVal
BI		119	Class 1 and 0	Yes	FKEY LED 8		LD0.FKEYGGIO1.SPCSO8.stVal
BI		120	Class 1 and 0	Yes	FKEY LED 9		LD0.FKEYGGIO1.SPCSO9.stVal
BI		121	Class 1 and 0	Yes	FKEY LED 10		LD0.FKEYGGIO1.SPCSO10.stVal
BI		122	Class 1 and 0	Yes	FKEY LED 11		LD0.FKEYGGIO1.SPCSO11.stVal
BI		123	Class 1 and 0	Yes	FKEY LED 12		LD0.FKEYGGIO1.SPCSO12.stVal
BI		124	Class 1 and 0	Yes	FKEY LED 13		LD0.FKEYGGIO1.SPCSO13.stVal
BI		125	Class 1 and 0	Yes	FKEY LED 14		LD0.FKEYGGIO1.SPCSO14.stVal
BI		126	Class 1 and 0	Yes	FKEY LED 15		LD0.FKEYGGIO1.SPCSO15.stVal
BI		127	Class 1 and 0	Yes	FKEY LED 16		LD0.FKEYGGIO1.SPCSO16.stVal

Table 120: DFR: Disturbance recorder (RDRE1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		242	Class 1 and 0	Yes	Disturbance recorder Recording made		DR.RDRE1.RcdMade.stVal
AI	Yes	168	Class 0	Yes	Disturbance recorder Remaining amount of recordings that fit into the available recording memory when present settings are used	0	DR.RDRE1.EMaxNumRcd.stVal
AI	Yes	169	Class 0	Yes	Disturbance recorder Time remaining to the next periodic triggering	0	DR.RDRE1.EPerTRem.stVal
AI	Yes	170	Class 0	Yes	Disturbance recorder Number of recordings in the memory	0	DR.RDRE1.FltNum.stVal
AI	Yes	171	Class 0	Yes	Disturbance recorder How much recording memory is currently used	0	DR.RDRE1.MemUsed.stVal

Table 121: FR: Fault recorder (FLTMSTA1)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		219	Class 2 and 0	Yes	FLTMSTA1 Active setting group	0	LD0.FLTMSTA1.ActSG.stVal
AI		220	Class 2 and 0	Yes	FLTMSTA1 Phase A current	100	LD0.FLTMSTA1.AmpsA.mag.f
AI		221	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A current (b)	100	LD0.FLTMSTA1.AmpsAb.mag.f
AI		222	Class 2 and 0	Yes	FLTMSTA1 Phase A current (c)	100	LD0.FLTMSTA1.AmpsAc.mag.f
AI		223	Class 2 and 0	Yes	FLTMSTA1 Phase B current	100	LD0.FLTMSTA1.AmpsB.mag.f
AI		224	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B current (b)	100	LD0.FLTMSTA1.AmpsBb.mag.f
AI		225	Class 2 and 0	Yes	FLTMSTA1 Phase B current (c)	100	LD0.FLTMSTA1.AmpsBc.mag.f
AI		226	Class 2 and 0	Yes	FLTMSTA1 Phase C current	100	LD0.FLTMSTA1.AmpsC.mag.f
AI		227	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C current (b)	100	LD0.FLTMSTA1.AmpsCb.mag.f
AI		228	Class 2 and 0	Yes	FLTMSTA1 Phase C current (c)	100	LD0.FLTMSTA1.AmpsCc.mag.f

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		229	Class 2 and 0	Yes	FLTMSTA1 Residual current	100	LD0.FLTMSTA1.AmpsN.mag.f
AI		230	Class 2 and 0	Yes	FLTMSTA1 Residual current (b)	100	LD0.FLTMSTA1.AmpsNb.mag.f
AI		231	Class 2 and 0	Yes	FLTMSTA1 Residual current (c)	100	LD0.FLTMSTA1.AmpsNc.mag.f
AI		232	Class 2 and 0	Yes	FLTMSTA1 Calculated residual current	100	LD0.FLTMSTA1.AmpsNClc.mag.f
AI		233	Class 2 and 0	Yes	FLTMSTA1 Calculated residual current (b)	100	LD0.FLTMSTA1.AmpsNClcb.mag.f
AI		234	Class 2 and 0	Yes	FLTMSTA1 Calculated residual current (c)	100	LD0.FLTMSTA1.AmpsNClcc.mag.f
AI		235	Class 2 and 0	Yes	FLTMSTA1 Negative sequence current	100	LD0.FLTMSTA1.AmpsNgSeq.mag.f
AI		236	Class 2 and 0	Yes	FLTMSTA1 Negative sequence current (b)	100	LD0.FLTMSTA1.AmpsNgSeqb.mag.f
AI		237	Class 2 and 0	Yes	FLTMSTA1 Negative sequence current (c)	100	LD0.FLTMSTA1.AmpsNgSeqc.mag.f
AI		238	Class 2 and 0	Yes	FLTMSTA1 Positive sequence current	100	LD0.FLTMSTA1.AmpsPsSeq.mag.f
AI		239	Class 2 and 0	Yes	FLTMSTA1 Positive sequence current (b)	100	LD0.FLTMSTA1.AmpsPsSeqb.mag.f
AI		240	Class 2 and 0	Yes	FLTMSTA1 Positive sequence current (c)	100	LD0.FLTMSTA1.AmpsPsSeqc.mag.f
AI		241	Class 2 and 0	Yes	FLTMSTA1 Breaker clear time	100	LD0.FLTMSTA1.CBClrTm.mag.f
AI		242	Class 2 and 0	Yes	FLTMSTA1 Conductance Yo	100	LD0.FLTMSTA1.CondN.mag.f
AI		243	Class 2 and 0	Yes	FLTMSTA1 Angle phase B to phase C voltage - phase A current	100	LD0.FLTMSTA1.DifAAngBC.mag.f
AI		244	Class 2 and 0	Yes	FLTMSTA1 Angle phase B to phase C voltage - phase A current (b)	100	LD0.FLTMSTA1.DifAAngBCb.mag.f
AI		245	Class 2 and 0	Yes	FLTMSTA1 Differential current phase A	100	LD0.FLTMSTA1.DifAmpsA.mag.f
AI		246	Class 2 and 0	Yes	FLTMSTA1 Differential current phase B	100	LD0.FLTMSTA1.DifAmpsB.mag.f
AI		247	Class 2 and 0	Yes	FLTMSTA1 Differential current phase C	100	LD0.FLTMSTA1.DifAmpsC.mag.f
AI		248	Class 2 and 0	Yes	FLTMSTA1 Differential current residual	100	LD0.FLTMSTA1.DifAmpsN.mag.f
AI		249	Class 2 and 0	Yes	FLTMSTA1 Angle phase C to phase A voltage - phase B current	100	LD0.FLTMSTA1.DifBAngCA.mag.f
AI		250	Class 2 and 0	Yes	FLTMSTA1 Angle phase C to phase A voltage - phase B current (b)	100	LD0.FLTMSTA1.DifBAngCAb.mag.f
AI		251	Class 2 and 0	Yes	FLTMSTA1 Angle phase A to phase B voltage - phase C current	100	LD0.FLTMSTA1.DifCAngAB.mag.f
AI		252	Class 2 and 0	Yes	FLTMSTA1 Angle phase A to phase B voltage - phase C current (b)	100	LD0.FLTMSTA1.DifCAngABb.mag.f
AI		253	Class 2 and 0	Yes	FLTMSTA1 Angle residual voltage - residual current	100	LD0.FLTMSTA1.DifNAngN.mag.f

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		254	Class 2 and 0	Yes	FLTMSTA1 Angle residual voltage - residual current (b)	100	LD0.FLTMSTA1.DifNAngNb.mag.f
AI		255	Class 2 and 0	Yes	FLTMSTA1 Distance to fault measured in pu	100	LD0.FLTMSTA1.FltDiskm.mag.f
AI		256	Class 2 and 0	Yes	FLTMSTA1 Fault resistance	100	LD0.FLTMSTA1.FltZ.cVal.mag.f
AI		257	Class 2 and 0	Yes	FLTMSTA1 Frequency	100	LD0.FLTMSTA1.Hz.mag.f
AI		258	Class 2 and 0	Yes	FLTMSTA1 Frequency gradient	100	LD0.FLTMSTA1.HzS.mag.f
AI		259	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A current	100	LD0.FLTMSTA1.MaxAmpsA.mag.f
AI		260	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A current (b)	100	LD0.FLTMSTA1.MaxAmpsAb.mag.f
AI		261	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A current (c)	100	LD0.FLTMSTA1.MaxAmpsAc.mag.f
AI		262	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B current	100	LD0.FLTMSTA1.MaxAmpsB.mag.f
AI		263	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B current (b)	100	LD0.FLTMSTA1.MaxAmpsBb.mag.f
AI		264	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B current (c)	100	LD0.FLTMSTA1.MaxAmpsBc.mag.f
AI		265	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C current	100	LD0.FLTMSTA1.MaxAmpsC.mag.f
AI		266	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C current (b)	100	LD0.FLTMSTA1.MaxAmpsCb.mag.f
AI		267	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C current (c)	100	LD0.FLTMSTA1.MaxAmpsCc.mag.f
AI		268	Class 2 and 0	Yes	FLTMSTA1 Maximum residual current	100	LD0.FLTMSTA1.MaxAmpsN.mag.f
AI		269	Class 2 and 0	Yes	FLTMSTA1 Maximum residual current (b)	100	LD0.FLTMSTA1.MaxAmpsNb.mag.f
AI		270	Class 2 and 0	Yes	FLTMSTA1 Maximum residual current (c)	100	LD0.FLTMSTA1.MaxAmpsNc.mag.f
AI		271	Class 2 and 0	Yes	FLTMSTA1 49 calculated temperature of the protected object relative to the trip level	100	LD0.FLTMSTA1.MaxTmpRl.mag.f
AI		272	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A differential current	100	LD0.FLTMSTA1.MxDifAClcA.mag.f
AI		273	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B differential current	100	LD0.FLTMSTA1.MxDifAClcB.mag.f
AI		274	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C differential current	100	LD0.FLTMSTA1.MxDifAClcC.mag.f
AI		275	Class 2 and 0	Yes	FLTMSTA1 Maximum phase A bias current	100	LD0.FLTMSTA1.MxRstAClcA.mag.f
AI		276	Class 2 and 0	Yes	FLTMSTA1 Maximum phase B bias current	100	LD0.FLTMSTA1.MxRstAClcB.mag.f
AI		277	Class 2 and 0	Yes	FLTMSTA1 Maximum phase C bias current	100	LD0.FLTMSTA1.MxRstAClcC.mag.f
AI		278	Class 2 and 0	Yes	FLTMSTA1 Fault record number	0	LD0.FLTMSTA1.OpCnt.stVal
AI		279	Class 2 and 0	Yes	FLTMSTA1 Trip time	100	LD0.FLTMSTA1.OpTm.mag.f
AI		280	Class 2 and 0	Yes	FLTMSTA1 46PD ratio I2/I1	100	LD0.FLTMSTA1.PDNS1MxRat.mag.f

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		281	Class 2 and 0	Yes	FLTMSTA1 Reactance of fault loop	100	LD0.FLTMSTA1.PPLoopReac.mag.f
AI		282	Class 2 and 0	Yes	FLTMSTA1 Resistance of fault loop	100	LD0.FLTMSTA1.PPLoopRis.mag.f
AI		283	Class 2 and 0	Yes	FLTMSTA1 Protection function	0	LD0.FLTMSTA1.ProFcn.stVal
AI		284	Class 2 and 0	Yes	FLTMSTA1 Bias current phase A	100	LD0.FLTMSTA1.RstAmpsA.mag.f
AI		285	Class 2 and 0	Yes	FLTMSTA1 Bias current phase B	100	LD0.FLTMSTA1.RstAmpsB.mag.f
AI		286	Class 2 and 0	Yes	FLTMSTA1 Bias current phase C	100	LD0.FLTMSTA1.RstAmpsC.mag.f
AI		287	Class 2 and 0	Yes	FLTMSTA1 Bias current residual	100	LD0.FLTMSTA1.RstAmpsN.mag.f
AI		288	Class 2 and 0	Yes	FLTMSTA1 Autoreclosing shot pointer value	0	LD0.FLTMSTA1.ShotPntr.stVal
AI		289	Class 2 and 0	Yes	FLTMSTA1 Maximum pickup duration of all stages during the fault	100	LD0.FLTMSTA1.StrDur.mag.f
AI		290	Class 2 and 0	Yes	FLTMSTA1 Susceptance Yo	100	LD0.FLTMSTA1.SusN.mag.f
AI		291	Class 2 and 0	Yes	FLTMSTA1 Negative sequence voltage	100	LD0.FLTMSTA1.VNgSeq.mag.f
AI		292	Class 2 and 0	Yes	FLTMSTA1 Negative sequence voltage (b)	100	LD0.FLTMSTA1.VNgSeqb.mag.f
AI		293	Class 2 and 0	Yes	FLTMSTA1 Phase A voltage	100	LD0.FLTMSTA1.VoltsA.mag.f
AI		294	Class 2 and 0	Yes	FLTMSTA1 Phase A to phase B voltage	100	LD0.FLTMSTA1.VoltsAB.mag.f
AI		295	Class 2 and 0	Yes	FLTMSTA1 Phase A voltage (b)	100	LD0.FLTMSTA1.VoltsAb.mag.f
AI		296	Class 2 and 0	Yes	FLTMSTA1 Phase A to phase B voltage (b)	100	LD0.FLTMSTA1.VoltsABb.mag.f
AI		297	Class 2 and 0	Yes	FLTMSTA1 Phase B voltage	100	LD0.FLTMSTA1.VoltsB.mag.f
AI		298	Class 2 and 0	Yes	FLTMSTA1 Phase B voltage (b)	100	LD0.FLTMSTA1.VoltsBb.mag.f
AI		299	Class 2 and 0	Yes	FLTMSTA1 Phase B to phase C voltage	100	LD0.FLTMSTA1.VoltsBC.mag.f
AI		300	Class 2 and 0	Yes	FLTMSTA1 Phase B to phase C voltage (b)	100	LD0.FLTMSTA1.VoltsBCb.mag.f
AI		301	Class 2 and 0	Yes	FLTMSTA1 Phase C voltage	100	LD0.FLTMSTA1.VoltsC.mag.f
AI		302	Class 2 and 0	Yes	FLTMSTA1 Phase C to phase A voltage	100	LD0.FLTMSTA1.VoltsCA.mag.f
AI		303	Class 2 and 0	Yes	FLTMSTA1 Phase C to phase A voltage (b)	100	LD0.FLTMSTA1.VoltsCAb.mag.f
AI		304	Class 2 and 0	Yes	FLTMSTA1 Phase B voltage (b)	100	LD0.FLTMSTA1.VoltsCb.mag.f
AI		305	Class 2 and 0	Yes	FLTMSTA1 Residual voltage	100	LD0.FLTMSTA1.VoltsN.mag.f
AI		306	Class 2 and 0	Yes	FLTMSTA1 Residual voltage (b)	100	LD0.FLTMSTA1.VoltsNb.mag.f
AI		307	Class 2 and 0	Yes	FLTMSTA1 Positive sequence voltage	100	LD0.FLTMSTA1.VPsSeq.mag.f
AI		308	Class 2 and 0	Yes	FLTMSTA1 Positive sequence voltage (b)	100	LD0.FLTMSTA1.VPsSeqb.mag.f
AI		309	Class 2 and 0	Yes	FLTMSTA1 Zero sequence voltage	100	LD0.FLTMSTA1.VZroSeq.mag.f

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		310	Class 2 and 0	Yes	FLTMSTA1 Zero sequence voltage (b)	100	LD0.FLTMSTA1.VZroSeqb.mag.f

Table 122: XGGIO100: PSM (X100) card (XGGIO100)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		27	Class 1 and 0	Yes	X100 (PSM) Connectors 6-7		LD0.XGGIO100.SPCSO1.stVal
BI		28	Class 1 and 0	Yes	X100 (PSM) Connectors 8-9		LD0.XGGIO100.SPCSO2.stVal
BI		29	Class 1 and 0	Yes	X100 (PSM) Connectors 10c-11nc-12no		LD0.XGGIO100.SPCSO3.stVal
BI		30	Class 1 and 0	Yes	X100 (PSM) Connectors 13c-14no		LD0.XGGIO100.SPCSO4.stVal
BI		31	Class 1 and 0	Yes	X100 (PSM) Connectors 15-17/18-19		LD0.XGGIO100.SPCSO5.stVal
BI		32	Class 1 and 0	Yes	X100 (PSM) Connectors 20-22/23-24		LD0.XGGIO100.SPCSO6.stVal

Table 123: XRGGIO105: RTD (X105) 6RTD and 2mA (XRGGIO105)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		92	Class 1 and 0	Yes	X105 (RTD) General alarm		LD0.XRGGIO105.Alm.stVal
BI		93	Class 1 and 0	Yes	X105 (RTD) General warning		LD0.XRGGIO105.Wrn.stVal
AI		152	Class 2 and 0	Yes	X105 (RTD) mA input Connectors 1-2 reported value	100	LD0.XRGGIO105.AnIn1.mag.f
AI		153	Class 2 and 0	Yes	X105 (RTD) mA input Connectors 3-4 reported value	100	LD0.XRGGIO105.AnIn2.mag.f
AI		154	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 5-6-11c reported value	100	LD0.XRGGIO105.AnIn3.mag.f
AI		155	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 7-8-11c reported value	100	LD0.XRGGIO105.AnIn4.mag.f
AI		156	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 9-10-11c reported value	100	LD0.XRGGIO105.AnIn5.mag.f
AI		157	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 13-14-12c reported value	100	LD0.XRGGIO105.AnIn6.mag.f
AI		158	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 15-16-12c reported value	100	LD0.XRGGIO105.AnIn7.mag.f
AI		159	Class 2 and 0	Yes	X105 (RTD) RTD input Connectors 17-18-12c reported value	100	LD0.XRGGIO105.AnIn8.mag.f

Table 124: XRGGIO110: RTD (X110) 6RTD and 2mA (XRGGIO110)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		94	Class 1 and 0	Yes	X110 (RTD) General alarm		LD0.XRGGIO110.Alm.stVal
BI		95	Class 1 and 0	Yes	X110 (RTD) General warning		LD0.XRGGIO110.Wrn.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		160	Class 2 and 0	Yes	X110 (RTD) mA input Connectors 1-2 reported value	100	LD0.XRGGIO110.AnIn1.mag.f
AI		161	Class 2 and 0	Yes	X110 (RTD) mA input Connectors 3-4 reported value	100	LD0.XRGGIO110.AnIn2.mag.f
AI		162	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 5-6-11c reported value	100	LD0.XRGGIO110.AnIn3.mag.f
AI		163	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 7-8-11c reported value	100	LD0.XRGGIO110.AnIn4.mag.f
AI		164	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 9-10-11c reported value	100	LD0.XRGGIO110.AnIn5.mag.f
AI		165	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 13-14-12c reported value	100	LD0.XRGGIO110.AnIn6.mag.f
AI		166	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 15-16-12c reported value	100	LD0.XRGGIO110.AnIn7.mag.f
AI		167	Class 2 and 0	Yes	X110 (RTD) RTD input Connectors 17-18-12c reported value	100	LD0.XRGGIO110.AnIn8.mag.f

Table 125: XBGGIO115: BIO (X115) standard BO card (XBGGIO115)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		15	Class 1 and 0	Yes	X115 (BIO) Connectors 1-2		LD0.XBGGIO115.Ind1.stVal
BI		16	Class 1 and 0	Yes	X115 (BIO) Connectors 3-4		LD0.XBGGIO115.Ind2.stVal
BI		17	Class 1 and 0	Yes	X115 (BIO) Connectors 5-6c		LD0.XBGGIO115.Ind3.stVal
BI		18	Class 1 and 0	Yes	X115 (BIO) Connectors 7-6c		LD0.XBGGIO115.Ind4.stVal
BI		19	Class 1 and 0	Yes	X115 (BIO) Connectors 8-9c		LD0.XBGGIO115.Ind5.stVal
BI		20	Class 1 and 0	Yes	X115 (BIO) Connectors 10-9c		LD0.XBGGIO115.Ind6.stVal
BI		21	Class 1 and 0	Yes	X115 (BIO) Connectors 11-12c		LD0.XBGGIO115.Ind7.stVal
BI		22	Class 1 and 0	Yes	X115 (BIO) Connectors 13-12c		LD0.XBGGIO115.Ind8.stVal
BI		23	Class 1 and 0	Yes	X115 (BIO) Connectors 14c-15no-16nc		LD0.XBGGIO115.SPCSO1.stVal
BI		24	Class 1 and 0	Yes	X115 (BIO) Connectors 17c-18no-19nc		LD0.XBGGIO115.SPCSO2.stVal
BI		25	Class 1 and 0	Yes	X115 (BIO) Connectors 20c-21no-22nc		LD0.XBGGIO115.SPCSO3.stVal
BI		26	Class 1 and 0	Yes	X115 (BIO) Connectors 23-24		LD0.XBGGIO115.SPCSO4.stVal

Table 126: XHBGGIO115: HSO card (XHBGGIO115)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		81	Class 1 and 0	Yes	X115 (BIO-H) Connectors 1-5c		LD0.XHBGGIO115.Ind1.stVal
BI		82	Class 1 and 0	Yes	X115 (BIO-H) Connectors 2-5c		LD0.XHBGGIO115.Ind2.stVal
BI		83	Class 1 and 0	Yes	X115 (BIO-H) Connectors 3-5c		LD0.XHBGGIO115.Ind3.stVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		84	Class 1 and 0	Yes	X115 (BIO-H) Connectors 4-5c		LD0.XHBGGIO115.Ind4.stVal
BI		85	Class 1 and 0	Yes	X115 (BIO-H) Connectors 6-10c		LD0.XHBGGIO115.Ind5.stVal
BI		86	Class 1 and 0	Yes	X115 (BIO-H) Connectors 7-10c		LD0.XHBGGIO115.Ind6.stVal
BI		87	Class 1 and 0	Yes	X115 (BIO-H) Connectors 8-10c		LD0.XHBGGIO115.Ind7.stVal
BI		88	Class 1 and 0	Yes	X115 (BIO-H) Connectors 9-10c		LD0.XHBGGIO115.Ind8.stVal
BI		89	Class 1 and 0	Yes	X115 (BIO-H) Connectors 15no-16no		LD0.XHBGGIO115.SPCSO1.stVal
BI		90	Class 1 and 0	Yes	X115 (BIO-H) Connectors 19no-20no		LD0.XHBGGIO115.SPCSO2.stVal
BI		91	Class 1 and 0	Yes	X115 (BIO-H) Connectors 23no-24no		LD0.XHBGGIO115.SPCSO3.stVal

Table 127: XAGGIO130: AIM (X130) 5VT+4BI (XAGGIO130)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		0	Class 1 and 0	Yes	X130 (AIM) Connectors 1-2		LD0.XAGGIO130.Ind1.stVal
BI		1	Class 1 and 0	Yes	X130 (AIM) Connectors 3-4		LD0.XAGGIO130.Ind2.stVal
BI		2	Class 1 and 0	Yes	X130 (AIM) Connectors 5-6		LD0.XAGGIO130.Ind3.stVal
BI		3	Class 1 and 0	Yes	X130 (AIM) Connectors 7-8		LD0.XAGGIO130.Ind4.stVal

Table 128: XARGGIO130: 5VT+2RTD (XARGGIO130)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
AI		146	Class 2 and 0	Yes	X130 (AIM+RTD) mA input Connectors 1-2 reported value	100	LD0.XARGGIO130.AnIn1.mag.f
AI		147	Class 2 and 0	Yes	X130 (AIM+RTD) RTD input Connectors 3-4 instantaneous value	100	LD0.XARGGIO130.AnIn2.mag.f
AI		148	Class 2 and 0	Yes	X130 (AIM+RTD) RTD input Connectors 5-6 instantaneous value	100	LD0.XARGGIO130.AnIn3.mag.f

Table 129: XGGIO130: BIO (X130) card (XGGIO130)

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BI		61	Class 1 and 0	Yes	X130 (BIO) Connectors 1-2c		LD0.XGGIO130.Ind1.stVal
BI		62	Class 1 and 0	Yes	X130 (BIO) Connectors 3-2c		LD0.XGGIO130.Ind2.stVal
BI		63	Class 1 and 0	Yes	X130 (BIO) Connectors 4-5c		LD0.XGGIO130.Ind3.stVal
BI		64	Class 1 and 0	Yes	X130 (BIO) Connectors 6-5c		LD0.XGGIO130.Ind4.stVal
BI		65	Class 1 and 0	Yes	X130 (BIO) Connectors 7-8c		LD0.XGGIO130.Ind5.stVal
BI		66	Class 1 and 0	Yes	X130 (BIO) Connectors 9-8c		LD0.XGGIO130.Ind6.stVal
BI		67	Class 1 and 0	Yes	X130 (BIO) Connectors 10c-11no-12nc		LD0.XGGIO130.SPCSO1.stVal
BI		68	Class 1 and 0	Yes	X130 (BIO) Connectors 13c-14no-15nc		LD0.XGGIO130.SPCSO2.stVal
BI		69	Class 1 and 0	Yes	X130 (BIO) Connectors 16c-17no-18nc		LD0.XGGIO130.SPCSO3.stVal

2.3 DNP Binary Outputs

Table 130: DNP binary outputs

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BO		0		Yes	Protection LLN0 Clear indication LEDs and texts		LD0.LLN0.LEDRs1.Oper.ctlVal
BO		1		Yes	Protection LLN0 Clear alarm LEDs		LD0.LLN0.LEDRs2.Oper.ctlVal
BO		2		Yes	Protection LLN0 Reset all power quality data		LD0.LLN0.PQRs.Oper.ctlVal
BO		3		Yes	52 Switch general		CTRL.CBCSWI1.Pos.Oper.ctlVal
BO		5		Yes	FLTMSTA1 Reset fault records		LD0.FLTMSTA1.RecRs.Oper.ctlVal
BO		6		Yes	Disturbance recorder Manual trigger for the disturbance recorder		DR.RDRE1.RcdTrg.Oper.ctlVal
BO		7		Yes	Disturbance recorder Clear all DFR recordings in the memory		DR.RDRE1.MemClr.Oper.ctlVal
BO		10		Yes	IA IB IC CMMXU1 demands		LD0.CMSTA1.RecRs.Oper.ctlVal
BO		11		Yes	IA IB IC(2) CMMXU2 demands		LD0.CMSTA2.RecRs.Oper.ctlVal
BO		16		Yes	Physical device Reset of IED		LD0.LPHD1.RsDev.Oper.ctlVal
BO		21		Yes	LoadProf Reset load profile record		LD0.LDPMSTA1.RecRs.Oper.ctlVal
BO		22		Yes	OPTM-1 Resets the accumulated operation time to initial value		LD0.MDSOPT1.OpTmRs.Oper.ctlVal
BO		23		Yes	OPTM-2 Resets the accumulated operation time to initial value		LD0.MDSOPT2.OpTmRs.Oper.ctlVal
BO		24		Yes	49M Reset 49M temperature		LD0.MPTTR1.RsTmp.Oper.ctlVal
BO		25		Yes	P E Reset of accumulated energy reading		LD0.PEMMTR1.SupDmdRs.Oper.ctlVal
BO		27		Yes	SP SE Reset of accumulated energy reading		LD0.SPEMMTR1.SupDmdRs.Oper.ctlVal
BO		32		Yes	CNTRL-1 Trig output 1		LD0.SPCGGIO1.SPCSO1.Oper.ctlVal
BO		33		Yes	CNTRL-1 Trig output 2		LD0.SPCGGIO1.SPCSO2.Oper.ctlVal
BO		34		Yes	CNTRL-1 Trig output 3		LD0.SPCGGIO1.SPCSO3.Oper.ctlVal
BO		35		Yes	CNTRL-1 Trig output 4		LD0.SPCGGIO1.SPCSO4.Oper.ctlVal
BO		36		Yes	CNTRL-1 Trig output 5		LD0.SPCGGIO1.SPCSO5.Oper.ctlVal
BO		37		Yes	CNTRL-1 Trig output 6		LD0.SPCGGIO1.SPCSO6.Oper.ctlVal
BO		38		Yes	CNTRL-1 Trig output 7		LD0.SPCGGIO1.SPCSO7.Oper.ctlVal
BO		39		Yes	CNTRL-1 Trig output 8		LD0.SPCGGIO1.SPCSO8.Oper.ctlVal
BO		40		Yes	CNTRL-1 Trig output 9		LD0.SPCGGIO1.SPCSO9.Oper.ctlVal
BO		41		Yes	CNTRL-1 Trig output 10		LD0.SPCGGIO1.SPCSO10.Oper.ctlVal
BO		42		Yes	CNTRL-1 Trig output 11		LD0.SPCGGIO1.SPCSO11.Oper.ctlVal
BO		43		Yes	CNTRL-1 Trig output 12		LD0.SPCGGIO1.SPCSO12.Oper.ctlVal
BO		44		Yes	CNTRL-1 Trig output 13		LD0.SPCGGIO1.SPCSO13.Oper.ctlVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BO		45		Yes	CNTRL-1 Trig output 14		LD0.SPCGGIO1.SPCSO14.Oper.ctlVal
BO		46		Yes	CNTRL-1 Trig output 15		LD0.SPCGGIO1.SPCSO15.Oper.ctlVal
BO		47		Yes	CNTRL-1 Trig output 16		LD0.SPCGGIO1.SPCSO16.Oper.ctlVal
BO		48		Yes	CNTRL-2 Trig output 1		LD0.SPCGGIO2.SPCSO1.Oper.ctlVal
BO		49		Yes	CNTRL-2 Trig output 2		LD0.SPCGGIO2.SPCSO2.Oper.ctlVal
BO		50		Yes	CNTRL-2 Trig output 3		LD0.SPCGGIO2.SPCSO3.Oper.ctlVal
BO		51		Yes	CNTRL-2 Trig output 4		LD0.SPCGGIO2.SPCSO4.Oper.ctlVal
BO		52		Yes	CNTRL-2 Trig output 5		LD0.SPCGGIO2.SPCSO5.Oper.ctlVal
BO		53		Yes	CNTRL-2 Trig output 6		LD0.SPCGGIO2.SPCSO6.Oper.ctlVal
BO		54		Yes	CNTRL-2 Trig output 7		LD0.SPCGGIO2.SPCSO7.Oper.ctlVal
BO		55		Yes	CNTRL-2 Trig output 8		LD0.SPCGGIO2.SPCSO8.Oper.ctlVal
BO		56		Yes	CNTRL-2 Trig output 9		LD0.SPCGGIO2.SPCSO9.Oper.ctlVal
BO		57		Yes	CNTRL-2 Trig output 10		LD0.SPCGGIO2.SPCSO10.Oper.ctlVal
BO		58		Yes	CNTRL-2 Trig output 11		LD0.SPCGGIO2.SPCSO11.Oper.ctlVal
BO		59		Yes	CNTRL-2 Trig output 12		LD0.SPCGGIO2.SPCSO12.Oper.ctlVal
BO		60		Yes	CNTRL-2 Trig output 13		LD0.SPCGGIO2.SPCSO13.Oper.ctlVal
BO		61		Yes	CNTRL-2 Trig output 14		LD0.SPCGGIO2.SPCSO14.Oper.ctlVal
BO		62		Yes	CNTRL-2 Trig output 15		LD0.SPCGGIO2.SPCSO15.Oper.ctlVal
BO		63		Yes	CNTRL-2 Trig output 16		LD0.SPCGGIO2.SPCSO16.Oper.ctlVal
BO		64		Yes	CNTRL-3 Trig output 1		LD0.SPCGGIO3.SPCSO1.Oper.ctlVal
BO		65		Yes	CNTRL-3 Trig output 2		LD0.SPCGGIO3.SPCSO2.Oper.ctlVal
BO		66		Yes	CNTRL-3 Trig output 3		LD0.SPCGGIO3.SPCSO3.Oper.ctlVal
BO		67		Yes	CNTRL-3 Trig output 4		LD0.SPCGGIO3.SPCSO4.Oper.ctlVal
BO		68		Yes	CNTRL-3 Trig output 5		LD0.SPCGGIO3.SPCSO5.Oper.ctlVal
BO		69		Yes	CNTRL-3 Trig output 6		LD0.SPCGGIO3.SPCSO6.Oper.ctlVal
BO		70		Yes	CNTRL-3 Trig output 7		LD0.SPCGGIO3.SPCSO7.Oper.ctlVal
BO		71		Yes	CNTRL-3 Trig output 8		LD0.SPCGGIO3.SPCSO8.Oper.ctlVal
BO		72		Yes	CNTRL-3 Trig output 9		LD0.SPCGGIO3.SPCSO9.Oper.ctlVal
BO		73		Yes	CNTRL-3 Trig output 10		LD0.SPCGGIO3.SPCSO10.Oper.ctlVal
BO		74		Yes	CNTRL-3 Trig output 11		LD0.SPCGGIO3.SPCSO11.Oper.ctlVal
BO		75		Yes	CNTRL-3 Trig output 12		LD0.SPCGGIO3.SPCSO12.Oper.ctlVal
BO		76		Yes	CNTRL-3 Trig output 13		LD0.SPCGGIO3.SPCSO13.Oper.ctlVal
BO		77		Yes	CNTRL-3 Trig output 14		LD0.SPCGGIO3.SPCSO14.Oper.ctlVal
BO		78		Yes	CNTRL-3 Trig output 15		LD0.SPCGGIO3.SPCSO15.Oper.ctlVal
BO		79		Yes	CNTRL-3 Trig output 16		LD0.SPCGGIO3.SPCSO16.Oper.ctlVal
BO		80		Yes	RCNTRL-1 Output 1		LD0.SPCRGGIO1.SPCSO1.Oper.ctlVal
BO		81		Yes	RCNTRL-1 Output 2		LD0.SPCRGGIO1.SPCSO2.Oper.ctlVal
BO		82		Yes	RCNTRL-1 Output 3		LD0.SPCRGGIO1.SPCSO3.Oper.ctlVal
BO		83		Yes	RCNTRL-1 Output 4		LD0.SPCRGGIO1.SPCSO4.Oper.ctlVal
BO		84		Yes	RCNTRL-1 Output 5		LD0.SPCRGGIO1.SPCSO5.Oper.ctlVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BO		85		Yes	RCNTRL-1 Output 6		LD0.SPCRGGIO1.SPCSO6.Oper.ctlVal
BO		86		Yes	RCNTRL-1 Output 7		LD0.SPCRGGIO1.SPCSO7.Oper.ctlVal
BO		87		Yes	RCNTRL-1 Output 8		LD0.SPCRGGIO1.SPCSO8.Oper.ctlVal
BO		88		Yes	RCNTRL-1 Output 9		LD0.SPCRGGIO1.SPCSO9.Oper.ctlVal
BO		89		Yes	RCNTRL-1 Output 10		LD0.SPCRGGIO1.SPCSO10.Oper.ctlVal
BO		90		Yes	RCNTRL-1 Output 11		LD0.SPCRGGIO1.SPCSO11.Oper.ctlVal
BO		91		Yes	RCNTRL-1 Output 12		LD0.SPCRGGIO1.SPCSO12.Oper.ctlVal
BO		92		Yes	RCNTRL-1 Output 13		LD0.SPCRGGIO1.SPCSO13.Oper.ctlVal
BO		93		Yes	RCNTRL-1 Output 14		LD0.SPCRGGIO1.SPCSO14.Oper.ctlVal
BO		94		Yes	RCNTRL-1 Output 15		LD0.SPCRGGIO1.SPCSO15.Oper.ctlVal
BO		95		Yes	RCNTRL-1 Output 16		LD0.SPCRGGIO1.SPCSO16.Oper.ctlVal
BO		96		Yes	SR-1 Resets Q1 output when set		LD0.SRGAPC1.Rs1.Oper.ctlVal
BO		97		Yes	SR-1 Resets Q2 output when set		LD0.SRGAPC1.Rs2.Oper.ctlVal
BO		98		Yes	SR-1 Resets Q3 output when set		LD0.SRGAPC1.Rs3.Oper.ctlVal
BO		99		Yes	SR-1 Resets Q4 output when set		LD0.SRGAPC1.Rs4.Oper.ctlVal
BO		100		Yes	SR-1 Resets Q5 output when set		LD0.SRGAPC1.Rs5.Oper.ctlVal
BO		101		Yes	SR-1 Resets Q6 output when set		LD0.SRGAPC1.Rs6.Oper.ctlVal
BO		102		Yes	SR-1 Resets Q7 output when set		LD0.SRGAPC1.Rs7.Oper.ctlVal
BO		103		Yes	SR-1 Resets Q8 output when set		LD0.SRGAPC1.Rs8.Oper.ctlVal
BO		104		Yes	SR-2 Resets Q1 output when set		LD0.SRGAPC2.Rs1.Oper.ctlVal
BO		105		Yes	SR-2 Resets Q2 output when set		LD0.SRGAPC2.Rs2.Oper.ctlVal
BO		106		Yes	SR-2 Resets Q3 output when set		LD0.SRGAPC2.Rs3.Oper.ctlVal
BO		107		Yes	SR-2 Resets Q4 output when set		LD0.SRGAPC2.Rs4.Oper.ctlVal
BO		108		Yes	SR-2 Resets Q5 output when set		LD0.SRGAPC2.Rs5.Oper.ctlVal
BO		109		Yes	SR-2 Resets Q6 output when set		LD0.SRGAPC2.Rs6.Oper.ctlVal
BO		110		Yes	SR-2 Resets Q7 output when set		LD0.SRGAPC2.Rs7.Oper.ctlVal
BO		111		Yes	SR-2 Resets Q8 output when set		LD0.SRGAPC2.Rs8.Oper.ctlVal
BO		112		Yes	SR-3 Resets Q1 output when set		LD0.SRGAPC3.Rs1.Oper.ctlVal
BO		113		Yes	SR-3 Resets Q2 output when set		LD0.SRGAPC3.Rs2.Oper.ctlVal
BO		114		Yes	SR-3 Resets Q3 output when set		LD0.SRGAPC3.Rs3.Oper.ctlVal
BO		115		Yes	SR-3 Resets Q4 output when set		LD0.SRGAPC3.Rs4.Oper.ctlVal
BO		116		Yes	SR-3 Resets Q5 output when set		LD0.SRGAPC3.Rs5.Oper.ctlVal
BO		117		Yes	SR-3 Resets Q6 output when set		LD0.SRGAPC3.Rs6.Oper.ctlVal
BO		118		Yes	SR-3 Resets Q7 output when set		LD0.SRGAPC3.Rs7.Oper.ctlVal
BO		119		Yes	SR-3 Resets Q8 output when set		LD0.SRGAPC3.Rs8.Oper.ctlVal
BO		120		Yes	SR-4 Resets Q1 output when set		LD0.SRGAPC4.Rs1.Oper.ctlVal
BO		121		Yes	SR-4 Resets Q2 output when set		LD0.SRGAPC4.Rs2.Oper.ctlVal
BO		122		Yes	SR-4 Resets Q3 output when set		LD0.SRGAPC4.Rs3.Oper.ctlVal
BO		123		Yes	SR-4 Resets Q4 output when set		LD0.SRGAPC4.Rs4.Oper.ctlVal
BO		124		Yes	SR-4 Resets Q5 output when set		LD0.SRGAPC4.Rs5.Oper.ctlVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BO		125		Yes	SR-4 Resets Q6 output when set		LD0.SRGAPC4.Rs6.Oper.ctlVal
BO		126		Yes	SR-4 Resets Q7 output when set		LD0.SRGAPC4.Rs7.Oper.ctlVal
BO		127		Yes	SR-4 Resets Q8 output when set		LD0.SRGAPC4.Rs8.Oper.ctlVal
BO		128		Yes	52CM Resets accumulation energy		LD0.SSCBR1.RsAccAPwr.Oper.ctlVal
BO		129		Yes	52CM Reset CB remaining life and operation counter		LD0.SSCBR1.RsCBWear.Oper.ctlVal
BO		130		Yes	52CM Reset the charging time of the CB spring		LD0.SSCBR1.RsSprChaTm.Oper.ctlVal
BO		131		Yes	52CM Reset CB closing and opening travel times		LD0.SSCBR1.RsTrvTm.Oper.ctlVal
BO		140		Yes	86/94-1 Reset 86/94-1 lockout and latch		LD0.TRPPTRC1.LORs.Oper.ctlVal
BO		141		Yes	86/94-1 Reset latched trip		LD0.TRPPTRC1.TrRs.Oper.ctlVal
BO		142		Yes	86/94-2 Reset 86/94-2 lockout and latch		LD0.TRPPTRC2.LORs.Oper.ctlVal
BO		143		Yes	86/94-2 Reset latched trip		LD0.TRPPTRC2.TrRs.Oper.ctlVal
BO		146		Yes	CTR-1 Loads the counter to preset value		LD0.UDFCNT1.LodCnt.Oper.ctlVal
BO		147		Yes	CTR-1 Resets counter value		LD0.UDFCNT1.RsCnt.Oper.ctlVal
BO		148		Yes	CTR-2 Loads the counter to preset value		LD0.UDFCNT2.LodCnt.Oper.ctlVal
BO		149		Yes	CTR-2 Resets counter value		LD0.UDFCNT2.RsCnt.Oper.ctlVal
BO		150		Yes	CTR-3 Loads the counter to preset value		LD0.UDFCNT3.LodCnt.Oper.ctlVal
BO		151		Yes	CTR-3 Resets counter value		LD0.UDFCNT3.RsCnt.Oper.ctlVal
BO		152		Yes	CTR-4 Loads the counter to preset value		LD0.UDFCNT4.LodCnt.Oper.ctlVal
BO		153		Yes	CTR-4 Resets counter value		LD0.UDFCNT4.RsCnt.Oper.ctlVal
BO		154		Yes	CTR-5 Loads the counter to preset value		LD0.UDFCNT5.LodCnt.Oper.ctlVal
BO		155		Yes	CTR-5 Resets counter value		LD0.UDFCNT5.RsCnt.Oper.ctlVal
BO		156		Yes	CTR-6 Loads the counter to preset value		LD0.UDFCNT6.LodCnt.Oper.ctlVal
BO		157		Yes	CTR-6 Resets counter value		LD0.UDFCNT6.RsCnt.Oper.ctlVal
BO		158		Yes	CTR-7 Loads the counter to preset value		LD0.UDFCNT7.LodCnt.Oper.ctlVal
BO		159		Yes	CTR-7 Resets counter value		LD0.UDFCNT7.RsCnt.Oper.ctlVal
BO		160		Yes	CTR-8 Loads the counter to preset value		LD0.UDFCNT8.LodCnt.Oper.ctlVal
BO		161		Yes	CTR-8 Resets counter value		LD0.UDFCNT8.RsCnt.Oper.ctlVal
BO		162		Yes	CTR-9 Loads the counter to preset value		LD0.UDFCNT9.LodCnt.Oper.ctlVal
BO		163		Yes	CTR-9 Resets counter value		LD0.UDFCNT9.RsCnt.Oper.ctlVal
BO		164		Yes	CTR-10 Loads the counter to preset value		LD0.UDFCNT10.LodCnt.Oper.ctlVal

DNP Object Type	No Event	Point Index	DNP Class	Enabled	Description	Scale Factor	IEC61850 Data Attribute Name
BO		165		Yes	CTR-10 Resets counter value		LD0.UDFCNT10.RsCnt.Oper.ctlVal
BO		166		Yes	CTR-11 Loads the counter to preset value		LD0.UDFCNT11.LodCnt.Oper.ctlVal
BO		167		Yes	CTR-11 Resets counter value		LD0.UDFCNT11.RsCnt.Oper.ctlVal
BO		168		Yes	CTR-12 Loads the counter to preset value		LD0.UDFCNT12.LodCnt.Oper.ctlVal
BO		169		Yes	CTR-12 Resets counter value		LD0.UDFCNT12.RsCnt.Oper.ctlVal
BO		171		Yes	DNP 3.0 Activate setting group 1		LD0.DNPGGIO1.ActSG1.Oper.ctlVal
BO		172		Yes	DNP 3.0 Activate setting group 2		LD0.DNPGGIO1.ActSG2.Oper.ctlVal
BO		173		Yes	DNP 3.0 Activate setting group 3		LD0.DNPGGIO1.ActSG3.Oper.ctlVal
BO		174		Yes	DNP 3.0 Activate setting group 4		LD0.DNPGGIO1.ActSG4.Oper.ctlVal
BO		175		Yes	DNP 3.0 Activate setting group 5		LD0.DNPGGIO1.ActSG5.Oper.ctlVal
BO		176		Yes	DNP 3.0 Activate setting group 6		LD0.DNPGGIO1.ActSG6.Oper.ctlVal

Section 3 DNP3 protocol implementation

3.1 DNP3 device profile

The following table provides a device profile document in the standard format defined in the DNP3 Subset Definitions Document. While it is referred to in the DNP3 Subset Definitions as a document, it is in fact a table, and only a component of a total interoperability guide. The table, in combination with the Implementation table and the point list tables provides a complete configuration/interoperability guide for communicating with a device.

Table 131: Device profile document

DNP3 device profile document								
Vendor name:						ABB Inc.		
Device name:						REM620		
Highest DNP level supported:						Device function:		
	For requests:	Level 2+				○	Master	
	For responses:	Level 2+				●	Slave	
Notable objects, functions, and/or qualifiers supported in addition to the highest DNP levels supported (the complete list is described in the attached table): For static (non-change-event) object requests, request qualifier codes 07 and 08 (limited quantity), and 17 and 28 (index) are supported. Static object requests sent with qualifiers 07, or 08, will be responded with qualifiers 00 or 01. 16-bit and 32-bit Analog Change Events with Time may be requested.								
Maximum data link frame size (octets):						Maximum application fragment size (octets):		
	Transmitted:	292					Transmitted:	Configurable (256...2048)
	Received:	292					Received:	2048
Maximum data link re-tries:						Maximum application layer re-tries:		
	○	None				●	None	
	○	Fixed				○	Configurable	
	●	Configurable (0...65535)						
Requires data link layer confirmation:								
	○	Never						
	○	Always						
	○	Sometimes						
	●	Configurable as: "Never", "Only for multi-frame messages", or "Always"						
Requires application layer confirmation:								
	○	Never						
	○	Always						
	○	When reporting event data (slave devices only)						
	○	When sending multi-fragment responses (slave devices only)						
	○	Sometimes						
	●	Configurable as: "Only when reporting event data", or "When reporting event data or multi-fragment messages"						
Timeouts while waiting for:								
Data link confirm:	○	None	○	Fixed at ____	○	Variable	●	Configurable
Complete appl. fragment:	●	None	○	Fixed at ____	○	Variable	○	Configurable
Application confirm:	○	None	○	Fixed at ____	○	Variable	●	Configurable
Complete appl. response:	●	None	○	Fixed at ____	○	Variable	○	Configurable
Others:	Select/Operate Arm Timeout, not configurable; fixed at 10s, regardless of select timeout in the HMI. Need time interval, configurable Unsolicited notification delay, configurable Unsolicited response retry delay, configurable Unsolicited offline Interval, configurable							
Sends/Executes Control Operations:								

DNP3 device profile document								
WRITE binary outputs	●	Never	○	Always	○	Sometimes	○	Configurable
SELECT/OPERATE	○	Never	○	Always	○	Sometimes	●	Configurable
DIRECT OPERATE	○	Never	○	Always	○	Sometimes	●	Configurable
DIRECT OPERATE - NO ACK	○	Never	○	Always	○	Sometimes	●	Configurable
Count > 1 (Count > 1 is accepted but ignored)	●	Never	○	Always	○	Sometimes	○	Configurable
Pulse on	●	Never	○	Always	○	Sometimes	○	Configurable
Pulse off	●	Never	○	Always	○	Sometimes	○	Configurable
Latch on	○	Never	●	Always	○	Sometimes	○	Configurable
Latch off	○	Never	●	Always	○	Sometimes	○	Configurable
Queue	●	Never	○	Always	○	Sometimes	○	Configurable
Clear queue	●	Never	○	Always	○	Sometimes	○	Configurable
The circuit breaker control model is configurable for either direct or SBO mode in the circuit breaker settings. If the operation mode does not match the CROB, the returned CROB status is hardware error (4). All other control points may be controlled by either direct or SBO controls.								

Reports binary input change events when no specific variation requested:		Reports time-tagged binary input change events when no specific variation requested:	
○	Never	○	Never
○	Only when time-tagged	○	Binary input change with time
○	Only non-time-tagged	○	Binary input change with relative time
●	Configurable to send one or the other	●	Configurable

Sends unsolicited responses:		Sends static data in unsolicited responses:	
○	Never	●	Never
●	Configurable	○	When device restarts
○	Only certain objects	○	When status flags change
○	Sometimes (attach explanation)		
●	ENABLE/DISABLE UNSOLICITED function codes supported	No other options are permitted.	

Default counter object/variation:		Counters roll over at:	
●	No counters reported	●	No counters reported
○	Configurable	○	Configurable (attach explanation)
○	Default object Default variation:	○	16 bits
○	Point-by-point list attached	○	32 bits
		○	Other value: _____
		○	Point-by-point list attached

Sends multi-fragment responses:	
●	Yes
○	No

DNP3 device profile document					
	○	Configurable			
Sequential file transfer support:					
Append file mode	○	Yes	•	No	
Custom status code strings	○	Yes	•	No	
Permissions field	○	Yes	•	No	
File events assigned to class	○	Yes	•	No	
File events send immediately	○	Yes	•	No	
Multiple blocks in a fragment	○	Yes	•	No	
Max number of files open	0				
• = Selected, ○ = Not selected					

3.2 DNP3 implementation table

The following table identifies which object variations, function codes, and qualifiers the IED supports in both request messages and response messages. For static (non-change-event) objects, requests sent with qualifiers 00, 01, 06, 07, or 08, will be responded with qualifiers 00 or 01. Requests sent with qualifiers 17 or 28 will be responded with qualifiers 17 or 28. For change-event objects, qualifiers 17 or 28 are always responded.

Table 132: Implementation table

OBJECT			REQUEST (Library will parse)		RESPONSE (Library will respond with)	
Object number	Variation number	Description	Function codes (dec)	Qualifier codes (hex)	Function codes (dec)	Qualifier codes (hex)
1	0	Binary input – any variation	1 (read) 22 (assign class)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)		
1	1 (default) [1]	Binary input	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index) [2]
1	2	Binary input with status	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
2	0	Binary input change – any variation	1 (read)	06 (no range, or all) 07, 08 (limited qty)		
2	1	Binary input change without time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)
2	2	Binary input change with time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)

OBJECT			REQUEST (Library will parse)		RESPONSE (Library will respond with)	
2	3	Binary input change with relative time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)
10	0	Binary output status – any variation	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)		
10	1	Binary output	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
12	1	Control relay output block	3 (select) 4 (operate) 5 (direct op) 6 (dir. op, noack)	17, 28 (index)	129 (response)	echo of request
30	0	Analog input - any variation	1 (read) 22 (assign class)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)		
30	1	32-bit analog input	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
30	2 (default)	16-bit analog input	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
30	3	32-bit analog input without flag	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
30	4	16-bit analog input without flag	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07, 08 (limited qty) 17, 28 (index)	129 (response)	00, 01 (start-stop) 17, 28 (index)
32	0	Analog change event – any variation	1 (read)	06 (no range, or all) 07, 08 (limited qty)		
32	1	32-bit analog change event without time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)
32	2	16-bit analog change event without time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)
32	3	32-bit analog change event with time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)

OBJECT			REQUEST (Library will parse)		RESPONSE (Library will respond with)	
32	4 (default)	16-bit analog change event with time	1 (read)	06 (no range, or all) 07, 08 (limited qty)	129 (response) 130 (unsol. resp)	17, 28 (index)
50	0	Time and date				
50	1 (default)	Time and date	1 (read)	00, 01 (start-stop) 06 (no range, or all) 07 (limited qty = 1l) 08 (limited qty)	129 (response)	00, 01 (start-stop) 17, 28 (index)
			2 (write)	07 (limited qty = 1l)		
50	3	Time and date last recorded time	2 (write)	07 (limited qty)		
51	1	Time and date CTO			129 (response) 130 (unsol. resp)	07 (limited qty) (qty = 1)
51	2	Unsynchronized time and date CTO			129 (response) 130 (unsol. resp)	07 (limited qty) (qty = 1)
52	2	Time delay fine			129 (response)	07 (limited qty) (qty = 1)
60	0	Not defined				
60	1	Class 0 data	1 (read)	06 (no range, or all)		
60	2	Class 1 data	1 (read)	06 (no range, or all)		
			20 (enbl. unsol.) 21 (dab. unsol.) 22 (assign class)	07, 08 (limited qty) 06 (no range, or all)		
60	3	Class 2 data	1 (read)	06 (no range, or all) 07, 08 (limited qty)		
			20 (enbl. unsol.) 21 (dab. unsol.) 22 (assign class)	06 (no range, or all)		
60	4	Class 3 data	1 (read)	06 (no range, or all) 07, 08 (limited qty)		
			20 (enbl. unsol.) 21 (dab. unsol.) 22 (assign class)	06 (no range, or all)		
80	1	Internal indications	1 (read)	00, 01 (start-stop)		
			2 (write) [3]	00 (start-stop) index=7		
No object (function code only)			13 (cold restart)		[4]	
No object (function code only)			14 (warm restart)			
No object (function code only)			23 (delay meas.)			
No object (function code only)			24 (record current time)			

1. A default variation refers to the variation responded when variation 0 is requested and/or in class 0, 1, 2, or 3 scans. Default variations are configurable; however, default settings for the configuration parameters are indicated in the table above.

2. For static (non-change-event) objects, qualifiers 17 or 28 are only responded when a request is sent with qualifiers 17 or 28, respectively. Otherwise, static object requests sent with qualifiers 00, 01, 06, 07, or 08, will be responded with qualifiers 00 or 01. (For change-event objects, qualifiers 17 or 28 are always responded.)
3. Writes of internal indications are only supported for index 7 (Restart IIN1-7)
4. Cold and warm restarts return an application layer acknowledge, but no restart action is taken.

Section 4 Glossary

AIM	Analog input module
ANSI	American National Standards Institute
AR	Autoreclosing
BIO	Binary input and output
CB	Circuit breaker
CBB	Cycle building block
CBFP	Circuit-breaker failure protection
CROB	Control relay output block
CTO	Common time of occurrence. The time and date CTO object is an information object that represents the absolute time of day.
CTRL	Control logical device
DFR	Digital fault recorder
DNP3	A distributed network protocol originally developed by Westronic. The DNP3 Users Group has the ownership of the protocol and assumes responsibility for its evolution.
DR	Disturbance recorder
EMC	Electromagnetic compatibility
HMI	Human-machine interface
IEC 61850	International standard for substation communication and modelling
IED	Intelligent electronic device
LD0	Logical device zero (0)
LED	Light-emitting diode
LHMI	Local human-machine interface
LLN0	Logical node zero (0)
PCM600	Protection and Control IED Manager
PhsA	Phase A
PhsB	Phase B
PhsC	Phase C

PSM	Power supply module
SBO	Select-before-operate
stVal	Status value
Val	Value

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