Relion® 615 Series

Transformer Protection and Control
RET615 ANSI
Modbus Point List Manual

Power and productivity
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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

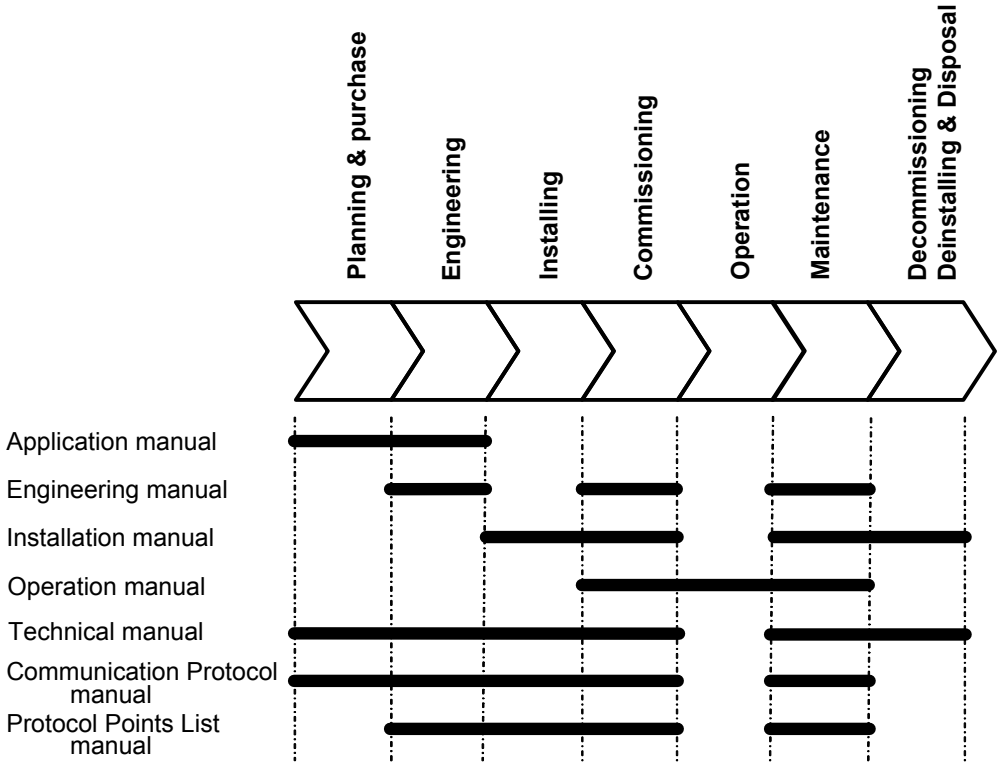

Figure 1: The intended use of manuals in different lifecycles

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/01/20/2010	2.0	First release
B/03/31/2011	615 series: 4.0	Contents updated for 615 series v4.0 ANSI 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
Modbus Communication Protocol Manual	1MAC052634-MB

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: unctions included in the RET615 standard configurations

Function	IEC61850	ANSI/C37.2 - 2008	IEC60617
Protection			
Three-phase non-directional overcurrent protection, low stage, instance 1	PHLPTOC1	51P (1)	3I> (1)
Three-phase non-directional overcurrent protection, low stage, instance 2	PHLPTOC2	51P (2)	3I> (2)
Three-phase non-directional overcurrent protection, high stage, instance 1	PHHPTOC1	50P-1 (1)	3I>> (1)
Three-phase non-directional overcurrent protection, high stage, instance 2	PHHPTOC2	50P-1 (2)	3I>> (2)
Three-phase non-directional overcurrent protection, high stage, instance 3	PHHPTOC3	50P-2 (1)	3I>> (3)
Three-phase non-directional overcurrent protection, high stage, instance 4	PHHPTOC4	50P-2 (2)	3I>> (4)
Three-phase directional overcurrent protection, low stage, instance 1	DPHLPDOC1	67/51P (2)	3I> -> (1)
Three-phase directional overcurrent protection, low stage, instance 2	DPHLPDOC2	67/51P (1)	3I> -> (2)
Non-directional ground-fault protection, low stage, instance 1	EFLPTOC1	51N (1)	Io> (1)
Non-directional ground-fault protection, low stage, instance 2	EFLPTOC2	51N (2)	Io> (2)
Non-directional ground-fault protection, low stage, instance 3	EFLPTOC3	51G	Io> (3)
Non-directional ground-fault protection, high stage, instance 1	EFHPTOC1	50G-1	Io>> (1)
Non-directional ground-fault protection, high stage, instance 2	EFHPTOC2	50G-2	Io>> (2)
Non-directional ground-fault protection, high stage, instance 3	EFHPTOC3	50N-1 (1)	Io>> (3)
Non-directional ground-fault protection, high stage, instance 4	EFHPTOC4	50N-1 (2)	Io>> (4)
Non-directional ground-fault protection, high stage, instance 5	EFHPTOC5	50N-2 (1)	Io>> (5)
Non-directional ground-fault protection, high stage, instance 6	EFHPTOC6	50N-2 (2)	Io>> (6)
Directional ground-fault protection, low stage, instance 1	DEFLPDEF1	67/51N (2)	Io> -> (1)
Directional ground-fault protection, low stage, instance 2	DEFLPDEF2	67/51N (1)	Io> -> (2)
Negative-sequence overcurrent protection, instance 1	NSPTOC1	46 (1)	I2> (1)
Negative-sequence overcurrent protection, instance 2	NSPTOC2	46 (2)	I2> (2)
Residual overvoltage protection, instance 1	ROVPTOV1	59G (2)	Uo> (1)
Residual overvoltage protection, instance 2	ROVPTOV2	59N (2)	Uo> (2)
Residual overvoltage protection, instance 3	ROVPTOV3	59N (1)	Uo> (3)

Function	IEC61850	ANSI/C37.2 - 2008	IEC60617
Residual overvoltage protection, instance 4	ROVPTOV4	59G (1)	Uo> (4)
Three-phase undervoltage protection, instance 1	PHPTUV1	27 (2)	3U< (1)
Three-phase undervoltage protection, instance 2	PHPTUV2	27 (1)	3U< (2)
Three-phase overvoltage protection, instance 1	PHPTOV1	59 (2)	3U> (1)
Three-phase overvoltage protection, instance 2	PHPTOV2	59 (1)	3U> (2)
Negative-sequence overvoltage protection, instance 1	NSPTOV1	47 (2)	U2> (1)
Negative-sequence overvoltage protection, instance 2	NSPTOV2	47 (1)	U2> (2)
Frequency protection, instance 1	FRPFRQ1	81-1 (2)	f>/f<,df/dt (1)
Frequency protection, instance 2	FRPFRQ2	81-2 (2)	f>/f<,df/dt (2)
Frequency protection, instance 3	FRPFRQ3	81-1 (1)	f>/f<,df/dt (3)
Frequency protection, instance 4	FRPFRQ4	81-2 (1)	f>/f<,df/dt (4)
Voltage per hertz protection, instance 1	OEPVPH1	24-1 (2)	U/f> (1)
Voltage per hertz protection, instance 2	OEPVPH2	24-2 (2)	U/f> (2)
Voltage per hertz protection, instance 3	OEPVPH3	24-1 (1)	U/f> (3)
Voltage per hertz protection, instance 4	OEPVPH4	24-2 (1)	U/f> (4)
Three-phase thermal overload protection for power transformers, two time constants	T2PTTR1	49T (1)	3Ith>T
Stabilized and instantaneous differential protection for 2W –transformers	TR2PTDF1	87T	3dI>T
Numerical stabilized low impedance restricted ground-fault protection	LREFPNDF1	87LOZREF (2)	dIoLo>
Circuit breaker failure protection, instance 1	CCBRBRF1	50BF (2)	3I>/Io>BF (1)
Circuit breaker failure protection, instance 2	CCBRBRF2	50BF (1)	3I>/Io>BF (2)
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 (2)	ARC (1)
Arc protection, instance 2	ARCSARC2	AFD-2 (2)	ARC (2)
Arc protection, instance 3	ARCSARC3	AFD-3 (2)	ARC (3)
Load shedding and restoration, instance 1	LSHDPFRQ1	81LSH-1 (2)	UFLS/R (1)
Load shedding and restoration, instance 2	LSHDPFRQ2	81LSH-2 (2)	UFLS/R (2)
Load shedding and restoration, instance 3	LSHDPFRQ3	81LSH-1 (1)	UFLS/R (3)
Load shedding and restoration, instance 4	LSHDPFRQ4	81LSH-2 (1)	UFLS/R (4)
Loss of phase, instance 1	PHPTUC1	37 (1)	3I< (1)
Control			
Circuit-breaker control, instance 1	CBXCBR1	52 (2)	I <-> O CB (1)

Function	IEC61850	ANSI/C37.2 - 2008	IEC60617
Circuit-breaker control, instance 2	CBXCBR2	52 (1)	I <-> O CB (2)
Tap changer position indication	TPOSSLTC1	84T	TPOSM
Condition Monitoring			
Circuit-breaker condition monitoring, instance 1	SSCBR1	52CM (2)	CBCM (1)
Circuit-breaker condition monitoring, instance 2	SSCBR2	52CM (1)	CBCM (2)
Trip circuit supervision, instance 1	TCSSCBR1	TCM-1	TCS (1)
Trip circuit supervision, instance 2	TCSSCBR2	TCM-2	TCS (2)
Advanced current circuit supervision for transformers	CTSRCTF1	MCS 3I, I2	MCS 3I, I2
Fuse failure supervision, instance 1	SEQRFUF1	60 (2)	FUSEF (1)
Fuse failure supervision, instance 2	SEQRFUF2	60 (1)	FUSEF (2)
Measurement			
Three-phase current measurement, instance 1	CMMXU1	IA, IB, IC (2)	3I
Three-phase current measurement, instance 2	CMMXU2	IA, IB, IC (1)	3I(B)
Sequence current measurement, instance 1	CSMSQI1	I1, I2, I0 (2)	I1, I2, I0
Sequence current measurement, instance 2	CSMSQI2	I1, I2, I0 (1)	I1, I2, I0(B)
Residual current measurement, instance 1	RESCMMXU1	IG	Io
Three-phase voltage measurement, instance 1	VMMXU1	VA, VB, VC (2)	3U
Three-phase voltage measurement, instance 2	VMMXU2	VA, VB, VC (1)	3U(B)
Residual voltage measurement	RESVMMXU1	VG	Uo
Sequence voltage measurement, instance 1	VSMSQI1	V1, V2, V0 (2)	U1, U2, U0
Sequence voltage measurement, instance 2	VSMSQI2	V1, V2, V0 (1)	U1, U2, U0(B)
Single-phase power and energy measurement, instance 1	SPEMMXU1	SP, SE (2)	SP, SE
Single-phase power and energy measurement, instance 2	SPEMMXU2	SP, SE (1)	SP, SE(B)
Three-phase power and energy measurement, instance 1	PEMMXU1	P, E (2)	P, E
Three-phase power and energy measurement, instance 2	PEMMXU2	P, E (1)	P, E(B)
Frequency measurement	FMMXU1	f	f
Recorder			
Disturbance recorder	RDRE1	DFR	-
Fault recorder	FLMSTA1	FR	-
Sequence event recorder	SER	SER	-
Other Functions			
Minimum pulse timer (2 pcs), instance 1	TPGAPC1	TP - 1	TP (1)

Function	IEC61850	ANSI/C37.2 - 2008	IEC60617
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 on (8 pcs), instance 1	TONGAPC1	TON -1	TON (1)
Time delay on (8 pcs), instance 2	TONGAPC2	TON -2	TON (2)
Set reset (8 pcs), instance 1	SRGAPC1	SR-1	SR (1)
Set reset (8 pcs), instance 2	SRGAPC2	SR-2	SR (2)
Move (8 pcs), instance 1	MVGAPC1	MV-1	MV (1)
Move (8 pcs), instance 2	MVGAPC2	MV-2	MV (2)

Section 2 Modbus data mappings

2.1 Overview

This document describes the Modbus data points and structures available in RET615 Ver. 4.0.

Point list table columns

0x addr	Coil (0X) PLC address, base address = 1
AFL-Common SA name	AFL name of the corresponding data signal
Bit addr	Bit (1X and 0X) PLC address, base address = 1
Ctrl bit	Control bit (0..15) within control structure
Ctrl struct	Control structure number
Dc	Data category
DS	Object resides as default in some IEC 61850 data set (Y = yes, N = no)
FD Num	Unique number of the platform SW component
Identification	IED's internal IEC 61850 signal name
Item	Unique number of an data item within the data object
Mode	Control object mode: unsecured or secured
Object	Unique number of a data object within the SW component
Offset	Offset factor, default setting
Reg addr	Modbus register address (3X or 4X). PLC address, base address = 1
Reg.bit addr	Register PLC address (3X and 4X) and bit within register (0..15)
Scale	Scale factor, default setting
Signal name	IEC 61850 signal description
Type	Register type and value interpretation: signed or unsigned
UID	Unique ID combination of FD Num, Object and Item
W	Writable register

2.2 Point list for RET615 v4.0 ANSI

Table 2: System Status Registers

Coil Addr	Register(:Bit) Addr	Dc	Type	Scale	OffSet	Description	IEC61850 Data Attribute Name
	129	0	u16			System Status Register, 1	
	130	0	u16			System Status Register, 2	
	131	0	u16			System Status Register, 3	
	132	0	u16			System Status Register, 4	
	133	0	u16			System Status Register, 5	
	134	0	u16			System Status Register, 6	
	135	0	u16			Device Information	
	..	0	u16				
	225	0	u16				
	245		u16			Parameter Setting Group in Use	

Table 3: Time Stamp of Last Device Reset

Coil Addr	Register(:Bit) Addr	Dc	Type	Scale	OffSet	Description	IEC61850 Data Attribute Name
	226	0	u16			Year(High Byte)/Month(Low Byte)	
	227	0	u16			Day(High Byte)/Hour(Low Byte)	
	228	0	u16			Min(High Byte)/Sec(Low Byte)	
	229	0	u16			MilliSecond	
	230	0	u16			Time Quality	
	231	0	u16			Cause of Reset (1-Power Reset, 2-Watchdog Reset, 3-Warm Reset)	

Table 4: Device Real-Time clock in local Time

Coil Addr	Register(:Bit) Addr	W	Type	Scale	OffSet	Description	IEC61850 Data Attribute Name
	497	x	u16			Real-time struct - Control register(0..2)	
	498	x	u16			Real-time struct - Year (2000-2999)	
	499	x	u16			Real-time struct - Month (1..12)	
	500	x	u16			Real-time struct - Day (1..31)	
	501	x	u16			Real-time struct - Hour (0..23)	
	502	x	u16			Real-time struct - Minute (0..59)	
	503	x	u16			Real-time struct - Seconds (0..59)	
	504	x	u16			Real-time struct - Milliseconds (0..999)	

Table 5: Device Real-Time clock in UTC Time

Coil Addr	Register(:Bit) Addr	W	Type	Scale	OffSet	Description	IEC61850 Data Attribute Name
	516	x	u16			Real-time struct - Control register(0..2)	
	517	x	u16			Real-time struct - Year (2000-2999)	
	518	x	u16			Real-time struct - Month (1..12)	
	519	x	u16			Real-time struct - Day (1..31)	
	520	x	u16			Real-time struct - Hour (0..23)	
	521	x	u16			Real-time struct - Minute (0..59)	
	522	x	u16			Real-time struct - Seconds (0..59)	
	523	x	u16			Real-time struct - Milliseconds (0..999)	

Table 6: Event Records

Coil Addr	Register(:Bit) Addr	W	Type	Scale	OffSet	Description	IEC61850 Data Attribute Name
	1561	x	u16			Number of Events to Read	
	1562	x	u16	1		Event Selection	
	1563		u16	1		Sequence Number	
	1564		u16	1		Number of Unread Records	
	1565		u16	1		Year(High Byte)/Month(Low Byte)	
	1566		u16	1		Day(High Byte)/Hour(Low Byte)	
	1567		u16	1		Min(High Byte)/Sec(Low Byte)	
	1568		u16	1		MilliSecond	
	1569		u16	1		Event Type	
	1570		u16	1		Data Object ID 1 [1)]	
	1571		u16	1		Data Object ID 2 [1)]	
	1572		u16	1		Event Data Value	
	1573		u16	1		Event Data Value	

1) See Decoding of Data Object ID1 and 1

Decoding of Data Object ID1 and Data Object ID2

The base 4x Modbus address is Data Object ID2/16. Bit offset is the remainder of DataObject ID2/16.

For Instance, Bit 10 in register of 2500 would appear in Data Object ID2 as 0x9C4A = 40010. The base address is 40010/16 = 2500. The bit is 0.625 x 16 = 10.

Data Object ID1 is the most significant 16 bits. If Data Object ID1 is non-zero then a 32 bit number is composed of Data Object ID1 as bits 31-16 and Data Object ID2 are bits 15-0.

Table 7: Fault records

Coil Addr	Register(:Bit) Addr	W	Dc	Type	Scale	Description	IEC61850 Data Attribute Name
	1712	x		u16	1	Fault Record Selection	
	1713			u16	1	Sequence Number	
	1714			u16	1	Number of Unread Records	
	1715			u16	1	Year(High Byte)/Month(Low Byte)	
	1716			u16	1	Day(High Byte)/Hour(Low Byte)	
	1717			u16	1	Min(High Byte)/Sec(Low Byte)	
	1718			u16	1	MilliSecond	
	1719			u16	1	Time Quality	
	1720		100	u16	100	Last Fault: Max Phase A Current Magnitude	LD0.FLTMSTA1.MaxAmpsA.mag.f
	1721		100	u16	100	Last Fault: Max Phase B Current Magnitude	LD0.FLTMSTA1.MaxAmpsB.mag.f
	1722		100	u16	100	Last Fault: Max Phase C Current Magnitude	LD0.FLTMSTA1.MaxAmpsC.mag.f
	1723		100	u16	100	Last Fault: Max Neutral Current Magnitude	LD0.FLTMSTA1.MaxAmpsN.mag.f
	1724		100	u16	100	Last Fault: Phase A Current Magnitude	LD0.FLTMSTA1.AmpsA.mag.f
	1725		100	u16	100	Last Fault: Phase B Current Magnitude	LD0.FLTMSTA1.AmpsB.mag.f
	1726		100	u16	100	Last Fault: Phase C Current Magnitude	LD0.FLTMSTA1.AmpsC.mag.f
	1727		100	u16	100	Last Fault: Neutral Current Magnitude	LD0.FLTMSTA1.AmpsN.mag.f
	1728		100	u16	100	Last Fault: Calculated Residual Current Magnitude	LD0.FLTMSTA1.AmpsNClc.mag.f
	1729		100	u16	100	Last Fault: Negative Sequence Current Mag.	LD0.FLTMSTA1.AmpsNgSeq.mag.f
	1730		100	u16	100	Last Fault: Positive Sequence Current Mag.	LD0.FLTMSTA1.AmpsPsSeq.mag.f
	1731		100	u16	100	Last Fault: Phase A Voltage Magnitude	LD0.FLTMSTA1.VoltsA.mag.f
	1732		100	u16	100	Last Fault: Phase B Voltage Magnitude	LD0.FLTMSTA1.VoltsB.mag.f
	1733		100	u16	100	Last Fault: Phase C Voltage Magnitude	LD0.FLTMSTA1.VoltsC.mag.f
	1734		100	u16	100	Last Fault: Measured Residual Voltage Magnitude	LD0.FLTMSTA1.VoltsN.mag.f
	1735		100	u16	100	Last Fault: Negative Sequence Voltage Magnitude	LD0.FLTMSTA1.VNgSeq.mag.f
	1736		100	u16	100	Last Fault: Positive Sequence Voltage Magnitude	LD0.FLTMSTA1.VPsSeq.mag.f
	1737		100	u16	100	Last Fault: Zero Sequence Voltage Magnitude	LD0.FLTMSTA1.VZroSeq.mag.f
	1738		100	u16	100	Last Fault: Phase AB Voltage Magnitude	LD0.FLTMSTA1.VoltsAB.mag.f

Coil Addr	Register(:Bit) Addr	W	Dc	Type	Scale	Description	IEC61850 Data Attribute Name
	1739		100	u16	100	Last Fault: Phase BC Voltage Magnitude	LD0.FLTMSTA1.VoltsBC.mag.f
	1740		100	u16	100	Last Fault: Phase CA Voltage Magnitude	LD0.FLTMSTA1.VoltsCA.mag.f
	1741		100	u16	100	Maximum phase A current (b)	LD0.FLTMSTA1.MaxAmpsAb.mag.f
	1742		100	u16	100	Maximum phase B current (b)	LD0.FLTMSTA1.MaxAmpsBb.mag.f
	1743		100	u16	100	Maximum phase C current (b)	LD0.FLTMSTA1.MaxAmpsCb.mag.f
	1744		100	u16	100	Maximum residual current (b)	LD0.FLTMSTA1.MaxAmpsNb.mag.f
	1745		100	u16	100	Phase A current (b)	LD0.FLTMSTA1.AmpsAb.mag.f
	1746		100	u16	100	Phase B current (b)	LD0.FLTMSTA1.AmpsBb.mag.f
	1747		100	u16	100	Phase C current (b)	LD0.FLTMSTA1.AmpsCb.mag.f
	1748		100	u16	100	Residual current (b)	LD0.FLTMSTA1.AmpsNb.mag.f
	1749		100	u16	100	Calculated residual current (b)	LD0.FLTMSTA1.AmpsNClcb.mag.f
	1750		100	u16	100	Negative sequence current (b)	LD0.FLTMSTA1.AmpsNgSeqb.mag.f
	1751		100	u16	100	Positive sequence current (b)	LD0.FLTMSTA1.AmpsPsSeqb.mag.f
	1752		100	u16	100	Phase A voltage (b)	LD0.FLTMSTA1.VoltsAb.mag.f
	1753		100	u16	100	Phase B voltage (b)	LD0.FLTMSTA1.VoltsBb.mag.f
	1754		100	u16	100	Phase C voltage (b)	LD0.FLTMSTA1.VoltsCb.mag.f
	1755		100	u16	100	Residual voltage (b)	LD0.FLTMSTA1.VoltsNb.mag.f
	1756		100	u16	100	Negative sequence voltage (b)	LD0.FLTMSTA1.VNgSeqb.mag.f
	1757		100	u16	100	Positive sequence voltage (b)	LD0.FLTMSTA1.VPsSeqb.mag.f
	1758		100	u16	100	Zero sequence voltage (b)	LD0.FLTMSTA1.VZroSeqb.mag.f
	1759		100	u16	100	Phase A to phase B voltage (b)	LD0.FLTMSTA1.VoltsABb.mag.f
	1760		100	u16	100	Phase B to phase C voltage (b)	LD0.FLTMSTA1.VoltsBCb.mag.f
	1761		100	u16	100	Phase C to phase A voltage (b)	LD0.FLTMSTA1.VoltsCAb.mag.f
	1762		100	u16	100	Maximum differential current phase A	LD0.FLTMSTA1.MxDifAClcA.mag.f
	1763		100	u16	100	Maximum differential current phase B	LD0.FLTMSTA1.MxDifAClcB.mag.f
	1764		100	u16	100	Maximum differential current phase C	LD0.FLTMSTA1.MxDifAClcC.mag.f
	1765		100	u16	100	Differential current phase A	LD0.FLTMSTA1.DifAmpsA.mag.f
	1766		100	u16	100	Differential current phase B	LD0.FLTMSTA1.DifAmpsB.mag.f
	1767		100	u16	100	Differential current phase C	LD0.FLTMSTA1.DifAmpsC.mag.f
	1768		100	u16	100	Differential current residual	LD0.FLTMSTA1.DifAmpsN.mag.f
	1769		100	u16	100	Maximum bias current phase A	LD0.FLTMSTA1.MxRstAClcA.mag.f
	1770		100	u16	100	Maximum bias current phase B	LD0.FLTMSTA1.MxRstAClcB.mag.f

Coil Addr	Register(:Bit) Addr	W	Dc	Type	Scale	Description	IEC61850 Data Attribute Name
	1771		100	u16	100	Maximum bias current phase C	LD0.FLTMSTA1.MxRstAClcC.mag.f
	1772		100	u16	100	Bias current phase A	LD0.FLTMSTA1.RstAmpsA.mag.f
	1773		100	u16	100	Bias current phase B	LD0.FLTMSTA1.RstAmpsB.mag.f
	1774		100	u16	100	Bias current phase C	LD0.FLTMSTA1.RstAmpsC.mag.f
	1775		100	u16	100	Bias current residual	LD0.FLTMSTA1.RstAmpsN.mag.f
	1776		100	u16	100	Last Fault: I2/I1 Ratio Fault	LD0.FLTMSTA1.PDNS1MxRat.mag.f
	1777		100	u16	100	Last Fault: Max Temperature	LD0.FLTMSTA1.MaxTmpRl.mag.f
	1778		100	u16	100	Last Fault: Fault Record Operation Counter	LD0.FLTMSTA1.OpCnt.stVal
	1779		100	u16	100	Last Fault: Frequency At The Time The Fault Is Cleared	LD0.FLTMSTA1.Hz.mag.f
	1780		100	u16	100	Last Fault: Frequency Gradient At The Time The Fault Is Cleared	LD0.FLTMSTA1.HzS.mag.f
	1781		100	u16	100	Last Fault: Conductance Yo	LD0.FLTMSTA1.CondN.mag.f
	1782		100	u16	100	Last Fault: Susceptance Yo	LD0.FLTMSTA1.SusN.mag.f
	1783		100	u16	100	Last Fault: Max Pickup (Start) Duration Of All Stages During The Fault	LD0.FLTMSTA1.StrDur.mag.f
	1784		100	u16	100	Distance to fault measured in pu	LD0.FLTMSTA1.FltDisKm.mag.f

Table 8: General Device Information (LLN0)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5576	235:0	0					Local / Remote (1- Local; 0-Remote)	CTRL.LLN0.Loc.stVal
5577	235:1	0	Yes					
	244:0	0					Protection LLN0 Settings Reservation	LD0.LLN0.SetSeld.stVal
	244:1	0	Yes					
	245:0	0					Protection LLN0 Settings Change	LD0.LLN0.SetChg.stVal
	245:1	0	Yes					
	236	0		u16	1	0	Local / Remote state	CTRL.LLN0.LocRem.stVal

Table 9: Device Physical Information (LPHD1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	232	0		u16	1	0	Number Of Power Ups	LD0.LPHD1.NumPwrUp.stVal
	233	0		u16	1	0	Number Of Warm Starts	LD0.LPHD1.WrmStr.stVal
	234	0		u16	1	0	Number Of Watchdog Device Resets	LD0.LPHD1.WacTrg.stVal
	237	0		s16	1	0	General Device State	LD0.LPHD1.PhyHealth.stVal
	238	0		u16	1	0	Physical Sevice Warning	LD0.LPHD1.PhyHealth1.stVal
	239	0		u16	1	0	Internal Fault	LD0.LPHD1.PhyHealth2.stVal

Table 10: LED Condition monitoring (LEDPTRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2894	2199:2	0					Global Conditioning Trip (Operate)	LD0.LEDPTRC1.Op.general
2895	2199:3	0	Yes					
3824	2245:8	0					Global Conditioning Phase-A Trip (Operate)	LD0.LEDPTRC1.Op.phsA
3825	2245:9	0	Yes					
3826	2245:10	0					Global Conditioning Phase-B Trip (Operate)	LD0.LEDPTRC1.Op.phsB
3827	2245:11	0	Yes					
3828	2245:12	0					Global Conditioning Phase-C Trip (Operate)	LD0.LEDPTRC1.Op.phsC
3829	2245:13	0	Yes					

Table 11: LED Status (LEDGGIO1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5020	2476:0	0					Led 1 On	LD0.LEDGGIO1.SPCSO1.stVal
5021	2476:1	0	Yes					
5022	2476:2	0					Led 2 On	LD0.LEDGGIO1.SPCSO2.stVal
5023	2476:3	0	Yes					
5024	2476:4	0					Led 3 On	LD0.LEDGGIO1.SPCSO3.stVal
5025	2476:5	0	Yes					
5026	2476:6	0					Led 4 On	LD0.LEDGGIO1.SPCSO4.stVal
5027	2476:7	0	Yes					
5028	2476:8	0					Led 5 On	LD0.LEDGGIO1.SPCSO5.stVal
5029	2476:9	0	Yes					
5030	2476:10	0					Led 6 On	LD0.LEDGGIO1.SPCSO6.stVal
5031	2476:11	0	Yes					
5032	2476:12	0					Led 7 On	LD0.LEDGGIO1.SPCSO7.stVal
5033	2476:13	0	Yes					
5034	2476:14	0					Led 8 On	LD0.LEDGGIO1.SPCSO8.stVal
5035	2476:15	0	Yes					
5036	2477:0	0					Led 9 On	LD0.LEDGGIO1.SPCSO9.stVal
5037	2477:1	0	Yes					
5038	2477:2	0					Led 10 On	LD0.LEDGGIO1.SPCSO10.stVal
5039	2477:3	0	Yes					
5040	2477:4	0					Led 11 On	LD0.LEDGGIO1.SPCSO11.stVal
5041	2477:5	0	Yes					

Table 12: X100 - Binary Inputs/Outputs (XGGIO100)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2148	2162:0	2					X100-Output 1 PSM	LD0.XGGIO100.SPCSO1.stVal
2149	2162:1	2	Yes					
2150	2162:2	2					X100-Output 2 PSM	LD0.XGGIO100.SPCSO2.stVal
2151	2162:3	2	Yes					
2152	2162:4	2					X100-Output 3 PSM	LD0.XGGIO100.SPCSO3.stVal
2153	2162:5	2	Yes					
2154	2162:6	2					X100-Output 4 PSM	LD0.XGGIO100.SPCSO4.stVal
2155	2162:7	2	Yes					
2156	2162:8	2					X100-Output 5 PSM	LD0.XGGIO100.SPCSO5.stVal
2157	2162:9	2	Yes					
2158	2162:10	2					X100-Output 6 PSM	LD0.XGGIO100.SPCSO6.stVal
2159	2162:11	2	Yes					

Table 13: X110 - Binary Inputs/Outputs (XGGIO110)

Coil Addr	Input Addr (1x)	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2132			2					X110-Output 1 BIO	LD0.XGGIO110.SPCSO1.stVal
2133			2	Yes					
2134			2					X110-Output 2 BIO	LD0.XGGIO110.SPCSO2.stVal
2135			2	Yes					
2136			2					X110-Output 3 BIO	LD0.XGGIO110.SPCSO3.stVal
2137			2	Yes					
2138			2					X110-Output 4 BIO	LD0.XGGIO110.SPCSO4.stVal
2139			2	Yes					
	2164	2320:0	1					X110-Input 1 BIO	LD0.XGGIO110.Ind1.stVal
	2165	2320:1	1	Yes					
	2166	2320:2	1					X110-Input 2 BIO	LD0.XGGIO110.Ind2.stVal
	2167	2320:3	1	Yes					
	2168	2320:4	1					X110-Input 3 BIO	LD0.XGGIO110.Ind3.stVal
	2169	2320:5	1	Yes					
	2170	2320:6	1					X110-Input 4 BIO	LD0.XGGIO110.Ind4.stVal
	2171	2320:7	1	Yes					
	2172	2320:8	1					X110-Input 5 BIO	LD0.XGGIO110.Ind5.stVal
	2173	2320:9	1	Yes					
	2174	2320:10	1					X110-Input 6 BIO	LD0.XGGIO110.Ind6.stVal
	2175	2320:11	1	Yes					
	2176	2320:12	1					X110-Input 7 BIO	LD0.XGGIO110.Ind7.stVal
	2177	2320:13	1	Yes					
	2178	2320:14	1					X110-Input 8 BIO	LD0.XGGIO110.Ind8.stVal

Coil Addr	Input Addr (1x)	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	2179	2320:15	1	Yes					

Table 14: X130 - Binary Inputs/Outputs (XGGIO130)

Coil Addr	Input Addr (1x)	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2100			2					X130-Output 1	LD0.XGGIO130.SPCSO1.stVal
2101			2	Yes					
2102			2					X130-Output 2	LD0.XGGIO130.SPCSO2.stVal
2103			2	Yes					
2104			2					X130-Output 3	LD0.XGGIO130.SPCSO3.stVal
2105			2	Yes					
	2100	2316:0	1					X130-Input 1	LD0.XGGIO130.Ind1.stVal
	2101	2316:1	1	Yes					
	2102	2316:2	1					X130-Input 2	LD0.XGGIO130.Ind2.stVal
	2103	2316:3	1	Yes					
	2104	2316:4	1					X130-Input 3	LD0.XGGIO130.Ind3.stVal
	2105	2316:5	1	Yes					
	2106	2316:6	1					X130-Input 4	LD0.XGGIO130.Ind4.stVal
	2107	2316:7	1	Yes					
	2108	2316:8	1					X130-Input 5	LD0.XGGIO130.Ind5.stVal
	2109	2316:9	1	Yes					
	2110	2316:10	1					X130-Input 6	LD0.XGGIO130.Ind6.stVal
	2111	2316:11	1	Yes					

Table 15: 51P (1):Three-phase non-directional overcurrent protection - low stage - instance 1 (PHLPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2230	2167:0	0					51P (1) Trip (Operate)	LD0.PHLPTOC1.Op.general
2231	2167:1	0	Yes					
3400	2224:0	0					51P (1) Phase A Trip (Operate)	LD0.PHLPTOC1.Op.phsA
3401	2224:1	0	Yes					
3402	2224:2	0					51P (1) Phase B Trip (Operate)	LD0.PHLPTOC1.Op.phsB
3403	2224:3	0	Yes					
3404	2224:4	0					51P (1) Phase C Trip (Operate)	LD0.PHLPTOC1.Op.phsC
3405	2224:5	0	Yes					
	2326:0	0					51P (1) Enable Signal For Current Multiplier	LD0.PHLPTOC1.InEnaMult.stVal
	2326:1	0	Yes					

Table 16: 51P (2):Three-phase non-directional overcurrent protection - low stage - instance 2 (PHLPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2836	2195:8	0					51P (2) Trip (Operate)	LD0.PHLPTOC2.Op.general
2837	2195:9	0	Yes					
3532	2232:4	0					51P (2) Phase A Trip (Operate)	LD0.PHLPTOC2.Op.phsA
3533	2232:5	0	Yes					
3534	2232:6	0					51P (2) Phase B Trip (Operate)	LD0.PHLPTOC2.Op.phsB
3535	2232:7	0	Yes					
3536	2232:8	0					51P (2) Phase C Trip (Operate)	LD0.PHLPTOC2.Op.phsC
3537	2232:9	0	Yes					

Table 17: 50P-1 (1):Three-phase non-directional overcurrent protection - high stage - instance 1 (PHHPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2232	2167:2	0					50P-1 (1) Trip (Operate)	LD0.PHHPTOC1.Op.general
2233	2167:3	0	Yes					
3406	2224:6	0					50P-1 (1) Phase A Trip (Operate)	LD0.PHHPTOC1.Op.phsA
3407	2224:7	0	Yes					
3408	2224:8	0					50P-1 (1) Phase B Trip (Operate)	LD0.PHHPTOC1.Op.phsB
3409	2224:9	0	Yes					
3410	2224:10	0					50P-1 (1) Phase C Trip (Operate)	LD0.PHHPTOC1.Op.phsC
3411	2224:11	0	Yes					
	2326:2	0					50P-1 (1) Enable Signal For Current Multiplier	LD0.PHHPTOC1.InEnaMult.stVal
	2326:3	0	Yes					

Table 18: 50P-1 (2):Three-phase non-directional overcurrent protection - high stage - instance 2 (PHHPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2234	2167:4	0					50P-1 (2) Trip (Operate)	LD0.PHHPTOC2.Op.general
2235	2167:5	0	Yes					
3412	2224:12	0					50P-1 (2) Phase A Trip (Operate)	LD0.PHHPTOC2.Op.phsA
3413	2224:13	0	Yes					
3414	2224:14	0					50P-1 (2) Phase B Trip (Operate)	LD0.PHHPTOC2.Op.phsB
3415	2224:15	0	Yes					
3416	2225:0	0					50P-1 (2) Phase C Trip (Operate)	LD0.PHHPTOC2.Op.phsC
3417	2225:1	0	Yes					
	2326:4	0					50P-1 (2) Enable Signal For Current Multiplier	LD0.PHHPTOC2.InEnaMult.stVal
	2326:5	0	Yes					

Table 19: 50P-2 (1):Three-phase non-directional overcurrent protection - high stage - instance 3 (PHHPTOC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2838	2195:10	0					50P-2 (1) Trip (Operate)	LD0.PHHPTOC3.Op.general
2839	2195:11	0	Yes					
3538	2232:10	0					50P-2 (1) Phase A Trip (Operate)	LD0.PHHPTOC3.Op.phsA
3539	2232:11	0	Yes					
3540	2232:12	0					50P-2 (1) Phase B Trip (Operate)	LD0.PHHPTOC3.Op.phsB
3541	2232:13	0	Yes					
3542	2232:14	0					50P-2 (1) Phase C Trip (Operate)	LD0.PHHPTOC3.Op.phsC
3543	2232:15	0	Yes					

Table 20: Table - 50P-2 (2):Three-phase non-directional overcurrent protection - high stage - instance 4 (PHHPTOC4))

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2840	2195:12	0					50P-2 (2) Trip (Operate)	LD0.PHHPTOC4.Op.general
2841	2195:13	0	Yes					
3544	2233:0	0					50P-2 (2) Phase A Trip (Operate)	LD0.PHHPTOC4.Op.phsA
3545	2233:1	0	Yes					
3546	2233:2	0					50P-2 (2) Phase B Trip (Operate)	LD0.PHHPTOC4.Op.phsB
3547	2233:3	0	Yes					
3548	2233:4	0					50P-2 (2) Phase C Trip (Operate)	LD0.PHHPTOC4.Op.phsC
3549	2233:5	0	Yes					

Table 21: 67/51P (2):Three-phase directional overcurrent protection - low stage - instance 1 (DPHLPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2270	2169:8	0					67/51P (2) Trip (Operate)	LD0.DPHLPTOC1.Op.general
2271	2169:9	0	Yes					
3460	2227:12	0					67/51P (2) Phase A Trip (Operate)	LD0.DPHLPTOC1.Op.phsA
3461	2227:13	0	Yes					
3462	2227:14	0					67/51P (2) Phase B Trip (Operate)	LD0.DPHLPTOC1.Op.phsB
3463	2227:15	0	Yes					
3464	2228:0	0					67/51P (2) Phase C Trip (Operate)	LD0.DPHLPTOC1.Op.phsC
3465	2228:1	0	Yes					

Table 22: 67/51P (1):Three-phase directional overcurrent protection - low stage - instance 2 (DPHLPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2272	2169:10	0					67/51P (1) Trip (Operate)	LD0.DPHLPTOC2.Op.general
2273	2169:11	0	Yes					
3466	2228:2	0					67/51P (1) Phase A Trip (Operate)	LD0.DPHLPTOC2.Op.phsA
3467	2228:3	0	Yes					

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3468	2228:4	0					67/51P (1) Phase B Trip (Operate)	LD0.DPHLPTOC2.Op.phsB
3469	2228:5	0	Yes					
3470	2228:6	0					67/51P (1) Phase C Trip (Operate)	LD0.DPHLPTOC2.Op.phsC
3471	2228:7	0	Yes					

Table 23: 51G:Non-directional ground-fault protection - low stage - instance 1 (EFLPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2246	2168:0	0					51G Trip (Operate)	LD0.EFLPTOC1.Op.general
2247	2168:1	0	Yes					
	2326:8	0					51G Enable Current Multiplier	LD0.EFLPTOC1.InEnaMult.stVal
	2326:9	0	Yes					

Table 24: 51N (1):Non-directional ground-fault protection - low stage - instance 2 (EFLPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2238	2167:8	0					51N (1) Trip (Operate)	LD0.EFLPTOC2.Op.general
2239	2167:9	0	Yes					

Table 25: 51N (2):Non-directional ground-fault protection - low stage - instance 3 (EFLPTOC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2602	2184:8	0					51N (2) Trip (Operate)	LD0.EFLPTOC3.Op.general
2603	2184:9	0	Yes					

Table 26: 50G-1:Non-directional ground-fault protection - high stage - instance 1 (EFHPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2248	2168:2	0					50G-1 Trip (Operate)	LD0.EFHPTOC1.Op.general
2249	2168:3	0	Yes					
	2326:10	0					50G-1 Enable Current Multiplier	LD0.EFHPTOC1.InEnaMult.stVal
	2326:11	0	Yes					

Table 27: 50G-2:Non-directional ground-fault protection - high stage - instance 2 (EFHPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2250	2168:4	0					50G-2 Trip (Operate)	LD0.EFHPTOC2.Op.general
2251	2168:5	0	Yes					

Table 28: 50N-1 (1):Non-directional ground-fault protection - high stage - instance 3 (EFHPTOC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2240	2167:10	0					50N-1 (1) Trip (Operate)	LD0.EFHPTOC3.Op.general
2241	2167:11	0	Yes					

Table 29: 50N-1 (2):Non-directional ground-fault protection - high stage - instance 4 (EFHPTOC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2242	2167:12	0					50N-1 (2) Trip (Operate)	LD0.EFHPTOC4.Op.general
2243	2167:13	0	Yes					

Table 30: 50N-2 (1):Non-directional ground-fault protection - high stage - instance 5 (EFHPTOC5)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2296	2171:2	0					50N-2 (1) Trip (Operate)	LD0.EFHPTOC5.Op.general
2297	2171:3	0	Yes					

Table 31: 50N-2 (2):Non-directional ground-fault protection - high stage - instance 6 (EFHPTOC6)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2624	2185:14	0					50N-2 (2) Trip (Operate)	LD0.EFHPTOC6.Op.general
2625	2185:15	0	Yes					

Table 32: 67/51N (2):Directional ground-fault protection - low stage - instance 1 (DEFLPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2278	2170:0	0					67/51N (2) Trip (Operate)	LD0.DEFLPTOC1.Op.general
2279	2170:1	0	Yes					

Table 33: 67/51N (1):Directional ground-fault protection - low stage - instance 2 (DEFLPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2280	2170:2	0					67/51N (1) Trip (Operate)	LD0.DEFLPTOC2.Op.general
2281	2170:3	0	Yes					

Table 34: 46 (1):Negative-sequence overcurrent protection - instance 1 (NSPTOC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2256	2168:10	0					46 (1) Trip (Operate)	LD0.NSPTOC1.Op.general
2257	2168:11	0	Yes					
	2326:14	0					46 (1) Enable Signal For Current Multiplier	LD0.NSPTOC1.InEnaMult.stVal
	2326:15	0	Yes					

Table 35: 46 (2):Negative-sequence overcurrent protection - instance 2 (NSPTOC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2258	2168:12	0					46 (2) Trip (Operate)	LD0.NSPTOC2.Op.general
2259	2168:13	0	Yes					
	2327:0	0					46 (2) Enable Signal For Current Multiplier	LD0.NSPTOC2.InEnaMult.stVal
	2327:1	0	Yes					

Table 36: 59G (2):Residual overvoltage protection - instance 1 (ROVPTOV1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2308	2171:14	0					59G (2) Trip (Operate)	LD0.ROVPTOV1.Op.general
2309	2171:15	0	Yes					

Table 37: 59N (2):Residual overvoltage protection - instance 2 (ROVPTOV2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3146	2210:12	0					59N (2) Trip (Operate)	LD0.ROVPTOV2.Op.general
3147	2210:13	0	Yes					

Table 38: 59N (1):Residual overvoltage protection - instance 3 (ROVPTOV3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2348	2174:6	0					59N (1) Trip (Operate)	LD0.ROVPTOV3.Op.general
2349	2174:7	0	Yes					

Table 39: 59G (1):Residual overvoltage protection - instance 4 (ROVPTOV4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2350	2174:8	0					59G (1) Trip (Operate)	LD0.ROVPTOV4.Op.general
2351	2174:9	0	Yes					

Table 40: 27 (2):Three-phase undervoltage protection - instance 1 (PHPTUV1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2292	2170:14	0					27 (2) Trip (Operate)	LD0.PHPTUV1.Op.general
2293	2170:15	0	Yes					
3478	2228:14	0					27 (2) Phase A Trip (Operate)	LD0.PHPTUV1.Op.phsA
3479	2228:15	0	Yes					
3480	2229:0	0					27 (2) Phase B Trip (Operate)	LD0.PHPTUV1.Op.phsB
3481	2229:1	0	Yes					
3482	2229:2	0					27 (2) Phase C Trip (Operate)	LD0.PHPTUV1.Op.phsC
3483	2229:3	0	Yes					

Table 41: 27 (1):Three-phase undervoltage protection - instance 2 (PHPTUV2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2294	2171:0	0					27 (1) Trip (Operate)	LD0.PHPTUV2.Op.general
2295	2171:1	0	Yes					
3484	2229:4	0					27 (1) Phase A Trip (Operate)	LD0.PHPTUV2.Op.phsA
3485	2229:5	0	Yes					
3486	2229:6	0					27 (1) Phase B Trip (Operate)	LD0.PHPTUV2.Op.phsB
3487	2229:7	0	Yes					
3488	2229:8	0					27 (1) Phase C Trip (Operate)	LD0.PHPTUV2.Op.phsC
3489	2229:9	0	Yes					

Table 42: 59 (2):Three-phase overvoltage protection - instance 1 (PHPTOV1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2298	2171:4	0					59 (2) Trip (Operate)	LD0.PHPTOV1.Op.general
2299	2171:5	0	Yes					
3490	2229:10	0					59 (2) Phase A Trip (Operate)	LD0.PHPTOV1.Op.phsA
3491	2229:11	0	Yes					
3492	2229:12	0					59 (2) Phase B Trip (Operate)	LD0.PHPTOV1.Op.phsB
3493	2229:13	0	Yes					
3494	2229:14	0					59 (2) Phase C Trip (Operate)	LD0.PHPTOV1.Op.phsC
3495	2229:15	0	Yes					

Table 43: 59 (1):Three-phase overvoltage protection - instance 2 (PHPTOV2))

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2300	2171:6	0					59 (1) Trip (Operate)	LD0.PHPTOV2.Op.general
2301	2171:7	0	Yes					
3496	2230:0	0					59 (1) Phase A Trip (Operate)	LD0.PHPTOV2.Op.phsA
3497	2230:1	0	Yes					
3498	2230:2	0					59 (1) Phase B Trip (Operate)	LD0.PHPTOV2.Op.phsB
3499	2230:3	0	Yes					
3500	2230:4	0					59 (1) Phase C Trip (Operate)	LD0.PHPTOV2.Op.phsC
3501	2230:5	0	Yes					

Table 44: 47 (2):Negative-sequence overvoltage protection - instance 1 (NSPTOV1))

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	IEC61850 Data Attribute Name	Description
2342	2174:0	0					LD0.NSPTOV1.Op.general	47 (2) Trip (Operate)
2343	2174:1	0	Yes					

Table 45: 47 (1):Negative-sequence overvoltage protection - instance 2 (NSPTOV2))

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3152	2211:2	0					47 (1) Trip (Operate)	LD0.NSPTOV2.Op.general
3153	2211:3	0	Yes					

Table 46: 81-1 (2):Frequency protection - instance 1 (FRPTRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3154	2211:4	0					81-1 (2) Frequency Trip (Operate)	LD0.FRPTRC1.Op.general
3155	2211:5	0	Yes					
	841	6		u16	100	0	81-1 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Instance 1	LD0.FRPTRC1.StrDur.mag.f

Table 47: 81-1 (2):Frequency protection - instance 1 (FRPTOF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3158	2211:8	0					81-1 (2) Over-Frequency Trip (Operate)	LD0.FRPTOF1.Op.general
3159	2211:9	0	Yes					
	843	6		u16	100	0	81-1 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Overfrequency Instance 1	LD0.FRPTOF1.StrDur.mag.f

Table 48: 81-1 (2):Frequency protection - instance 1 (FRPTUF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3162	2211:12	0					81-1 (2) Under-Frequency Trip (Operate)	LD0.FRPTUF1.Op.general
3163	2211:13	0	Yes					
	845	6		u16	100	0	81-1 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Underfrequency Instance 1	LD0.FRPTUF1.StrDur.mag.f

Table 49: 81-1 (2):Frequency protection - instance 1 (FRPFRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3166	2212:0	0					81-1 (2) Frequency Gradient Trip (Operate)	LD0.FRPFRC1.Op.general
3167	2212:1	0	Yes					
	847	6		u16	100	0	81-1 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Frequency Gradient Instance 1	LD0.FRPFRC1.StrDur.mag.f

Table 50: 81-2 (2):Frequency protection - instance 2 (FRPTRC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3156	2211:6	0					81-2 (2) Frequency Trip (Operate)	LD0.FRPTRC2.Op.general
3157	2211:7	0	Yes					
	842	6		u16	100	0	81-2 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Instance 2	LD0.FRPTRC2.StrDur.mag.f

Table 51: 81-2 (2):Frequency protection - instance 2 (FRPTOF2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3160	2211:10	0					81-2 (2) Over-Frequency Trip (Operate)	LD0.FRPTOF2.Op.general
3161	2211:11	0	Yes					
	844	6		u16	100	0	81-2 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Overfrequency Instance 2	LD0.FRPTOF2.StrDur.mag.f

Table 52: 81-2 (2):Frequency protection - instance 2 (FRPTUF2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3164	2211:14	0					81-2 (2) Under-Frequency Trip (Operate)	LD0.FRPTUF2.Op.general
3165	2211:15	0	Yes					
	846	6		u16	100	0	81-2 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Underfrequency Instance 2	LD0.FRPTUF2.StrDur.mag.f

Table 53: 81-2 (2):Frequency protection - instance 2 (FRPFRC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3168	2212:2	0					81-2 (2) Frequency Gradient Trip (Operate)	LD0.FRPFRC2.Op.general
3169	2212:3	0	Yes					
	848	6		u16	100	0	81-2 (2) Ratio Of Pickup (Start) Time / Trip (Operate) Time Frequency Gradient Instance 2	LD0.FRPFRC2.StrDur.mag.f

Table 54: 81-1 (1):Frequency protection - instance 3 (FRPTRC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3252	2217:6	0					81-1 (1) Trip (Operate)	LD0.FRPTRC3.Op.general
3253	2217:7	0	Yes					
	881	6		u16	100	0	81-1 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time	LD0.FRPTRC3.StrDur.mag.f

Table 55: 81-1 (1):Frequency protection - instance 3 (FRPTOF3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3256	2217:10	0					81-1 (1) Over-Frequency Trip (Operate)	LD0.FRPTOF3.Op.general
3257	2217:11	0	Yes					
	883	6		u16	100	0	81-1 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Overfrequency	LD0.FRPTOF3.StrDur.mag.f

Table 56: 81-1 (1):Frequency protection - instance 3 (FRPTUF3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3260	2217:14	0					81-1 (1) Under-Frequency Trip (Operate)	LD0.FRPTUF3.Op.general
3261	2217:15	0	Yes					
	885	6		u16	100	0	81-1 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Underfrequency	LD0.FRPTUF3.StrDur.mag.f

Table 57: 81-1 (1):Frequency protection - instance 3 (FRPFRC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3248	2217:2	0					81-1 (1) Frequency Gradient Trip (Operate)	LD0.FRPFRC3.Op.general
3249	2217:3	0	Yes					
	879	6		u16	100	0	81-1 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Frequency Gradient	LD0.FRPFRC3.StrDur.mag.f

Table 58: 81-2 (1):Frequency protection - instance 4 (FRPTRC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3254	2217:8	0					81-2 (1) Trip (Operate)	LD0.FRPTRC4.Op.general
3255	2217:9	0	Yes					
	882	6		u16	100	0	81-2 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time	LD0.FRPTRC4.StrDur.mag.f

Table 59: 81-2 (1):Frequency protection - instance 4 (FRPTOF4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3258	2217:12	0					81-2 (1) Over-Frequency Trip (Operate)	LD0.FRPTOF4.Op.general
3259	2217:13	0	Yes					
	884	6		u16	100	0	81-2 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Overfrequency	LD0.FRPTOF4.StrDur.mag.f

Table 60: 81-2 (1):Frequency protection - instance 4 (FRPTUF4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3262	2218:0	0					81-2 (1) Under-Frequency Trip (Operate)	LD0.FRPTUF4.Op.general
3263	2218:1	0	Yes					
	886	6		u16	100	0	81-2 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Underfrequency	LD0.FRPTUF4.StrDur.mag.f

Table 61: 81-2 (1):Frequency protection - instance 4 (FRPFRC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3250	2217:4	0					81-2 (1) Frequency Gradient Trip (Operate)	LD0.FRPFRC4.Op.general
3251	2217:5	0	Yes					
	880	6		u16	100	0	81-2 (1) Ratio Of Pickup (Start) Time / Trip (Operate) Time Frequency Gradient	LD0.FRPFRC4.StrDur.mag.f

Table 62: 24-1 (2):Voltage per hertz protection - instance 1 (OEPVPH1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3224	2215:10	0					24-1 (2) Trip (Operate)	LD0.OEPVPH1.Op.general
3225	2215:11	0	Yes					

Table 63: 24-2 (2):Voltage per hertz protection - instance 2 (OEPVPH2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3226	2215:12	0					24-2 (2) Trip (Operate)	LD0.OEPVPH2.Op.general
3227	2215:13	0	Yes					

Table 64: 24-1 (1):Voltage per hertz protection - instance 3 (OEPVPH3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3228	2215:14	0					24-1 (1) Trip (Operate)	LD0.OEPVPH3.Op.general
3229	2215:15	0	Yes					

Table 65: 24-2 (1):Voltage per hertz protection - instance 4 (OEPVPH4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3230	2216:0	0					24-2 (1) Trip (Operate)	LD0.OEPVPH4.Op.general
3231	2216:1	0	Yes					

Table 66: 49T (1):Three-phase thermal overload protection for power transformers - two time constants (T2PTTR1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2832	2195:4	0					49T (1) Thermal Overload Protection Trip (Operate) For Power Transformers	LD0.T2PTTR1.Op.general
2833	2195:5	0	Yes					
5512	2505:6	0					49T (1) Thermal Overload Protection Alarm For Power Transformers	LD0.T2PTTR1.AlmThm.general
5513	2505:7	0	Yes					
	792	6		u16	100	0	49T (1) Temp	LD0.T2PTTR1.Tmp.mag.f
	793	6		u16	100	0	49T (1) Temp_RI	LD0.T2PTTR1.TmpRI.mag.f
	794	6		u16	100	0	49T (1) The Ambient Temperature Used In The Calculation	LD0.T2PTTR1.TmpUsed.mag.f
	795	0		u16	1	0	49T (1) Estimated Time To Trip (Operate)	LD0.T2PTTR1.TmsOp.stVal
	796	0		u16	1	0	49T (1) Estimated Time To Deactivate Inhrec	LD0.T2PTTR1.TmsRecEna.stVal

Table 67: 87T:Stabilized and instantaneous differential protection for 2W transformers (TR2PDIF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2828	2195:0	0					87T Trip (Operate) Signal	LD0.TR2PDIF1.Op.general
2829	2195:1	0	Yes					
3830	2245:14	0					87T Phase-A Differential Trip (Operate)	LD0.TR2PDIF1.Op.phsA
3831	2245:15	0	Yes					
3832	2246:0	0					87T Phase-B Differential Trip (Operate)	LD0.TR2PDIF1.Op.phsB
3833	2246:1	0	Yes					
3834	2246:2	0					87T Phase-C Differential Trip (Operate)	LD0.TR2PDIF1.Op.phsC
3835	2246:3	0	Yes					
3836	2246:4	0					87T Status From 2nd Harmonic Restraint Blocking- General	LD0.TR2PDIF1.Blk2HSt.general
3837	2246:5	0	Yes					
3838	2246:6	0					87T Status From 2nd Harmonic Restraint Blocking- Phase A	LD0.TR2PDIF1.Blk2HSt.phsA
3839	2246:7	0	Yes					
3840	2246:8	0					87T Status From 2nd Harmonic Restraint Blocking- Phase B	LD0.TR2PDIF1.Blk2HSt.phsB
3841	2246:9	0	Yes					
3842	2246:10	0					87T Status From 2nd Harmonic Restraint Blocking- Phase C	LD0.TR2PDIF1.Blk2HSt.phsC
3843	2246:11	0	Yes					
	797	6		u16	100	0	87T Phase A Differential Current	LD0.TR2PDIF1.DifAClc.phsA.cVal.mag.f

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	798	6		u16	100	0	87T Phase B Differential Current	LD0.TR2PDIF1.DifAClc.phsB.cVal.mag.f
	799	6		u16	100	0	87T Phase C Differential Current	LD0.TR2PDIF1.DifAClc.phsC.cVal.mag.f
	800	6		u16	100	0	87T Phase A Biasing Current	LD0.TR2PDIF1.RstA.phsA.cVal.mag.f
	801	6		u16	100	0	87T Phase B Biasing Current	LD0.TR2PDIF1.RstA.phsB.cVal.mag.f
	802	6		u16	100	0	87T Phase C Biasing Current	LD0.TR2PDIF1.RstA.phsC.cVal.mag.f

Table 68: Table - 87LOZREF (2):Numerical stabilized low impedance restricted ground-fault protection (LREFPDIF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2890	2198:14	0					87LOZREF (2) Trip (Operate)	LD0.LREFPDIF1.Op.general
2891	2198:15	0	Yes					

Table 69: 50BF (1):Circuit breaker failure protection - instance 1 (CCBRBRF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2310	2172:0	0					50BF (1) Recloser External Operation Failure 2	LD0.CCBRBRF1.OpEx.general
2311	2172:1	0	Yes					
2312	2172:2	0					50BF (1) Recloser Retrip (Internal Trip) 2	LD0.CCBRBRF1.OpIn.general
2313	2172:3	0	Yes					
5526	2506:4	0					50BF (1) Recloser Close Position 2	LD0.CCBRBRF1.InPosCls.stVal
5527	2506:5	0	Yes					
5528	2506:6	0					50BF (1) Recloser Faulty And Unable To Trip 2	LD0.CCBRBRF1.InCBFlt.stVal
5529	2506:7	0	Yes					
5532	2506:10	0					50BF (1) Recloser Trip Start 2	LD0.CCBRBRF1.InStr.stVal
5533	2506:11	0	Yes					

Table 70: 50BF (2):Circuit breaker failure protection - instance 2 (CCBRBRF2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
6548	3034:4	0					50BF (2) Recloser Faulty And Unable To Trip 1	LD0.CCBRBRF2.InCBFlt.stVal
6549	3034:5	0	Yes					
6550	3034:6	0					50BF (2) Recloser Close Position 1	LD0.CCBRBRF2.InPosCls.stVal
6551	3034:7	0	Yes					
6552	3034:8	0					50BF (2) Recloser Trip Start 1	LD0.CCBRBRF2.InStr.stVal
6553	3034:9	0	Yes					

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
6554	3034:10	0					50BF (2) Recloser External Operation Failure 1	LD0.CCBRBRF2.OpEx.general
6555	3034:11	0	Yes					
6556	3034:12	0					50BF (2) Recloser Retrip (Internal Trip) 1	LD0.CCBRBRF2.OpIn.general
6557	3034:13	0	Yes					

Table 71: 86/94-1:Master trip - instance 1 (TRPPTRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2896	2199:4	0					86/94-1 Master Trip Trip (Operate) Input 1	LD0.TRPPTRC1.Op.general
2897	2199:5	0	Yes					
2898	2199:6	0					86/94-1 Master Trip General Output 1	LD0.TRPPTRC1.Tr.general
2899	2199:7	0	Yes					

Table 72: 86/94-2:Master trip - instance 2 (TRPPTRC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2900	2199:8	0					86/94-2 Master Trip Operate Input 2	LD0.TRPPTRC2.Op.general
2901	2199:9	0	Yes					
2902	2199:10	0					86/94-2 Master Trip General Output 2	LD0.TRPPTRC2.Tr.general
2903	2199:11	0	Yes					

Table 73: AFD-1 (2):Arc protection - instance 1 (ARCSARC11)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2320	2172:10	0					AFD-1 (2) Fault Arc Detected 1	LD0.ARCSARC11.FADet.stVal
2321	2172:11	0	Yes					
2326	2173:0	0					AFD-1 (2) Remote Fault Arc Detected 1	LD0.ARCSARC11.InRemFA.stVal
2327	2173:1	0	Yes					

Table 74: AFD-1 (2):Arc protection - instance 1 (ARCPTRC11)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2314		0					AFD-1 (2) Arc Detected Trip (Operate) 1	LD0.ARCPTRC11.Op.general
2315		0	Yes					
	2172:4	0					AFD-1 (2) Arc Detected Trip (Operate) 1	LD0.ARCPTRC11.Op.general
	2172:5	0	Yes					

Table 75: AFD-2 (2):Arc protection - instance 2 (ARCSARC21)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2322	2172:12	0					AFD-2 (2) Fault Arc Detected 2	LD0.ARCSARC21.FADet.stVal
2323	2172:13	0	Yes					
2328	2173:2	0					AFD-2 (2) Remote Fault Arc Detected 2	LD0.ARCSARC21.InRemFA.stVal
2329	2173:3	0	Yes					

Table 76: AFD-2 (2):Arc protection - instance 2 (ARCPTRC21)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2316	2172:6	0					AFD-2 (2) Arc Detected Trip (Operate) 2	LD0.ARCPTRC21.Op.general
2317	2172:7	0	Yes					

Table 77: AFD-3 (2):Arc protection - instance 3 (ARCSARC31)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2324	2172:14	0					AFD-3 (2) Fault Arc Detected 3	LD0.ARCSARC31.FADet.stVal
2325	2172:15	0	Yes					
2330	2173:4	0					AFD-3 (2) Remote Fault Arc Detected 3	LD0.ARCSARC31.InRemFA.stVal
2331	2173:5	0	Yes					

Table 78: AFD-3 (2):Arc protection - instance 3 (ARCPTRC31)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2318	2172:8	0					AFD-3 (2) Arc Detected Trip (Operate) 3	LD0.ARCPTRC31.Op.general
2319	2172:9	0	Yes					

Table 79: MAP - 1:Multi-purpose protection - instance 1 (MAPGAPC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3218	2215:4	0					MAP - 1 Multi-Purpose Protection 1	LD0.MAPGAPC1.Op.general
3219	2215:5	0	Yes					

Table 80: MAP - 2:Multi-purpose protection - instance 2 (MAPGAPC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3220	2215:6	0					MAP - 2 Multi-Purpose Protection 2	LD0.MAPGAPC2.Op.general
3221	2215:7	0	Yes					

Table 81: MAP - 3:Multi-purpose protection - instance 3 (MAPGAPC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3222	2215:8	0					MAP - 3 Multi-Purpose Protection 3	LD0.MAPGAPC3.Op.general
3223	2215:9	0	Yes					

Table 82: 81LSH-1 (2):Load shedding and restoration - instance 1 (LSHDPTRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3170	2212:4	0					81LSH-1 (2)Load Shedding Trip - 1	LD0.LSHDPTRC1.Op.general
3171	2212:5	0	Yes					
3172	2212:6	0					81LSH-1 (2)Restore Signal For Load Restoring Purposes - 1	LD0.LSHDPTRC1.RestLodOp.general
3173	2212:7	0	Yes					
	849	6		u16	100	0	81LSH-1 (2) Ratio Of Pickup (Start) / Trip (Operate) Time Frequency Gradient 1	LD0.LSHDPTRC1.StrDur.mag.f

Table 83: 81LSH-1 (2):Load shedding and restoration - instance 1 (LSHDPTUF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3178	2212:12	0					81LSH-1 (2) Trip (Operate) Underfrequency	LD0.LSHDPTUF1.Op.general
3179	2212:13	0	Yes					

Table 84: 81LSH-1 (2):Load shedding and restoration - instance 1 (LSHDPFRC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3182	2213:0	0					81LSH-1 (2) Trip (Operate) Frequency Gradient	LD0.LSHDPFRC1.Op.general
3183	2213:1	0	Yes					

Table 85: 81LSH-2 (2):Load shedding and restoration - instance 2 (LSHDPTRC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3174	2212:8	0					81LSH-2 (2) Load Shedding Trip - 2	LD0.LSHDPTRC2.Op.general
3175	2212:9	0	Yes					
3176	2212:10	0					81LSH-2 (2) Restore Signal For Load Restoring Purposes - 2	LD0.LSHDPTRC2.RestLodOp.general
3177	2212:11	0	Yes					
	850	6		u16	100	0	81LSH-2 (2) Ratio Of Pickup (Start) / Trip (Operate) Time Frequency Gradient 2	LD0.LSHDPTRC2.StrDur.mag.f

Table 86: 81LSH-2 (2):Load shedding and restoration - instance 2 (LSHDPTUF2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3180	2212:14	0					81LSH-2 (2) Trip (Operate) Underfrequency	LD0.LSHDPTUF2.Op.general
3181	2212:15	0	Yes					

Table 87: 81LSH-2 (2):Load shedding and restoration - instance 2 (LSHDPFRC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3184	2213:2	0					81LSH-2 (2) Trip (Operate) Frequency Gradient	LD0.LSHDPFRC2.Op.general
3185	2213:3	0	Yes					

Table 88: 81LSH-1 (1):Load shedding and restoration - instance 3 (LSHDPTRC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3232	2216:2	0					81LSH-1 (1) Load Shedding Trip - 3	LD0.LSHDPTRC3.Op.general
3233	2216:3	0	Yes					
3234	2216:4	0					81LSH-1 (1) Restore Signal For Load Restoring Purposes - 3	LD0.LSHDPTRC3.RestLodOp.general
3235	2216:5	0	Yes					
	851	6		u16	100	0	81LSH-1 (1) Ratio Of Pickup (Start) / Trip (Operate) Time Frequency Gradient 3	LD0.LSHDPTRC3.StrDur.mag.f

Table 89: 81LSH-1 (1):Load shedding and restoration - instance 3 (LSHDPTUF3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3244	2216:14	0					81LSH-1 (1) Trip (Operate) Underfrequency	LD0.LSHDPTUF3.Op.general
3245	2216:15	0	Yes					

Table 90: 81LSH-1 (1):Load shedding and restoration - instance 3 (LSHDPFRC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3240	2216:10	0					81LSH-1 (1) Trip (Operate) Frequency Gradient	LD0.LSHDPFRC3.Op.general
3241	2216:11	0	Yes					

Table 91: 81LSH-2 (1):Load shedding and restoration - instance 4 (LSHDPTRC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3236	2216:6	0					81LSH-2 (1)Load Shedding Trip - 4	LD0.LSHDPTRC4.Op.general
3237	2216:7	0	Yes					
3238	2216:8	0					81LSH-2 (1) Restore Signal For Load Restoring Purposes - 4	LD0.LSHDPTRC4.RestLodOp.general
3239	2216:9	0	Yes					
	852	6		u16	100	0	81LSH-2 (1) Ratio Of Pickup (Start) / Trip (Operate) Time Frequency Gradient 4	LD0.LSHDPTRC4.StrDur.mag.f

Table 92: 81LSH-2 (1):Load shedding and restoration - instance 4 (LSHDPTUF4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3246	2217:0	0					81LSH-2 (1) Trip (Operate) Underfrequency	LD0.LSHDPTUF4.Op.general
3247	2217:1	0	Yes					

Table 93: 81LSH-2 (1):Load shedding and restoration - instance 4 (LSHDPFRC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
3242	2216:12	0					81LSH-2 (1) Trip (Operate) Frequency Gradient	LD0.LSHDPFRC4.Op.general
3243	2216:13	0	Yes					

Table 94: 37 (1):Loss of phase - instance 1 (PHPTUC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2950	2202:10	0					37 (1) Trip (Operate)	LD0.PHPTUC1.Op.general
2951	2202:11	0	Yes					
3586	2235:10	0					37 (1) Phase-A Trip (Operate)	LD0.PHPTUC1.Op.phsA
3587	2235:11	0	Yes					
3588	2235:12	0					37 (1) Phase-B Trip (Operate)	LD0.PHPTUC1.Op.phsB
3589	2235:13	0	Yes					
3590	2235:14	0					37 (1) Phase-C Trip (Operate)	LD0.PHPTUC1.Op.phsC
3591	2235:15	0	Yes					

Table 95: 52 (1):Circuit-breaker control - instance 1 (CBCILO1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5442	2501:0	0					52 (1) Breaker Interlock Enable Open 1	CTRL.CBCILO1.EnaOpn.stVal
5443	2501:1	0	Yes					
5444	2501:2	0					52 (1) Breaker Interlock Enable Close 1	CTRL.CBCILO1.EnaCls.stVal
5445	2501:3	0	Yes					
5472	2502:14	0					52 (1) Breaker Interlock Bypass 1	CTRL.CBCILO1.ItlByPss.stVal
5473	2502:15	0	Yes					

Table 96: 52 (1):Circuit-breaker control - instance 1 (CBCSWI1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5110	2481:0	0					52 (1) Breaker Switch Position Open	CTRL.CBCSWI1.Pos.stVal
5111	2481:1	0	Yes					
5112	2481:2	0					52 (1) Breaker Switch Position Closed	CTRL.CBCSWI1.Pos.stVal
5113	2481:3	0	Yes					
5114	2481:4	0					52 (1) Breaker Switch Position valid	CTRL.CBCSWI1.Pos.stVal
5115	2481:5	0	Yes					

Table 97: 52 (1):Circuit-breaker control - instance 1 (CBXCBR1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5150	2490:0	0					52 (1) Breaker Block Open	CTRL.CBXCBR1.BlkOpn.stVal
5151	2490:1	0	Yes					
5152	2490:2	0					52 (1) Breaker Block Close	CTRL.CBXCBR1.BlkCls.stVal
5153	2490:3	0	Yes					

Table 98: 52 (2):Circuit-breaker control - instance 2 (CBCILO2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
6558	3034:14	0					52 (2) Breaker Interlock Enable Open 2	CTRL.CBCILO2.EnaOpn.stVal
6559	3034:15	0	Yes					
6560	3035:0	0					52 (2) Breaker Interlock Enable Close 2	CTRL.CBCILO2.EnaCls.stVal
6561	3035:1	0	Yes					
6562	3035:2	0					52 (2) Breaker Interlock Bypass 2	CTRL.CBCILO2.ItlByPss.stVal
6563	3035:3	0	Yes					

Table 99: 52 (2):Circuit-breaker control - instance 2 (CBCSWI2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5140	2486:0	0					52 (2) Breaker Switch Position Open	CTRL.CBCSWI2.Pos.stVal
5141	2486:1	0	Yes					
5142	2486:2	0					52 (2) Breaker Switch Position Closed	CTRL.CBCSWI2.Pos.stVal
5143	2486:3	0	Yes					
5144	2486:4	0					52 (2) Breaker Switch Position valid	CTRL.CBCSWI2.Pos.stVal
5145	2486:5	0	Yes					

Table 100: 52 (2):Circuit-breaker control - instance 2 (CBXCBR2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5154	2490:4	0					52 (2) Breaker Block Open	CTRL.CBXCBR2.BlkOpn.stVal
5155	2490:5	0	Yes					
5156	2490:6	0					52 (2) Breaker Block Close	CTRL.CBXCBR2.BlkCls.stVal
5157	2490:7	0	Yes					

Table 101: 84T:Tap changer position indication (TPOSSLTC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	813	6		u16	1	0	84T TAPPOS	LD0.TPOSSLTC1.TapPos.valWTr.posVal

Table 102: 52CM (1):Circuit-breaker condition monitoring - instance 1 (SSCBR1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5410	2499:0	0					52CM (1) Recloser Open Travel Time Exceeded Set Value	LD0.SSCBR1.OpnAlm.stVal
5411	2499:1	0	Yes					
5412	2499:2	0					52CM (1) Recloser Close Travel Time Exceeded Set Value	LD0.SSCBR1.ClsAlm.stVal
5413	2499:3	0	Yes					
5418	2499:8	0					52CM (1) Spring Charging Time Has Crossed The Set Value	LD0.SSCBR1.SprChaAlm.stVal
5419	2499:9	0	Yes					
5420	2499:10	0					52CM (1) Number Of Recloser Operations Exceeds Alarm Limit	LD0.SSCBR1.OpNumAlm.stVal
5421	2499:11	0	Yes					
5422	2499:12	0					52CM (1) Number Of Recloser Operations Exceeds Lockout Limit	LD0.SSCBR1.OpNumLO.stVal
5423	2499:13	0	Yes					
5424	2499:14	0					52CM (1) Accumulated Currents Power (Iyt) Exceeded Alarm Limit	LD0.SSCBR1.APwrAlm.stVal
5425	2499:15	0	Yes					

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5426	2500:0	0					52CM (1) Accumulated Currents Power (Iyt) Exceeded Lockout Limit	LD0.SSCBR1.APwrLO.stVal
5427	2500:1	0	Yes					
5428	2500:2	0					52CM (1) Remaining Life Of Recloser Exceeded Alarm Limit	LD0.SSCBR1.CBLifAlm.stVal
5429	2500:3	0	Yes					
5430	2500:4	0					52CM (1) Recloser Not Operated For Long Time Alarm	LD0.SSCBR1.LonTmAlm.stVal
5431	2500:5	0	Yes					
5432	2500:6	0					52CM (1) Pressure Below Alarm Level	LD0.SSCBR1.PresAlm.stVal
5433	2500:7	0	Yes					
5434	2500:8	0					52CM (1) Pressure Below Lockout Level	LD0.SSCBR1.PresLO.stVal
5435	2500:9	0	Yes					
5436	2500:10	0					52CM (1) Recloser Position Is Open	LD0.SSCBR1.PosOpn.stVal
5437	2500:11	0	Yes					
5438	2500:12	0					52CM (1) Invalid Position	LD0.SSCBR1.PosIvd.stVal
5439	2500:13	0	Yes					
5440	2500:14	0					52CM (1) Recloser Position Is Closed	LD0.SSCBR1.PosCls.stVal
5441	2500:15	0	Yes					
5534	2506:12	0					52CM (1) Recloser Spring Charging Started Input	LD0.SSCBR1.InSprChStr.stVal
5535	2506:13	0	Yes					
5536	2506:14	0					52CM (1) Recloser Spring Charged Input	LD0.SSCBR1.InSprCha.stVal
5537	2506:15	0	Yes					
5538	2507:0	0					52CM (1) Binary Pressure Input For Alarm	LD0.SSCBR1.InPresAlm.stVal
5539	2507:1	0	Yes					
5540	2507:2	0					52CM (1) Binary Pressure Input For Lockout Indication	LD0.SSCBR1.InPresLO.stVal
5541	2507:3	0	Yes					
5542	2507:4	0					52CM (1) Posopen	LD0.SSCBR1.InPosOpn.stVal
5543	2507:5	0	Yes					
5544	2507:6	0					52CM (1) Posclose	LD0.SSCBR1.InPosCls.stVal
5545	2507:7	0	Yes					
	834	6		u16	100	0	52CM (1) Travel Time Of The Recloser During Opening Operation	LD0.SSCBR1.TmmsOpn.mag.f
	835	6		u16	100	0	52CM (1) Travel Time Of The Recloser During Closing Operation	LD0.SSCBR1.TmmsCls.mag.f
	836	6		u16	100	0	52CM (1) The Charging Time Of The Recloser Spring	LD0.SSCBR1.TmsSprCha.mag.f

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	2010	5		s32	1	0	52CM (1) Phase A Accumulated Currents Power (Iyt)	LD0.SSCBR1.AccAPwrPhA.mag.f
	2011	5						
	2012	5		s32	1	0	52CM (1) Phase B Accumulated Currents Power (Iyt)	LD0.SSCBR1.AccAPwrPhB.mag.f
	2013	5						
	2014	5		s32	1	0	52CM (1) Phase C Accumulated Currents Power (Iyt)	LD0.SSCBR1.AccAPwrPhC.mag.f
	2015	5						
	2016	0		u16	1	0	52CM (1) Phase A Recloser Monitoring Remaining Life	LD0.SSCBR1.RmnLifPhA.stVal
	2018	0		u16	1	0	52CM (1) Phase B Recloser Monitoring Remaining Life	LD0.SSCBR1.RmnLifPhB.stVal
	2020	0		u16	1	0	52CM (1) Phase C Recloser Monitoring Remaining Life	LD0.SSCBR1.RmnLifPhC.stVal
	2022	4		u16	1	0	52CM (1) The Number Of Days Recloser Has Been Inactive	LD0.SSCBR1.InaTmdCnt.stVal

Table 103: 52CM (2):Circuit-breaker condition monitoring - instance 2 (SSCBR2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
6564	3035:4	0					52CM (2) Recloser Open Travel Time Exceeded Set Value	LD0.SSCBR2.OpnAlm.stVal
6565	3035:5	0	Yes					
6566	3035:6	0					52CM (2) Recloser Close Travel Time Exceeded Set Value	LD0.SSCBR2.ClsAlm.stVal
6567	3035:7	0	Yes					
6572	3035:12	0					52CM (2) Spring Charging Time Has Crossed The Set Value	LD0.SSCBR2.SprChaAlm.stVal
6573	3035:13	0	Yes					
6574	3035:14	0					52CM (2) Number Of Recloser Operations Exceeds Alarm Limit	LD0.SSCBR2.OpNumAlm.stVal
6575	3035:15	0	Yes					
6576	3036:0	0					52CM (2) Number Of Recloser Operations Exceeds Lockout Limit	LD0.SSCBR2.OpNumLO.stVal
6577	3036:1	0	Yes					
6578	3036:2	0					52CM (2) Accumulated Currents Power (Iyt) Exceeded Alarm Limit	LD0.SSCBR2.APwrAlm.stVal
6579	3036:3	0	Yes					
6580	3036:4	0					52CM (2) Accumulated Currents Power (Iyt) Exceeded Lockout Limit	LD0.SSCBR2.APwrLO.stVal
6581	3036:5	0	Yes					
6582	3036:6	0					52CM (2) Remaining Life Of Recloser Exceeded Alarm Limit	LD0.SSCBR2.CBLifAlm.stVal
6583	3036:7	0	Yes					

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
6584	3036:8	0					52CM (2) Recloser Not Operated For Long Time Alarm	LD0.SSCBR2.LonTmAlm.stVal
6585	3036:9	0	Yes					
6586	3036:10	0					52CM (2) Pressure Below Alarm Level	LD0.SSCBR2.PresAlm.stVal
6587	3036:11	0	Yes					
6588	3036:12	0					52CM (2) Pressure Below Lockout Level	LD0.SSCBR2.PresLO.stVal
6589	3036:13	0	Yes					
6590	3036:14	0					52CM (2) Recloser Position Is Open	LD0.SSCBR2.PosOpn.stVal
6591	3036:15	0	Yes					
6592	3037:0	0					52CM (2) Invalid Position	LD0.SSCBR2.PosIvd.stVal
6593	3037:1	0	Yes					
6594	3037:2	0					52CM (2) Recloser Position Is Closed	LD0.SSCBR2.PosCls.stVal
6595	3037:3	0	Yes					
6596	3037:4	0					52CM (2) Recloser Spring Charging Started Input	LD0.SSCBR2.InSprChStr.stVal
6597	3037:5	0	Yes					
6598	3037:6	0					52CM (2) Recloser Spring Charged Input	LD0.SSCBR2.InSprCha.stVal
6599	3037:7	0	Yes					
6600	3037:8	0					52CM (2) Binary Pressure Input For Alarm	LD0.SSCBR2.InPresAlm.stVal
6601	3037:9	0	Yes					
6602	3037:10	0					52CM (2) Binary Pressure Input For Lockout Indication	LD0.SSCBR2.InPresLO.stVal
6603	3037:11	0	Yes					
6604	3037:12	0					52CM (2) Posopen	LD0.SSCBR2.InPosOpn.stVal
6605	3037:13	0	Yes					
6606	3037:14	0					52CM (2) Posclose	LD0.SSCBR2.InPosCls.stVal
6607	3037:15	0	Yes					
	871	6		u16	100	0	52CM (2) Travel Time Of The Recloser During Opening Operation	LD0.SSCBR2.TmmsOpn.mag.f
	872	6		u16	100	0	52CM (2) Travel Time Of The Recloser During Closing Operation	LD0.SSCBR2.TmmsCls.mag.f
	873	6		u16	100	0	52CM (2) The Charging Time Of The Recloser Spring	LD0.SSCBR2.TmsSprCha.mag.f
	2135	5		s32	1	0	52CM (2) Phase A Accumulated Currents Power (Iyt)	LD0.SSCBR2.AccAPwrPhA.mag.f
	2136	5						
	2137	5		s32	1	0	52CM (2) Phase B Accumulated Currents Power (Iyt)	LD0.SSCBR2.AccAPwrPhB.mag.f
	2138	5						

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	2139	5		s32	1	0	52CM (2) Phase C Accumulated Currents Power (Iyt)	LD0.SSCBR2.AccAPwrPhC.mag.f
	2140	5						
	2141	0		u16	1	0	52CM (2) Phase A Recloser Monitoring Remaining Life	LD0.SSCBR2.RmnLifPhA.stVal
	2143	0		u16	1	0	52CM (2) Phase B Recloser Monitoring Remaining Life	LD0.SSCBR2.RmnLifPhB.stVal
	2145	0		u16	1	0	52CM (2) Phase C Recloser Monitoring Remaining Life	LD0.SSCBR2.RmnLifPhC.stVal

Table 104: TCM-1:Trip circuit supervision - instance 1 (TCSSCBR1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5474	2503:0	0					TCM-1 Trip Circuit Supervision Alarm 1	LD0.TCSSCBR1.CirAlm.stVal
5475	2503:1	0	Yes					

Table 105: TCM-2:Trip circuit supervision - instance 2 (TCSSCBR2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5476	2503:2	0					TCM-2 Trip Circuit Supervision Alarm 2	LD0.TCSSCBR2.CirAlm.stVal
5477	2503:3	0	Yes					

Table 106: MCS 3I-I2:Advanced current circuit supervision for transformers (CTSRCTF1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2956	2203:0	0					MCS 3I I2 Advanced Current Circuit Supervision For Transformers	LD0.CTSRCTF1.Op.general
2957	2203:1	0	Yes					
2958	2203:2	0					MCS 3I I2 Group 1 Advanced Current Circuit Supervision For Transformers	LD0.CTSRCTF1.OpGrp1.general
2959	2203:3	0	Yes					
2960	2203:4	0					MCS 3I I2 Group 2 Advanced Current Circuit Supervision For Transformers	LD0.CTSRCTF1.OpGrp2.general
2961	2203:5	0	Yes					
2962	2203:6	0					MCS 3I I2 Group 3 Advanced Current Circuit Supervision For Transformers	LD0.CTSRCTF1.OpGrp3.general
2963	2203:7	0	Yes					

Table 107: IA-IB-IC (1):Three-phase current measurement - instance 1 (CMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5446	2501:4	0					IA IB IC (1) High Alarm	LD0.CMMXU1.HiAlm.stVal
5447	2501:5	0	Yes					

5448	2501:6	0					IA IB IC (1) High Warning	LD0.CMMXU1.HiWrn.stVal
5449	2501:7	0	Yes					
5450	2501:8	0					IA IB IC (1) Low Warning	LD0.CMMXU1.LoWrn.stVal
5451	2501:9	0	Yes					
5452	2501:10	0					IA IB IC (1) Low Alarm	LD0.CMMXU1.LoAlm.stVal
5453	2501:11	0	Yes					
	536	6		u32	100	0	IA IB IC (1) Phase A Mag (RMS)	LD0.CMMXU1.A.phsA.instCVal.mag.f
	537	6						
	538	6		u32	100	0	IA IB IC (1) Phase B Mag (RMS)	LD0.CMMXU1.A.phsB.instCVal.mag.f
	539	6						
	540	6		u32	100	0	IA IB IC (1) Phase C Mag (RMS)	LD0.CMMXU1.A.phsC.instCVal.mag.f
	541	6						

Table 108: IA-IB-IC (1):Three-phase current measurement - instance 1 (CMSTA1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	899	5		u32	100	0	IA IB IC (1) Phase A Average Demand	LD0.CMSTA1.AvAmpsA.mag.f
	900	5						
	901	5		u32	100	0	IA IB IC (1) Phase B Average Demand	LD0.CMSTA1.AvAmpsB.mag.f
	902	5						
	903	5		u32	100	0	IA IB IC (1) Phase C Average Demand	LD0.CMSTA1.AvAmpsC.mag.f
	904	5						
	1000	5		u32	100	0	IA IB IC (1) Phase A Maximum Demand	LD0.CMSTA1.MaxAmpsA.mag.f
	1001	5						
	1002	5					IA IB IC (1) Phase A Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1003	5					Day(High Byte)/Hour(Low Byte)	
	1004	5					Min(High Byte)/Sec(Low Byte)	
	1005	5					MilliSecond	
	1006	5					Time Quality	
	1010	5		u32	100	0	IA IB IC (1) Phase B Maximum Demand	LD0.CMSTA1.MaxAmpsB.mag.f
	1011	5						
	1012	5					IA IB IC (1) Phase B Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1013	5					Day(High Byte)/Hour(Low Byte)	
	1014	5					Min(High Byte)/Sec(Low Byte)	
	1015	5					MilliSecond	

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	1016						Time Quality	
	1020	5		u32	100	0	IA IB IC (1) Phase C Maximum Demand	LD0.CMSTA1.MaxAmpsC.mag.f
	1021	5						
	1022	5					IA IB IC (1) Phase C Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1023	5					Day(High Byte)/Hour(Low Byte)	
	1024	5					Min(High Byte)/Sec(Low Byte)	
	1025	5					MilliSecond	
	1026	5					Time Quality	

Table 109: IA-IB-IC (2):Three-phase current measurement - instance 2 (CMMXU2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5486	2503:12	0					IA IB IC (2) High Alarm	LD0.CMMXU2.HiAlm.stVal
5487	2503:13	0	Yes					
5488	2503:14	0					IA IB IC (2) High Warning	LD0.CMMXU2.HiWrn.stVal
5489	2503:15	0	Yes					
5490	2504:0	0					IA IB IC (2) Low Warning	LD0.CMMXU2.LoWrn.stVal
5491	2504:1	0	Yes					
5492	2504:2	0					IA IB IC (2) Low Alarm	LD0.CMMXU2.LoAlm.stVal
5493	2504:3	0	Yes					
	548	6		u32	100	0	IA IB IC (2) Phase A Mag (RMS)	LD0.CMMXU2.A.phsA.instCVal.mag.f
	549	6						
	550	6		u32	100	0	IA IB IC (2) Phase B Mag (RMS)	LD0.CMMXU2.A.phsB.instCVal.mag.f
	551	6						
	552	6		u32	100	0	IA IB IC (2) Phase C Mag (RMS)	LD0.CMMXU2.A.phsC.instCVal.mag.f
	553	6						

Table 110: IA-IB-IC (2):Three-phase current measurement - instance 2 (CMSTA2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	907	5		u32	100	0	IA IB IC (2) Phase A Average Demand	LD0.CMSTA2.AvAmpsA.mag.f
	908	5						
	909	5		u32	100	0	IA IB IC (2) Phase B Average Demand	LD0.CMSTA2.AvAmpsB.mag.f
	910	5						
	911	5		u32	100	0	IA IB IC (2) Phase C Average Demand	LD0.CMSTA2.AvAmpsC.mag.f
	912	5						

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	1120	5		u32	100	0	IA IB IC (2) Phase A Maximum Demand	LD0.CMSTA2.MaxAmpsA.mag.f
	1121	5						
	1122						IA IB IC (2) Phase A Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1123						Day(High Byte)/Hour(Low Byte)	
	1124						Min(High Byte)/Sec(Low Byte)	
	1125						MilliSecond	
	1126						Time Quality	
	1130	5		u32	100	0	IA IB IC (2) Phase B Maximum Demand	LD0.CMSTA2.MaxAmpsB.mag.f
	1131	5						
	1132						IA IB IC (2) Phase B Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1133						Day(High Byte)/Hour(Low Byte)	
	1134						Min(High Byte)/Sec(Low Byte)	
	1135						MilliSecond	
	1136						Time Quality	
	1140	5		u32	100	0	IA IB IC (2) Phase C Maximum Demand	LD0.CMSTA2.MaxAmpsC.mag.f
	1141	5						
	1142						IA IB IC (2) Phase C Maximum Demand Timestamp Year(High Byte)/Month(Low Byte)	
	1143						Day(High Byte)/Hour(Low Byte)	
	1144						Min(High Byte)/Sec(Low Byte)	
	1145						MilliSecond	
	1146						Time Quality	

Table 111: I1-I2-I0 (1):Sequence current measurement - instance 2 (CSMSQI1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	614	6		u32	100	0	I1-I2-I0 (1) Positive Sequence Mag (RMS)	LD0.CSMSQI1.SeqA.c1.instCVal .mag.f
	615	6						
	616	6		u32	100	0	I1-I2-I0 (1) Negative Sequence Mag (RMS)	LD0.CSMSQI1.SeqA.c2.instCVal .mag.f
	617	6						
	618	6		u32	100	0	I1-I2-I0 (1) Zero Sequence Mag (RMS)	LD0.CSMSQI1.SeqA.c3.instCVal .mag.f
	619	6						

Table 112: I1-I2-I0 (2):Sequence current measurement - instance 2 (CSMSQI2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	623	6		u32	100	0	I1-I2-I0 (2) Positive Sequence Mag (RMS)	LD0.CSMSQI2.SeqA.c1.instCVal .mag.f
	624	6						
	625	6		u32	100	0	I1-I2-I0 (2) Negative Sequence Mag (RMS)	LD0.CSMSQI2.SeqA.c2.instCVal .mag.f
	626	6						
	627	6		u32	100	0	I1-I2-I0 (2) Zero Sequence Mag (RMS)	LD0.CSMSQI2.SeqA.c3.instCVal .mag.f
	628	6						

Table 113: IG:Residual current measurement - instance 1 (RESCMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5454	2501:12	0					IG High Trip (Operate)	LD0.RESCMMXU1.HiAlm.stVal
5455	2501:13	0	Yes					
5456	2501:14	0					IG High Warning	LD0.RESCMMXU1.HiWrn.stVal
5457	2501:15	0	Yes					
	542	6		u16	100	0	IG-Mag (RMS) 1	LD0.RESCMMXU1.A.res.instCV al.mag.f

Table 114: VA-VB-VC (1):Three-phase voltage measurement - instance 1 (VMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5460	2502:2	0					VA VB VC (1) High Trip (Operate)	LD0.VMMXU1.HiAlm.stVal
5461	2502:3	0	Yes					
5462	2502:4	0					VA VB VC (1) High Warning	LD0.VMMXU1.HiWrn.stVal
5463	2502:5	0	Yes					
5464	2502:6	0					VA VB VC (1) Low Warning	LD0.VMMXU1.LoWrn.stVal
5465	2502:7	0	Yes					
5466	2502:8	0					VA VB VC (1) Low Trip (Operate)	LD0.VMMXU1.LoAlm.stVal
5467	2502:9	0	Yes					
	590	6		u16	100	0	VA VB VC (1) Phase A Mag	LD0.VMMXU1.PhV.phsA.cVal.m ag.f
	591	6		u16	100	0	VA VB VC (1) Phase B Mag	LD0.VMMXU1.PhV.phsB.cVal.m ag.f
	592	6		u16	100	0	VA VB VC (1) Phase C Mag	LD0.VMMXU1.PhV.phsC.cVal.m ag.f
	596	6		u16	100	0	VA VB VC (1) Phase AB Mag (RMS)	LD0.VMMXU1.PPV.phsAB.instC Val.mag.f
	597	6		u16	100	0	VA VB VC (1) Phase BC Mag (RMS)	LD0.VMMXU1.PPV.phsBC.instC Val.mag.f
	598	6		u16	100	0	VA VB VC (1) Phase CA Mag (RMS)	LD0.VMMXU1.PPV.phsCA.instC Val.mag.f

Table 115: VA-VB-VC (2):Three-phase voltage measurement - instance 2 (VMMXU2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5498	2504:8	0					VA VB VC (2) High Trip (Operate)	LD0.VMMXU2.HiAlm.stVal
5499	2504:9	0	Yes					
5500	2504:10	0					VA VB VC (2) High Warning	LD0.VMMXU2.HiWrn.stVal
5501	2504:11	0	Yes					
5502	2504:12	0					VA VB VC (2) Low Warning	LD0.VMMXU2.LoWrn.stVal
5503	2504:13	0	Yes					
5504	2504:14	0					VA VB VC (2) Low Trip (Operate)	LD0.VMMXU2.LoAlm.stVal
5505	2504:15	0	Yes					
	602	6		u16	100	0	VA VB VC (2) Phase A Mag	LD0.VMMXU2.PhV.phsA.cVal.mag.f
	603	6		u16	100	0	VA VB VC (2) Phase B Mag	LD0.VMMXU2.PhV.phsB.cVal.mag.f
	604	6		u16	100	0	VA VB VC (2) Phase C Mag	LD0.VMMXU2.PhV.phsC.cVal.mag.f
	608	6		u16	100	0	VA VB VC (2) Phase AB Mag (RMS)	LD0.VMMXU2.PPV.phsAB.instCVal.mag.f
	609	6		u16	100	0	VA VB VC (2) Phase BC Mag (RMS)	LD0.VMMXU2.PPV.phsBC.instCVal.mag.f
	610	6		u16	100	0	VA VB VC (2) Phase CA Mag (RMS)	LD0.VMMXU2.PPV.phsCA.instCVal.mag.f

Table 116: VG:Residual voltage measurement - instance 1 (RESVMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5468	2502:10	0					VG High Alarm	LD0.RESVMMXU1.HiAlm.stVal
5469	2502:11	0	Yes					
5470	2502:12	0					VG High Warning	LD0.RESVMMXU1.HiWrn.stVal
5471	2502:13	0	Yes					
	662	6		u16	100	0		LD0.RESVMMXU1.PhV.res.instCVal.mag.f

Table 117: V1-V2-V0 (1):Sequence voltage measurement - instance 1 (VSMSQI1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	650	6		u16	100	0	V1 V2 V0 (1) Positive Sequence Mag (RMS)	LD0.VSMSQI1.SeqV.c1.instCVal.mag.f
	651	6		u16	100	0	V1 V2 V0 (1) Negative Sequence Mag (RMS)	LD0.VSMSQI1.SeqV.c2.instCVal.mag.f
	652	6		u16	100	0	V1 V2 V0 (1) Zero Sequence Mag (RMS)	LD0.VSMSQI1.SeqV.c3.instCVal.mag.f

Table 118: V1-V2-V0 (2):Sequence voltage measurement - instance 2 (VSMSQI2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	656	6		u16	100	0	V1 V2 V0 (2) Positive Sequence Mag (RMS)	LD0.VSMSQI2.SeqV.c1.instCVal .mag.f
	657	6		u16	100	0	V1 V2 V0 (2) Negative Sequence Mag (RMS)	LD0.VSMSQI2.SeqV.c2.instCVal .mag.f
	658	6		u16	100	0	V1 V2 V0 (2) Zero Sequence Mag (RMS)	LD0.VSMSQI2.SeqV.c3.instCVal .mag.f

Table 119: SP-SE (1):Single-phase power and energy measurement - instance 1 (SPEMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	668	6		s32	100	0	SP SE (1)Phase A Active Power	LD0.SPEMMXU1.W.phsA.cVal. mag.f
	669	6						
	670	6		s32	100	0	SP SE (1)Phase B Active Power	LD0.SPEMMXU1.W.phsB.cVal. mag.f
	671	6						
	672	6		s32	100	0	SP SE (1)Phase C Active Power	LD0.SPEMMXU1.W.phsC.cVal. mag.f
	673	6						
	676	6		s32	100	0	SP SE (1)Phase A Reactive Power	LD0.SPEMMXU1.VAr.phsA.cVal .mag.f
	677	6						
	678	6		s32	100	0	SP SE (1)Phase B Reactive Power	LD0.SPEMMXU1.VAr.phsB.cVal .mag.f
	679	6						
	680	6		s32	100	0	SP SE (1)Phase C Reactive Power	LD0.SPEMMXU1.VAr.phsC.cVal .mag.f
	681	6						
	704	6		s32	100	0	SP SE (1)Phase A Apparent Power	LD0.SPEMMXU1.VA.phsA.cVal. mag.f
	705	6						
	706	6		s32	100	0	SP SE (1)Phase B Apparent Power	LD0.SPEMMXU1.VA.phsB.cVal. mag.f
	707	6						
	708	6		s32	100	0	SP SE (1)Phase C Apparent Power	LD0.SPEMMXU1.VA.phsC.cVal. mag.f
	709	6						
	716	6		s16	100	0	SP SE (1)Average A Power Factor	LD0.SPEMMXU1.PF.phsA.cVal. mag.f
	717	6		s16	100	0	SP SE (1)Average B Power Factor	LD0.SPEMMXU1.PF.phsB.cVal. mag.f
	718	6		s16	100	0	SP SE (1)Average C Power Factor	LD0.SPEMMXU1.PF.phsC.cVal. mag.f

Table 120: SP-SE (2):Single-phase power and energy measurement - instance 2 (SPEMMXU2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	686	6		s32	100	0	SP SE (2)Phase A Active Power	LD0.SPEMMXU2.W.phsA.cVal.mag.f
	687	6						
	688	6		s32	100	0	SP SE (2)Phase B Active Power	LD0.SPEMMXU2.W.phsB.cVal.mag.f
	689	6						
	690	6		s32	100	0	SP SE (2)Phase C Active Power	LD0.SPEMMXU2.W.phsC.cVal.mag.f
	691	6						
	694	6		s32	100	0	SP SE (2)Phase A Reactive Power	LD0.SPEMMXU2.VAr.phsA.cVal.mag.f
	695	6						
	696	6		s32	100	0	SP SE (2)Phase B Reactive Power	LD0.SPEMMXU2.VAr.phsB.cVal.mag.f
	697	6						
	698	6		s32	100	0	SP SE (2)Phase C Reactive Power	LD0.SPEMMXU2.VAr.phsC.cVal.mag.f
	699	6						
	710	6		s32	100	0	SP SE (2)Phase A Apparent Power	LD0.SPEMMXU2.VA.phsA.cVal.mag.f
	711	6						
	712	6		s32	100	0	SP SE (2)Phase B Apparent Power	LD0.SPEMMXU2.VA.phsB.cVal.mag.f
	713	6						
	714	6		s32	100	0	SP SE (2)Phase C Apparent Power	LD0.SPEMMXU2.VA.phsC.cVal.mag.f
	715	6						
	719	6		s16	100	0	SP SE (2)Average A Power Factor	LD0.SPEMMXU2.PF.phsA.cVal.mag.f
	720	6		s16	100	0	SP SE (2)Average B Power Factor	LD0.SPEMMXU2.PF.phsB.cVal.mag.f
	721	6		s16	100	0	SP SE (2)Average C Power Factor	LD0.SPEMMXU2.PF.phsC.cVal.mag.f

Table 121: P-E (1):Three-phase power and energy measurement - instance 1 (PEMMXU1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	674	6		s32	100	0	P E (1) Total Active Power	LD0.PEMMXU1.TotW.instMag.f
	675	6						
	682	6		s32	100	0	P E (1) Total Reactive Power	LD0.PEMMXU1.TotVAr.instMag.f
	683	6						
	684	6		s32	100	0	P E (1) Total Apparent Power	LD0.PEMMXU1.TotVA.instMag.f
	685	6						
	774	6		s16	100	0	P E (1) Average Power Factor	LD0.PEMMXU1.TotPF.instMag.f

Table 122: P-E (2):Three-phase power and energy measurement - instance 2 (PEMMXU2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	692	6		s32	100	0	P E (2) Total Active Power	LD0.PEMMXU2.TotW.instMag.f
	693	6						
	700	6		s32	100	0	P E (2) Total Reactive Power	LD0.PEMMXU2.TotVAr.instMag.f
	701	6						
	702	6		s32	100	0	P E (2) Total Apparent Power	LD0.PEMMXU2.TotVA.instMag.f
	703	6						
	783	6		s16	100	0	P E (2) Average Power Factor	LD0.PEMMXU2.TotPF.instMag.f

Table 123: f:Frequency measurement - instance 1 (FMMXU1))

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
	786	6		u16	100	0	Frequency	LD0.FMMXU1.Hz.instMag.f

Table 124: TP - 1:Minimum pulse timer (2 pcs) - instance 1 (TPGAPC1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2942	2202:2	0					TP - 1 In2/Out2	LD0.TPGAPC1.Op.general
2943	2202:3	0	Yes					

Table 125: TP - 2:Minimum pulse timer (2 pcs) - instance 2 (TPGAPC2)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2944	2202:4	0					TP - 2 In2/Out2	LD0.TPGAPC2.Op.general
2945	2202:5	0	Yes					

Table 126: TP - 3:Minimum pulse timer (2 pcs) - instance 3 (TPGAPC3)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2946	2202:6	0					TP - 3 In2/Out2	LD0.TPGAPC3.Op.general
2947	2202:7	0	Yes					

Table 127: TP - 4:Minimum pulse timer (2 pcs) - instance 4 (TPGAPC4)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2948	2202:8	0					TP - 4 In2/Out2	LD0.TPGAPC4.Op.general
2949	2202:9	0	Yes					

Table 128: DFR:Disturbance recorder (RDRE1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
5458	2502:0	0					DFR Disturbance Recording Made	DR.RDRE1.RcdMade.stVal
5459	2502:1	0	Yes					
	241	0		u16	1	0	DFR Recording Memory Used %	DR.RDRE1.MemUsed.stVal
	2108	0		u16	1	0	DFR Number Of Recordings	DR.RDRE1.FltNum.stVal

Table 129: FLO:Fault location (DRFLO1)

Coil Addr	Register(:Bit) Addr	Dc	MCD	Type	Scale	Offset	Description	IEC61850 Data Attribute Name
2932	2201:8	0					FLO Relay Trip	LD0.DRFLO1.Tr.general
2933	2201:9	0	Yes					
	862	6		u16	100	0	FLO Distance to fault measured in Km/Miles	LD0.DRFLO1.FltDisKm.mag.f

Table 130: "Table - Control Structures

Control Structure	Control Register Addr	Control bit number	Description	IEC61850 Data Attribute Name
1	2513		Control Structure 1 Execute Register	
	2514		Control Structure 1 Password 1	
	2515		Control Structure 1 Password 2	
	2516	0	Turn Off Trip LEDs	LD0.LLN0.LEDRs1.Oper.ctlVal
	2516	1	Turn Off Alarm Indication LEDs	LD0.LLN0.LEDRs2.Oper.ctlVal
	2516	2	52(1) Select Open Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	3	52(1) Select Close Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	4	52(1) Cancel Select Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	5	52(1) Operate Select Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	6	52(1) Direct Open Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	7	52(1) Direct Close Breaker 1	CTRL.CBCSWI1.Pos.Oper.ctlVal
	2516	8	52(2) Select Open Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	9	52(2) Select Close Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	10	52(2) Cancel Select Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	11	52(2) Operate Select Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	12	52(2) Direct Open Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	13	52(2) Direct Close Breaker 2	CTRL.CBCSWI2.Pos.Oper.ctlVal
	2516	14	Clear Power Quality Data	LD0.LLN0.PQRs.Oper.ctlVal
	2516	15	Reserved	
	2517		Control Structure 1 Confirmation Register	
2	2518		Control Structure 2 Execute Register	
	2519		Control Structure 2 Password 1	

Control Structure	Control Register Addr	Control bit number	Description	IEC61850 Data Attribute Name
	2520		Control Structure 2 Password 2	
	2521	0	FLO Reset Fault Record Counter	LD0.FLTMSTA1.RecRs.Oper.ctlVal
	2521	1	DFR Trigger Disturbance Recording	DR.RDRE1.RcdTrg.Oper.ctlVal
	2521	2	DFR Clear Disturbance Records	DR.RDRE1.MemClr.Oper.ctlVal
	2521	3	Reserved	
	2521	4	Reserved	
	2521	5	Clear Current Demand Metering Source 1	LD0.CMSTA1.RecRs.Oper.ctlVal
	2521	6	52CM(1) Reset Breaker Accumulated Power	LD0.SSCBR1.RsAccAPwr.Oper.ctlVal
	2521	7	52CM(1) Reset Breaker remaining life	LD0.SSCBR1.RsCBWear.Oper.ctlVal
	2521	8	86/94-1 Clear Lockout Master Trip1	LD0.TRPPTRC1.LORs.Oper.ctlVal
	2521	9	86/94-1 Clear Master Trip1	LD0.TRPPTRC1.TrRs.Oper.ctlVal
	2521	10	86/94-2 Clear Lockout Master Trip2	LD0.TRPPTRC2.LORs.Oper.ctlVal
	2521	11	86/94-2 Clear Master Trip2	LD0.TRPPTRC2.TrRs.Oper.ctlVal
	2521	12	Reserved	
	2521	13	Reserved	
	2521	14	49T(1)Clear Temperature measurement	LD0.T1PTTR2.RsTmp.Oper.ctlVal
	2521	15	Reserved	
	2522		Control Structure 2 Confirmation Register	
3	2523		Control Structure 3 Execute Register	
	2524		Control Structure 3 Password 1	
	2525		Control Structure 3 Password 2	
	2526	0	52CM(1) Reset Breaker Tavel Time	LD0.SSCBR1.RsTrvTm.Oper.ctlVal
	2526	1	52CM(1) Reset Breaker Spring Charging time	LD0.SSCBR1.RsSprChaTm.Oper.ctlVal
	2526	2	P E(1) Reset Three Phase Power Meter	LD0.PEMMTR1.SupDmdRs.Oper.ctlVal
	2526	3	Reset Device	LD0.LPHD1.RsDev.Oper.ctlVal
	2526	4	Reserved	
	2526	5	Reserved	
	2526	6	Clear Current Demand Metering Source 1	LD0.CMSTA2.RecRs.Oper.ctlVal
	2526	7	Reserved	
	2526	8	Reserved	
	2526	9	Reserved	
	2526	10	Reserved	
	2526	11	Reserved	
	2526	12	Reserved	
	2526	13	Reserved	
	2526	14	Reserved	
	2526	15	Reserved	
	2527		Control Structure 3 Confirmation Register	

Control Structure	Control Register Addr	Control bit number	Description	IEC61850 Data Attribute Name
4	2528		Control Structure 4 Execute Register	
	2529		Control Structure 4 Password 1	
	2530		Control Structure 4 Password 2	
	2531	8	P E(2) Reset Three Phase Power Meter	LD0.PEMMTR2.SupDmdRs.Oper.ctlVal
	2531	9	SP SE(1) Reset Three Phase Power Meter	LD0.SPEMMTR1.SupDmdRs.Oper.ctlVal
	2531	10	P E(2) Reset Three Phase Power Meter	LD0.SPEMMTR2.SupDmdRs.Oper.ctlVal
	2531	11	52CM(2) Reset Breaker Accumulated Power	LD0.SSCBR2.RsAccAPwr.Oper.ctlVal
	2531	12	52CM(2) Reset Breaker remaining life	LD0.SSCBR2.RsCBWear.Oper.ctlVal
	2531	13	52CM(2) Reset Breaker Tavel Time	LD0.SSCBR2.RsTrvTm.Oper.ctlVal
	2531	14	52CM(2) Reset Breaker Spring Charging time	LD0.SSCBR2.RsSprChaTm.Oper.ctlVal
	2531	15	Reserved	
	2532		Control Structure 4 Confirmation Register	
8	2548		Control Structure 8 Execute Register	
	2549		Control Structure 8 Password 1	
	2550		Control Structure 8 Password 2	
	2551	8	Reserved	
	2551	9	Reserved	
	2551	10	Reserved	
	2551	11	Reserved	
	2551	12	Reserved	
	2552		Control Structure 8 Confirmation Register	

Section 3 Glossary

AFL	Application function block library
ANSI	American National Standards Institute
AR	Autoreclosing
CB	Circuit breaker
CT	Current transformer
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
I/O	Input/output
ID	Identifier or identification
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)
MCD	Momentary change detect
Modbus	A serial communication protocol developed by the Modicon company in 1979. Originally used for communication in PLCs and RTU devices.
MOM	Momentary position
PCM600	Protection and Control IED Manager
PLC	Programmable logic controller
SBO	Select-before-operate

stVal	Status value
SW	Software
UTC	Coordinated universal time
Val	Value

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