Easergy MiCOM P141

Feeder Management Relay

P141/EN MC/On8 - Ed. 2

Software Version	B6
Hardware Suffix	L
IEC61850 Edition	2
Issue Date	07/2020

Model Implementation Conformance Statement (MICS)

Note The technical manual for this device gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problems, do not take any action without proper authorization. Contact the appropriate Schneider Electric technical sales office and request the necessary information.

Any agreements, commitments, and legal relationships and any obligations on the part of Schneider Electric including settlements of warranties, result solely from the applicable purchase contract, which is not affected by the contents of the technical manual.

This device MUST NOT be modified. If any modification is made without the express permission of Schneider Electric, it will invalidate the warranty, and may render the product unsafe.

MODEL IMPLEMENTATION CONFORMANCE STATEMENT (MICS)

Date (month/year):	07/2020
Products covered by this chapter:	This chapter covers the specific versions of the MiCOM products listed below. This includes ***only*** the following combinations of Software Version and Hardware Suffix.
Hardware suffix:	L
Software version:	B6
Connection diagrams:	This includes a list of the Connection Diagrams for the Products covered by this document. 10P141xx (xx = 01 to 07) 10P142xx (xx = 01 to 07) 10P143xx (xx = 01 to 07) 10P145xx (xx = 01 to 07)

CONTENTS

Notes:

1 Introduction

This specification is the Model Implementation Conformance Statement (MICS) and presents the top-level IEC61850 data model that has been implemented. The definitions of all used Logical Nodes and their associated Common Data Classes, components and associated enumerated values are also included for completeness.

The reader is expected to be conversant with the terminology presented within the IEC61850 part 6 and part 7 series of specifications.

This document is applicable for P141 with the firmware B6A. The MICS is conformant to the devices associated ICD (Substation Configuration Language) file: P141_____B6A.ICD, version V3.0, according to part 6 and part 7 of the IEC61850 standards.

2 Logical Devices

The MiCOM relay implements an IEC61850 server that can contain one or more Logical Devices. Each Logical Device contains a data model built from instances of specific Logical Nodes and must consist of at least an instance of the LPHD Logical Node (which is responsible for providing physical device information) and an instance of the LLN0 Logical Node (for addressing common issues across the Logical Device).

The IEC61850 data model is contained within the Logical Devices detailed in the table below. All MiCOM devices will name the supported Logical Devices consistently to ensure that data model variables with the same purpose will have the same name within each MiCOM server.

Logical Device	Comment/Usage
Control	P141 Controls Domain
Measurements	P141 Measurements Domain
Protection	P141 Protection Domain
Records	P141 Records Domain
System	P141 System Domain

3 Logical Nodes

The IEC61850 data model consists of instances of Logical Nodes. The data model name for a Logical Node instance is constructed from an optional prefix (known as the wrapper), the Logical Node name, and an instance ID (or suffix).

The presented data model is in an alphabetically sorted order, rather than a logical order, because this is the natural order of the data when presented by a native MMS browser. (Higher level browsers can of course impart any ordering that they desire).

The following table presents a summary of the Logical Node templates used across the Logical Devices within the overall IEC61850 product data model:

LD	LN Instance	LN Type	LN Class	Description
Control				
	CILO1	CILO_INTERLOCK	CILO	XCBR Interlocking
	LLN0	LLN0_STANDARD	LLN0	Controls Logical Device
	LPHD1	LPHD_STANDARD	LPHD	Physical Device Information
	XCBR1	XCBR_BASIC	XCBR	Circuit Breaker Monitoring
Measurements				
	LLN0	LLN0_STANDARD	LLN0	Measurements Logical Device
	LPHD1	LPHD_STANDARD	LPHD	Physical Device Information
	PriFouMMXU1	MMXU_FOURIER	MMXU	Primary Fourier Measurements
	PriMMTR1	MMTR_PRIV	MMTR	Primary based metering quantities
	PriMSQI1	MSQI_ALL	MSQI	Primary Sequence Measurements
	PriMSTA1	MSTA_I_W_VAR	MSTA	Primary Metering Statistics
	PriRmsMMXU1	MMXU_RMS_P145	MMXU	Primary RMS Measurements
	PriSpeMMXU1	MMXU_SPEC	MMXU	Primary specific measurements
	SecFouMMXU1	MMXU_FOURIER	MMXU	Secondary Fourier Measurements
	SecMMTR1	MMTR_PRIV	MMTR	Secondary based metering quantities
	SecMSQI1	MSQI_ALL	MSQI	Secondary Sequence Measurements
	SecMSTA1	MSTA_I_W_VAR	MSTA	Secondary Metering Statistics
	SecRmsMMXU1	MMXU_RMS_P145	MMXU	Secondary RMS Measurements
	SecSpeMMXU1	MMXU_SPEC	MMXU	Secondary specific measurements
Protection				
	CbfRBRF1	RBRF_EXTTRIP	RBRF	CB Fail 1
	CbfRBRF2	RBRF_EXTTRIP	RBRF	CB Fail 2
	DfpPFRC1	PFRC_NO_SEG	PFRC	df/dt> 1 Frequency Rate of Change
	DfpPFRC2	PFRC_NO_SEG	PFRC	df/dt> 2 Frequency Rate of Change
	DfpPFRC3	PFRC_NO_SEG	PFRC	df/dt> 3 Frequency Rate of Change
	DfpPFRC4	PFRC_NO_SEG	PFRC	df/dt> 4 Frequency Rate of Change
	DfpPFRC5	PFRC_NO_SEG	PFRC	df/dt> 5 Frequency Rate of Change

LD	LN Instance	LN Type	LN Class	Description
	DfpPFRC6	PFRC_NO_SEG	PFRC	df/dt> 6 Frequency Rate of Change
	DfpPFRC7	PFRC_NO_SEG	PFRC	df/dt> 7 Frequency Rate of Change
	DfpPFRC8	PFRC_NO_SEG	PFRC	df/dt> 8 Frequency Rate of Change
	DfpPFRC9	PFRC_NO_SEG	PFRC	df/dt> 9 Frequency Rate of Change
	EfdPTOC1	PTOC_NEU	PTOC	IN2> 1 Earth Fault (Derived)
	EfdPTOC2	PTOC_NEU	PTOC	IN2> 2 Earth Fault (Derived)
	EfdPTOC3	PTOC_NEU	PTOC	IN2> 3 Earth Fault (Derived)
	EfdPTOC4	PTOC_NEU	PTOC	IN2> 4 Earth Fault (Derived)
	EfmPTOC1	PTOC_NEU	PTOC	IN1> 1 Earth Fault (Measured)
	EfmPTOC2	PTOC_NEU	PTOC	IN1> 2 Earth Fault (Measured)
	EfmPTOC3	PTOC_NEU	PTOC	IN1> 3 Earth Fault (Measured)
	EfmPTOC4	PTOC_NEU	PTOC	IN1> 4 Earth Fault (Measured)
	FrqPTOF1	PTOF_NO_SEG	PTOF	F> 1 Over Frequency
	FrqPTOF2	PTOF_NO_SEG	PTOF	F> 2 Over Frequency
	FrqPTUF1	PTUF_NO_SEG	PTUF	F< 1 Under Frequency
	FrqPTUF2	PTUF_NO_SEG	PTUF	F< 2 Under Frequency
	FrqPTUF3	PTUF_NO_SEG	PTUF	F< 3 Under Frequency
	FrqPTUF4	PTUF_NO_SEG	PTUF	F< 4 Under Frequency
	LLN0	LLN0_PROT	LLN0	Protection Logical Device
	LPHD1	LPHD_STANDARD	LPHD	Physical Device Information
	NgcPTOC1	PTOC_NO_SEG	PTOC	I2> 1 Negative Sequence
	NgcPTOC2	PTOC_NO_SEG	PTOC	I2> 2 Negative Sequence
	NgcPTOC3	PTOC_NO_SEG	PTOC	I2> 3 Negative Sequence
	NgcPTOC4	PTOC_NO_SEG	PTOC	I2> 4 Negative Sequence
	NgvPTOV1	PTOV_NO_SEG	PTOV	V2> 1 Negative Sequence
	OcpPTOC1	PTOC_SEG	PTOC	I> 1 Overcurrent
	OcpPTOC2	PTOC_SEG	PTOC	I> 2 Overcurrent
	OcpPTOC3	PTOC_SEG	PTOC	I> 3 Overcurrent
	OcpPTOC4	PTOC_SEG	PTOC	I> 4 Overcurrent
	OcpPTOC5	PTOC_SEG	PTOC	I> 5 Overcurrent
	OcpPTOC6	PTOC_SEG	PTOC	I> 6 Overcurrent
	PTRC1	PTRC_NO_SEG	PTRC	Protection Trip Conditioning
	SenEftPTOC1	PTOC_NEU	PTOC	ISEF> 1 Sensitive Earth Fault
	SenEftPTOC2	PTOC_NEU	PTOC	ISEF> 2 Sensitive Earth Fault
	SenEftPTOC3	PTOC_NEU	PTOC	ISEF> 3 Sensitive Earth Fault
	SenEftPTOC4	PTOC_NEU	PTOC	ISEF> 4 Sensitive Earth Fault
	SenRefPDIF1	PDIF_NEU	PDIF	IREF> 1 Restricted Earth Fault
	ThmPTTR1	PTTR_NO_SEG	PTTR	Thermal Overload
	VtpPhsPTOV1	PTOV_SEG	PTOV	V> 1 Overvoltage
	VtpPhsPTOV2	PTOV_SEG	PTOV	V> 2 Overvoltage
	VtpPhsPTUV1	PTUV_SEG	PTUV	V< 1 Undervoltage

LD	LN Instance	LN Type	LN Class	Description
	VtpPhsPTUV2	PTUV_SEG	PTUV	V< 2 Undervoltage
	VtpResPTOV1	PTOV_NEU	PTOV	VN> 1 Residual Overvoltage
	VtpResPTOV2	PTOV_NEU	PTOV	VN> 2 Residual Overvoltage
Records				
	LLN0	LLN0_STANDARD	LLN0	Records Logical Device
	LPHD1	LPHD_STANDARD	LPHD	Physical Device Information
	RDRE1	RDRE_BASIC	RDRE	Disturbance Recorder
	RFLO1	RFLO_PRIV_NDB	RFLO	Fault Reocrd (including Fault Locator)
System				
	AlmGGIO1	GGIO_ALM_96	GGIO	Alarms
	GosGGIO1	GGIO_IND_128_INREF	GGIO	GOOSE Input Singals for edition 2
	GosGGIO2	GGIO_IND_32	GGIO	GOOSE Output Signals
	LedGGIO1	GGIO_IND_8	GGIO	Red LED Signals
	LinkGGIO1	GGIO_IND_6	GGIO	Link Status
	LLN0	LLN0_SYSTEM	LLN0	System Logical Device
	LocLTIM1	LTIM_LOCAL	LTIM	Time management
	LPHD1	LPHD_SYSTEM	LPHD	Physical Device Information for system
	OptGGIO1	GGIO_IND_16	GGIO	Opto Inputs
	OrdRunGGIO1	GGIO_IND_64_INREF	GGIO	Uniqueness of control "Order Running" indications for control operations for edition 2
	PloGGIO1	GGIO_IND_32_CTRL	GGIO	Controllable Inputs
	RlyGGIO1	GGIO_IND_16	GGIO	Output Contacts
	SynLTMS1	LTMS_SYNC	LTMS	Time master supervision

The definition tables for each of the Logical Nodes in the top-level data model are presented in the following sub-sections and the column "T" means transient attribute.

3.1 LN: CILO_INTERLOCK

Description: Control Interlocking

LN Class: CILO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
EnaOpn	SPS_WD	Enable OPEN Commands		M	
EnaCls	SPS_WD	Enable CLOSE Commands		M	

3.2 LN: GGIO_ALM_96

Description: Generic Process I/O (w.r.t 96 Alarm Elements)

LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Alm1	SPS_D	General single alarm		O	
Alm2	SPS_D	General single alarm		O	
Alm3	SPS_D	General single alarm		O	
Alm4	SPS_D	General single alarm		O	
Alm5	SPS_D	General single alarm		O	
Alm6	SPS_D	General single alarm		O	
Alm7	SPS_D	General single alarm		O	
Alm8	SPS_D	General single alarm		O	
Alm9	SPS_D	General single alarm		O	
Alm10	SPS_D	General single alarm		O	
Alm11	SPS_D	General single alarm		O	
Alm12	SPS_D	General single alarm		O	
Alm13	SPS_D	General single alarm		O	
Alm14	SPS_D	General single alarm		O	
Alm15	SPS_D	General single alarm		O	
Alm16	SPS_D	General single alarm		O	
Alm17	SPS_D	General single alarm		O	
Alm18	SPS_D	General single alarm		O	
Alm19	SPS_D	General single alarm		O	
Alm20	SPS_D	General single alarm		O	
Alm21	SPS_D	General single alarm		O	
Alm22	SPS_D	General single alarm		O	
Alm23	SPS_D	General single alarm		O	
Alm24	SPS_D	General single alarm		O	
Alm25	SPS_D	General single alarm		O	
Alm26	SPS_D	General single alarm		O	
Alm27	SPS_D	General single alarm		O	
Alm28	SPS_D	General single alarm		O	
Alm29	SPS_D	General single alarm		O	
Alm30	SPS_D	General single alarm		O	
Alm31	SPS_D	General single alarm		O	
Alm32	SPS_D	General single alarm		O	
Alm33	SPS_D	General single alarm		O	
Alm34	SPS_D	General single alarm		O	
Alm35	SPS_D	General single alarm		O	
Alm36	SPS_D	General single alarm		O	
Alm37	SPS_D	General single alarm		O	
Alm38	SPS_D	General single alarm		O	
Alm39	SPS_D	General single alarm		O	
Alm40	SPS_D	General single alarm		O	
Alm41	SPS_D	General single alarm		O	
Alm42	SPS_D	General single alarm		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
Alm43	SPS_D	General single alarm		O	
Alm44	SPS_D	General single alarm		O	
Alm45	SPS_D	General single alarm		O	
Alm46	SPS_D	General single alarm		O	
Alm47	SPS_D	General single alarm		O	
Alm48	SPS_D	General single alarm		O	
Alm49	SPS_D	General single alarm		O	
Alm50	SPS_D	General single alarm		O	
Alm51	SPS_D	General single alarm		O	
Alm52	SPS_D	General single alarm		O	
Alm53	SPS_D	General single alarm		O	
Alm54	SPS_D	General single alarm		O	
Alm55	SPS_D	General single alarm		O	
Alm56	SPS_D	General single alarm		O	
Alm57	SPS_D	General single alarm		O	
Alm58	SPS_D	General single alarm		O	
Alm59	SPS_D	General single alarm		O	
Alm60	SPS_D	General single alarm		O	
Alm61	SPS_D	General single alarm		O	
Alm62	SPS_D	General single alarm		O	
Alm63	SPS_D	General single alarm		O	
Alm64	SPS_D	General single alarm		O	
Alm65	SPS_D	General single alarm		O	
Alm66	SPS_D	General single alarm		O	
Alm67	SPS_D	General single alarm		O	
Alm68	SPS_D	General single alarm		O	
Alm69	SPS_D	General single alarm		O	
Alm70	SPS_D	General single alarm		O	
Alm71	SPS_D	General single alarm		O	
Alm72	SPS_D	General single alarm		O	
Alm73	SPS_D	General single alarm		O	
Alm74	SPS_D	General single alarm		O	
Alm75	SPS_D	General single alarm		O	
Alm76	SPS_D	General single alarm		O	
Alm77	SPS_D	General single alarm		O	
Alm78	SPS_D	General single alarm		O	
Alm79	SPS_D	General single alarm		O	
Alm80	SPS_D	General single alarm		O	
Alm81	SPS_D	General single alarm		O	
Alm82	SPS_D	General single alarm		O	
Alm83	SPS_D	General single alarm		O	
Alm84	SPS_D	General single alarm		O	
Alm85	SPS_D	General single alarm		O	
Alm86	SPS_D	General single alarm		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
Alm87	SPS_D	General single alarm		O	
Alm88	SPS_D	General single alarm		O	
Alm89	SPS_D	General single alarm		O	
Alm90	SPS_D	General single alarm		O	
Alm91	SPS_D	General single alarm		O	
Alm92	SPS_D	General single alarm		O	
Alm93	SPS_D	General single alarm		O	
Alm94	SPS_D	General single alarm		O	
Alm95	SPS_D	General single alarm		O	
Alm96	SPS_D	General single alarm		O	

3.3 LN: GGIO_IND_128_INREF

Description: Generic process I/O (w.r.t 128 Indication Elements with inref)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
InRef1	ORG_SRC	General input reference		O	
Ind1	SPS_D	General indication (binary input)		O	
InRef2	ORG_SRC	General input reference		O	
Ind2	SPS_D	General indication (binary input)		O	
InRef3	ORG_SRC	General input reference		O	
Ind3	SPS_D	General indication (binary input)		O	
InRef4	ORG_SRC	General input reference		O	
Ind4	SPS_D	General indication (binary input)		O	
InRef5	ORG_SRC	General input reference		O	
Ind5	SPS_D	General indication (binary input)		O	
InRef6	ORG_SRC	General input reference		O	
Ind6	SPS_D	General indication (binary input)		O	
InRef7	ORG_SRC	General input reference		O	
Ind7	SPS_D	General indication (binary input)		O	
InRef8	ORG_SRC	General input reference		O	
Ind8	SPS_D	General indication (binary input)		O	
InRef9	ORG_SRC	General input reference		O	
Ind9	SPS_D	General indication (binary input)		O	
InRef10	ORG_SRC	General input reference		O	
Ind10	SPS_D	General indication (binary input)		O	
InRef11	ORG_SRC	General input reference		O	
Ind11	SPS_D	General indication (binary input)		O	
InRef12	ORG_SRC	General input reference		O	
Ind12	SPS_D	General indication (binary input)		O	
InRef13	ORG_SRC	General input reference		O	
Ind13	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef14	ORG_SRC	General input reference		O	
Ind14	SPS_D	General indication (binary input)		O	
InRef15	ORG_SRC	General input reference		O	
Ind15	SPS_D	General indication (binary input)		O	
InRef16	ORG_SRC	General input reference		O	
Ind16	SPS_D	General indication (binary input)		O	
InRef17	ORG_SRC	General input reference		O	
Ind17	SPS_D	General indication (binary input)		O	
InRef18	ORG_SRC	General input reference		O	
Ind18	SPS_D	General indication (binary input)		O	
InRef19	ORG_SRC	General input reference		O	
Ind19	SPS_D	General indication (binary input)		O	
InRef20	ORG_SRC	General input reference		O	
Ind20	SPS_D	General indication (binary input)		O	
InRef21	ORG_SRC	General input reference		O	
Ind21	SPS_D	General indication (binary input)		O	
InRef22	ORG_SRC	General input reference		O	
Ind22	SPS_D	General indication (binary input)		O	
InRef23	ORG_SRC	General input reference		O	
Ind23	SPS_D	General indication (binary input)		O	
InRef24	ORG_SRC	General input reference		O	
Ind24	SPS_D	General indication (binary input)		O	
InRef25	ORG_SRC	General input reference		O	
Ind25	SPS_D	General indication (binary input)		O	
InRef26	ORG_SRC	General input reference		O	
Ind26	SPS_D	General indication (binary input)		O	
InRef27	ORG_SRC	General input reference		O	
Ind27	SPS_D	General indication (binary input)		O	
InRef28	ORG_SRC	General input reference		O	
Ind28	SPS_D	General indication (binary input)		O	
InRef29	ORG_SRC	General input reference		O	
Ind29	SPS_D	General indication (binary input)		O	
InRef30	ORG_SRC	General input reference		O	
Ind30	SPS_D	General indication (binary input)		O	
InRef31	ORG_SRC	General input reference		O	
Ind31	SPS_D	General indication (binary input)		O	
InRef32	ORG_SRC	General input reference		O	
Ind32	SPS_D	General indication (binary input)		O	
InRef33	ORG_SRC	General input reference		O	
Ind33	SPS_D	General indication (binary input)		O	
InRef34	ORG_SRC	General input reference		O	
Ind34	SPS_D	General indication (binary input)		O	
InRef35	ORG_SRC	General input reference		O	
Ind35	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef36	ORG_SRC	General input reference		O	
Ind36	SPS_D	General indication (binary input)		O	
InRef37	ORG_SRC	General input reference		O	
Ind37	SPS_D	General indication (binary input)		O	
InRef38	ORG_SRC	General input reference		O	
Ind38	SPS_D	General indication (binary input)		O	
InRef39	ORG_SRC	General input reference		O	
Ind39	SPS_D	General indication (binary input)		O	
InRef40	ORG_SRC	General input reference		O	
Ind40	SPS_D	General indication (binary input)		O	
InRef41	ORG_SRC	General input reference		O	
Ind41	SPS_D	General indication (binary input)		O	
InRef42	ORG_SRC	General input reference		O	
Ind42	SPS_D	General indication (binary input)		O	
InRef43	ORG_SRC	General input reference		O	
Ind43	SPS_D	General indication (binary input)		O	
InRef44	ORG_SRC	General input reference		O	
Ind44	SPS_D	General indication (binary input)		O	
InRef45	ORG_SRC	General input reference		O	
Ind45	SPS_D	General indication (binary input)		O	
InRef46	ORG_SRC	General input reference		O	
Ind46	SPS_D	General indication (binary input)		O	
InRef47	ORG_SRC	General input reference		O	
Ind47	SPS_D	General indication (binary input)		O	
InRef48	ORG_SRC	General input reference		O	
Ind48	SPS_D	General indication (binary input)		O	
InRef49	ORG_SRC	General input reference		O	
Ind49	SPS_D	General indication (binary input)		O	
InRef50	ORG_SRC	General input reference		O	
Ind50	SPS_D	General indication (binary input)		O	
InRef51	ORG_SRC	General input reference		O	
Ind51	SPS_D	General indication (binary input)		O	
InRef52	ORG_SRC	General input reference		O	
Ind52	SPS_D	General indication (binary input)		O	
InRef53	ORG_SRC	General input reference		O	
Ind53	SPS_D	General indication (binary input)		O	
InRef54	ORG_SRC	General input reference		O	
Ind54	SPS_D	General indication (binary input)		O	
InRef55	ORG_SRC	General input reference		O	
Ind55	SPS_D	General indication (binary input)		O	
InRef56	ORG_SRC	General input reference		O	
Ind56	SPS_D	General indication (binary input)		O	
InRef57	ORG_SRC	General input reference		O	
Ind57	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef58	ORG_SRC	General input reference		O	
Ind58	SPS_D	General indication (binary input)		O	
InRef59	ORG_SRC	General input reference		O	
Ind59	SPS_D	General indication (binary input)		O	
InRef60	ORG_SRC	General input reference		O	
Ind60	SPS_D	General indication (binary input)		O	
InRef61	ORG_SRC	General input reference		O	
Ind61	SPS_D	General indication (binary input)		O	
InRef62	ORG_SRC	General input reference		O	
Ind62	SPS_D	General indication (binary input)		O	
InRef63	ORG_SRC	General input reference		O	
Ind63	SPS_D	General indication (binary input)		O	
InRef64	ORG_SRC	General input reference		O	
Ind64	SPS_D	General indication (binary input)		O	
InRef65	ORG_SRC	General input reference		O	
Ind65	SPS_D	General indication (binary input)		O	
InRef66	ORG_SRC	General input reference		O	
Ind66	SPS_D	General indication (binary input)		O	
InRef67	ORG_SRC	General input reference		O	
Ind67	SPS_D	General indication (binary input)		O	
InRef68	ORG_SRC	General input reference		O	
Ind68	SPS_D	General indication (binary input)		O	
InRef69	ORG_SRC	General input reference		O	
Ind69	SPS_D	General indication (binary input)		O	
InRef70	ORG_SRC	General input reference		O	
Ind70	SPS_D	General indication (binary input)		O	
InRef71	ORG_SRC	General input reference		O	
Ind71	SPS_D	General indication (binary input)		O	
InRef72	ORG_SRC	General input reference		O	
Ind72	SPS_D	General indication (binary input)		O	
InRef73	ORG_SRC	General input reference		O	
Ind73	SPS_D	General indication (binary input)		O	
InRef74	ORG_SRC	General input reference		O	
Ind74	SPS_D	General indication (binary input)		O	
InRef75	ORG_SRC	General input reference		O	
Ind75	SPS_D	General indication (binary input)		O	
InRef76	ORG_SRC	General input reference		O	
Ind76	SPS_D	General indication (binary input)		O	
InRef77	ORG_SRC	General input reference		O	
Ind77	SPS_D	General indication (binary input)		O	
InRef78	ORG_SRC	General input reference		O	
Ind78	SPS_D	General indication (binary input)		O	
InRef79	ORG_SRC	General input reference		O	
Ind79	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef80	ORG_SRC	General input reference		O	
Ind80	SPS_D	General indication (binary input)		O	
InRef81	ORG_SRC	General input reference		O	
Ind81	SPS_D	General indication (binary input)		O	
InRef82	ORG_SRC	General input reference		O	
Ind82	SPS_D	General indication (binary input)		O	
InRef83	ORG_SRC	General input reference		O	
Ind83	SPS_D	General indication (binary input)		O	
InRef84	ORG_SRC	General input reference		O	
Ind84	SPS_D	General indication (binary input)		O	
InRef85	ORG_SRC	General input reference		O	
Ind85	SPS_D	General indication (binary input)		O	
InRef86	ORG_SRC	General input reference		O	
Ind86	SPS_D	General indication (binary input)		O	
InRef87	ORG_SRC	General input reference		O	
Ind87	SPS_D	General indication (binary input)		O	
InRef88	ORG_SRC	General input reference		O	
Ind88	SPS_D	General indication (binary input)		O	
InRef89	ORG_SRC	General input reference		O	
Ind89	SPS_D	General indication (binary input)		O	
InRef90	ORG_SRC	General input reference		O	
Ind90	SPS_D	General indication (binary input)		O	
InRef91	ORG_SRC	General input reference		O	
Ind91	SPS_D	General indication (binary input)		O	
InRef92	ORG_SRC	General input reference		O	
Ind92	SPS_D	General indication (binary input)		O	
InRef93	ORG_SRC	General input reference		O	
Ind93	SPS_D	General indication (binary input)		O	
InRef94	ORG_SRC	General input reference		O	
Ind94	SPS_D	General indication (binary input)		O	
InRef95	ORG_SRC	General input reference		O	
Ind95	SPS_D	General indication (binary input)		O	
InRef96	ORG_SRC	General input reference		O	
Ind96	SPS_D	General indication (binary input)		O	
InRef97	ORG_SRC	General input reference		O	
Ind97	SPS_D	General indication (binary input)		O	
InRef98	ORG_SRC	General input reference		O	
Ind98	SPS_D	General indication (binary input)		O	
InRef99	ORG_SRC	General input reference		O	
Ind99	SPS_D	General indication (binary input)		O	
InRef100	ORG_SRC	General input reference		O	
Ind100	SPS_D	General indication (binary input)		O	
InRef101	ORG_SRC	General input reference		O	
Ind101	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef102	ORG_SRC	General input reference		O	
Ind102	SPS_D	General indication (binary input)		O	
InRef103	ORG_SRC	General input reference		O	
Ind103	SPS_D	General indication (binary input)		O	
InRef104	ORG_SRC	General input reference		O	
Ind104	SPS_D	General indication (binary input)		O	
InRef105	ORG_SRC	General input reference		O	
Ind105	SPS_D	General indication (binary input)		O	
InRef106	ORG_SRC	General input reference		O	
Ind106	SPS_D	General indication (binary input)		O	
InRef107	ORG_SRC	General input reference		O	
Ind107	SPS_D	General indication (binary input)		O	
InRef108	ORG_SRC	General input reference		O	
Ind108	SPS_D	General indication (binary input)		O	
InRef109	ORG_SRC	General input reference		O	
Ind109	SPS_D	General indication (binary input)		O	
InRef110	ORG_SRC	General input reference		O	
Ind110	SPS_D	General indication (binary input)		O	
InRef111	ORG_SRC	General input reference		O	
Ind111	SPS_D	General indication (binary input)		O	
InRef112	ORG_SRC	General input reference		O	
Ind112	SPS_D	General indication (binary input)		O	
InRef113	ORG_SRC	General input reference		O	
Ind113	SPS_D	General indication (binary input)		O	
InRef114	ORG_SRC	General input reference		O	
Ind114	SPS_D	General indication (binary input)		O	
InRef115	ORG_SRC	General input reference		O	
Ind115	SPS_D	General indication (binary input)		O	
InRef116	ORG_SRC	General input reference		O	
Ind116	SPS_D	General indication (binary input)		O	
InRef117	ORG_SRC	General input reference		O	
Ind117	SPS_D	General indication (binary input)		O	
InRef118	ORG_SRC	General input reference		O	
Ind118	SPS_D	General indication (binary input)		O	
InRef119	ORG_SRC	General input reference		O	
Ind119	SPS_D	General indication (binary input)		O	
InRef120	ORG_SRC	General input reference		O	
Ind120	SPS_D	General indication (binary input)		O	
InRef121	ORG_SRC	General input reference		O	
Ind121	SPS_D	General indication (binary input)		O	
InRef122	ORG_SRC	General input reference		O	
Ind122	SPS_D	General indication (binary input)		O	
InRef123	ORG_SRC	General input reference		O	
Ind123	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef124	ORG_SRC	General input reference		O	
Ind124	SPS_D	General indication (binary input)		O	
InRef125	ORG_SRC	General input reference		O	
Ind125	SPS_D	General indication (binary input)		O	
InRef126	ORG_SRC	General input reference		O	
Ind126	SPS_D	General indication (binary input)		O	
InRef127	ORG_SRC	General input reference		O	
Ind127	SPS_D	General indication (binary input)		O	
InRef128	ORG_SRC	General input reference		O	
Ind128	SPS_D	General indication (binary input)		O	

3.4 LN: GGIO_IND_16

Description: Generic Process I/O (w.r.t 16 Indication Elements)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Ind1	SPS_D	General indication (binary input)		O	
Ind2	SPS_D	General indication (binary input)		O	
Ind3	SPS_D	General indication (binary input)		O	
Ind4	SPS_D	General indication (binary input)		O	
Ind5	SPS_D	General indication (binary input)		O	
Ind6	SPS_D	General indication (binary input)		O	
Ind7	SPS_D	General indication (binary input)		O	
Ind8	SPS_D	General indication (binary input)		O	
Ind9	SPS_D	General indication (binary input)		O	
Ind10	SPS_D	General indication (binary input)		O	
Ind11	SPS_D	General indication (binary input)		O	
Ind12	SPS_D	General indication (binary input)		O	
Ind13	SPS_D	General indication (binary input)		O	
Ind14	SPS_D	General indication (binary input)		O	
Ind15	SPS_D	General indication (binary input)		O	
Ind16	SPS_D	General indication (binary input)		O	

3.5 LN: GGIO_IND_32

Description: Generic Process I/O (w.r.t 32 Indication Elements)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Ind1	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
Ind2	SPS_D	General indication (binary input)		O	
Ind3	SPS_D	General indication (binary input)		O	
Ind4	SPS_D	General indication (binary input)		O	
Ind5	SPS_D	General indication (binary input)		O	
Ind6	SPS_D	General indication (binary input)		O	
Ind7	SPS_D	General indication (binary input)		O	
Ind8	SPS_D	General indication (binary input)		O	
Ind9	SPS_D	General indication (binary input)		O	
Ind10	SPS_D	General indication (binary input)		O	
Ind11	SPS_D	General indication (binary input)		O	
Ind12	SPS_D	General indication (binary input)		O	
Ind13	SPS_D	General indication (binary input)		O	
Ind14	SPS_D	General indication (binary input)		O	
Ind15	SPS_D	General indication (binary input)		O	
Ind16	SPS_D	General indication (binary input)		O	
Ind17	SPS_D	General indication (binary input)		O	
Ind18	SPS_D	General indication (binary input)		O	
Ind19	SPS_D	General indication (binary input)		O	
Ind20	SPS_D	General indication (binary input)		O	
Ind21	SPS_D	General indication (binary input)		O	
Ind22	SPS_D	General indication (binary input)		O	
Ind23	SPS_D	General indication (binary input)		O	
Ind24	SPS_D	General indication (binary input)		O	
Ind25	SPS_D	General indication (binary input)		O	
Ind26	SPS_D	General indication (binary input)		O	
Ind27	SPS_D	General indication (binary input)		O	
Ind28	SPS_D	General indication (binary input)		O	
Ind29	SPS_D	General indication (binary input)		O	
Ind30	SPS_D	General indication (binary input)		O	
Ind31	SPS_D	General indication (binary input)		O	
Ind32	SPS_D	General indication (binary input)		O	

3.6 LN: GGIO_IND_32_CTRL

Description: Generic process I/O (w.r.t 32 Indications Ctrl i/p)

LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
SPCSO1	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO2	SPC_CONTROL_NS	Single point controllable status output		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
SPCSO3	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO4	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO5	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO6	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO7	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO8	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO9	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO10	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO11	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO12	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO13	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO14	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO15	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO16	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO17	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO18	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO19	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO20	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO21	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO22	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO23	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO24	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO25	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO26	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO27	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO28	SPC_CONTROL_NS	Single point controllable status output		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
SPCSO29	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO30	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO31	SPC_CONTROL_NS	Single point controllable status output		O	
SPCSO32	SPC_CONTROL_NS	Single point controllable status output		O	

3.7 LN: GGIO_IND_6

Description: Generic Process I/O (w.r.t 6 Indication Elements)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Ind1	SPS_D	General indication (binary input)		O	
Ind2	SPS_D	General indication (binary input)		O	
Ind3	SPS_D	General indication (binary input)		O	
Ind4	SPS_D	General indication (binary input)		O	
Ind5	SPS_D	General indication (binary input)		O	
Ind6	SPS_D	General indication (binary input)		O	

3.8 LN: GGIO_IND_64_INREF

Description: Generic process I/O (w.r.t 64 Indication Elements with inref)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
InRef1	ORG_SRC	General input reference		O	
Ind1	SPS_D	General indication (binary input)		O	
InRef2	ORG_SRC	General input reference		O	
Ind2	SPS_D	General indication (binary input)		O	
InRef3	ORG_SRC	General input reference		O	
Ind3	SPS_D	General indication (binary input)		O	
InRef4	ORG_SRC	General input reference		O	
Ind4	SPS_D	General indication (binary input)		O	
InRef5	ORG_SRC	General input reference		O	
Ind5	SPS_D	General indication (binary input)		O	
InRef6	ORG_SRC	General input reference		O	
Ind6	SPS_D	General indication (binary input)		O	
InRef7	ORG_SRC	General input reference		O	
Ind7	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef8	ORG_SRC	General input reference		O	
Ind8	SPS_D	General indication (binary input)		O	
InRef9	ORG_SRC	General input reference		O	
Ind9	SPS_D	General indication (binary input)		O	
InRef10	ORG_SRC	General input reference		O	
Ind10	SPS_D	General indication (binary input)		O	
InRef11	ORG_SRC	General input reference		O	
Ind11	SPS_D	General indication (binary input)		O	
InRef12	ORG_SRC	General input reference		O	
Ind12	SPS_D	General indication (binary input)		O	
InRef13	ORG_SRC	General input reference		O	
Ind13	SPS_D	General indication (binary input)		O	
InRef14	ORG_SRC	General input reference		O	
Ind14	SPS_D	General indication (binary input)		O	
InRef15	ORG_SRC	General input reference		O	
Ind15	SPS_D	General indication (binary input)		O	
InRef16	ORG_SRC	General input reference		O	
Ind16	SPS_D	General indication (binary input)		O	
InRef17	ORG_SRC	General input reference		O	
Ind17	SPS_D	General indication (binary input)		O	
InRef18	ORG_SRC	General input reference		O	
Ind18	SPS_D	General indication (binary input)		O	
InRef19	ORG_SRC	General input reference		O	
Ind19	SPS_D	General indication (binary input)		O	
InRef20	ORG_SRC	General input reference		O	
Ind20	SPS_D	General indication (binary input)		O	
InRef21	ORG_SRC	General input reference		O	
Ind21	SPS_D	General indication (binary input)		O	
InRef22	ORG_SRC	General input reference		O	
Ind22	SPS_D	General indication (binary input)		O	
InRef23	ORG_SRC	General input reference		O	
Ind23	SPS_D	General indication (binary input)		O	
InRef24	ORG_SRC	General input reference		O	
Ind24	SPS_D	General indication (binary input)		O	
InRef25	ORG_SRC	General input reference		O	
Ind25	SPS_D	General indication (binary input)		O	
InRef26	ORG_SRC	General input reference		O	
Ind26	SPS_D	General indication (binary input)		O	
InRef27	ORG_SRC	General input reference		O	
Ind27	SPS_D	General indication (binary input)		O	
InRef28	ORG_SRC	General input reference		O	
Ind28	SPS_D	General indication (binary input)		O	
InRef29	ORG_SRC	General input reference		O	
Ind29	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef30	ORG_SRC	General input reference		O	
Ind30	SPS_D	General indication (binary input)		O	
InRef31	ORG_SRC	General input reference		O	
Ind31	SPS_D	General indication (binary input)		O	
InRef32	ORG_SRC	General input reference		O	
Ind32	SPS_D	General indication (binary input)		O	
InRef33	ORG_SRC	General input reference		O	
Ind33	SPS_D	General indication (binary input)		O	
InRef34	ORG_SRC	General input reference		O	
Ind34	SPS_D	General indication (binary input)		O	
InRef35	ORG_SRC	General input reference		O	
Ind35	SPS_D	General indication (binary input)		O	
InRef36	ORG_SRC	General input reference		O	
Ind36	SPS_D	General indication (binary input)		O	
InRef37	ORG_SRC	General input reference		O	
Ind37	SPS_D	General indication (binary input)		O	
InRef38	ORG_SRC	General input reference		O	
Ind38	SPS_D	General indication (binary input)		O	
InRef39	ORG_SRC	General input reference		O	
Ind39	SPS_D	General indication (binary input)		O	
InRef40	ORG_SRC	General input reference		O	
Ind40	SPS_D	General indication (binary input)		O	
InRef41	ORG_SRC	General input reference		O	
Ind41	SPS_D	General indication (binary input)		O	
InRef42	ORG_SRC	General input reference		O	
Ind42	SPS_D	General indication (binary input)		O	
InRef43	ORG_SRC	General input reference		O	
Ind43	SPS_D	General indication (binary input)		O	
InRef44	ORG_SRC	General input reference		O	
Ind44	SPS_D	General indication (binary input)		O	
InRef45	ORG_SRC	General input reference		O	
Ind45	SPS_D	General indication (binary input)		O	
InRef46	ORG_SRC	General input reference		O	
Ind46	SPS_D	General indication (binary input)		O	
InRef47	ORG_SRC	General input reference		O	
Ind47	SPS_D	General indication (binary input)		O	
InRef48	ORG_SRC	General input reference		O	
Ind48	SPS_D	General indication (binary input)		O	
InRef49	ORG_SRC	General input reference		O	
Ind49	SPS_D	General indication (binary input)		O	
InRef50	ORG_SRC	General input reference		O	
Ind50	SPS_D	General indication (binary input)		O	
InRef51	ORG_SRC	General input reference		O	
Ind51	SPS_D	General indication (binary input)		O	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
InRef52	ORG_SRC	General input reference		O	
Ind52	SPS_D	General indication (binary input)		O	
InRef53	ORG_SRC	General input reference		O	
Ind53	SPS_D	General indication (binary input)		O	
InRef54	ORG_SRC	General input reference		O	
Ind54	SPS_D	General indication (binary input)		O	
InRef55	ORG_SRC	General input reference		O	
Ind55	SPS_D	General indication (binary input)		O	
InRef56	ORG_SRC	General input reference		O	
Ind56	SPS_D	General indication (binary input)		O	
InRef57	ORG_SRC	General input reference		O	
Ind57	SPS_D	General indication (binary input)		O	
InRef58	ORG_SRC	General input reference		O	
Ind58	SPS_D	General indication (binary input)		O	
InRef59	ORG_SRC	General input reference		O	
Ind59	SPS_D	General indication (binary input)		O	
InRef60	ORG_SRC	General input reference		O	
Ind60	SPS_D	General indication (binary input)		O	
InRef61	ORG_SRC	General input reference		O	
Ind61	SPS_D	General indication (binary input)		O	
InRef62	ORG_SRC	General input reference		O	
Ind62	SPS_D	General indication (binary input)		O	
InRef63	ORG_SRC	General input reference		O	
Ind63	SPS_D	General indication (binary input)		O	
InRef64	ORG_SRC	General input reference		O	
Ind64	SPS_D	General indication (binary input)		O	

3.9 LN: GGIO_IND_8

Description: Generic Process I/O (w.r.t 8 Indication Elements)
LN Class: GGIO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Ind1	SPS_D	General indication (binary input)		O	
Ind2	SPS_D	General indication (binary input)		O	
Ind3	SPS_D	General indication (binary input)		O	
Ind4	SPS_D	General indication (binary input)		O	
Ind5	SPS_D	General indication (binary input)		O	
Ind6	SPS_D	General indication (binary input)		O	
Ind7	SPS_D	General indication (binary input)		O	
Ind8	SPS_D	General indication (binary input)		O	

3.10 LN: LLN0_PROT

Description: Protection Domain Logical Node 0
LN Class: LLN0

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LLN0	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
CbfBeh	ENS_BEH_D_PRIV	CB Fail Behaviour		E	
CbfMod	ENC_CTRL_PRV_NS	CB Fail Mode		E	
EfdBeh	ENS_BEH_D_PRIV	Earth Fault 2 (Derived) Behaviour		E	
EfdMod	ENC_CTRL_PRV_NS	Earth Fault 2 (Derived) Mode		E	
EfmBeh	ENS_BEH_D_PRIV	Earth Fault 1 (Measured) Behaviour		E	
EfmMod	ENC_CTRL_PRV_NS	Earth Fault 1 (Measured) Mode		E	
FrqBeh	ENS_BEH_D_PRIV	Overfrequency/Underfrequency Behaviour		E	
FrqMod	ENC_CTRL_PRV_NS	Overfrequency/Underfrequency Mode		E	
NgcBeh	ENS_BEH_D_PRIV	Negative Sequence Behaviour		E	
NgcMod	ENC_CTRL_PRV_NS	Negative Sequence Mode		E	
NgvBeh	ENS_BEH_D_PRIV	Negative Sequence Overvoltage Behaviour		E	
NgvMod	ENC_CTRL_PRV_NS	Negative Sequence Overvoltage Mode		E	
NvdBeh	ENS_BEH_D_PRIV	Residual Overvoltage NVD Behaviour		E	
NvdMod	ENC_CTRL_PRV_NS	Residual Overvoltage NVD Mode		E	
OcpBeh	ENS_BEH_D_PRIV	Overcurrent Behaviour		E	
OcpMod	ENC_CTRL_PRV_NS	Overcurrent Mode		E	
SenBeh	ENS_BEH_D_PRIV	SEF/REF Behaviour		E	
SenMod	ENC_CTRL_PRV_NS	SEF/REF Mode		E	
ThmBeh	ENS_BEH_D_PRIV	Thermal Overload Behaviour		E	
ThmMod	ENC_CTRL_PRV_NS	Thermal Overload Mode		E	
VtpBeh	ENS_BEH_D_PRIV	Overvoltage/Undervoltage Behaviour		E	
VtpMod	ENC_CTRL_PRV_NS	Overvoltage/Undervoltage Mode		E	

3.11 LN: LLN0_STANDARD

Description: General Logical Node 0
LN Class: LLN0

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LLN0	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	

3.12 LN: LLN0_SYSTEM

Description: System Logical Node 0
LN Class: LLN0

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LLN0	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
LEDRs	SPC_CONTROL_NS	LED reset	T	O	
OrdRun	SPS_WD_PRIV	Indicate IED is operating a control object		E	
SyncSt	SPS_WD_PRIV	Indicate time synchronisation in the IED is active/inactive		E	

3.13 LN: LPHD_STANDARD

Description: Px40 Physical Device Information

LN Class: LPHD

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
PhyNam	DPL_STANDARD	Physical device name plate		M	
PhyHealth	ENS_HEALTH	Physical device health		M	
Proxy	SPS_D	Indicates if this LN is a proxy		M	
PwrUp	SPS_D	Power up detected		O	

3.14 LN: LPHD_SYSTEM

Description: Px40 physical device information for LD system

LN Class: LPHD

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
PhyNam	DPL_STANDARD	Physical device name plate		M	
PhyHealth	ENS_HEALTH	Physical device health		M	
Proxy	SPS_D	Indicates if this LN is a proxy		M	
PwrUp	SPS_D	Power up detected		O	
Sim	SPC_CONTROL_NS	Receive simulated GOOSE or simulated SV		O	

3.15 LN: LTIM_LOCAL

Description: Time management

LN Class: LTIM

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
TmDT	SPS_D	Indicating if for this location daylight saving time is in effect now		M	
TmOfsTmm	ING_BASIC	Offset of local time from UTC in minutes		M	
TmUseDT	SPG_BASIC	Flag indicating if this location is using daylight saving time		M	

3.16 LN: LTMS_SYNC

Description: Time master supervision (with time source only)

LN Class: LTMS

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
TmSrc	VSS_BASIC	Current time source		M	

3.17 LN: MMTR_PRIV

Description: Metering

LN Class: MMTR

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
SupWh	BCR_PRIV	Real energy supply (Energy flow towards bus bar)		O	
SupVArh	BCR_PRIV	Reactive energy supply (Energy flow towards bus bar)		O	
DmdWh	BCR_PRIV	Real energy demand (Energy flow from bus bar)		O	
DmdVArh	BCR_PRIV	Reactive energy demand (Energy flow from bus bar)		O	
MTRRs	SPC_CTRL_PRV_NS	Reset Energy Meters		E	

3.18 LN: MMXU_FOURIER

Description: Standard measurements

LN Class: MMXU

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
TotW	MV_FLOAT	Total active power (Total P)		O	
TotVAr	MV_FLOAT	Total reactive power (Total Q)		O	
TotVA	MV_FLOAT	Total apparent power (Total S)		O	
TotPF	MV_FLOAT	Average power factor (Total PF)		O	
Hz	MV_FLOAT	Frequency		O	
PPV	DEL_SEG_ANG	Phase to Phase voltages		O	
PhV	WYE_SEG_RES_D	Phase to Ground voltages		O	
W	WYE_SEG	Phase active power (P)		O	
VAr	WYE_SEG	Phase reactive power (Q)		O	
VA	WYE_SEG	Phase apparent power (S)		O	
PF	WYE_SEG	Phase power factor		O	
Ase1	WYE_SEG_RES_NS	Phase currents (Fourier Magnitudes)		E	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
Ase2	WYE_RES_ANG_NS	Phase currents (IN Measured)		E	
Ase3	WYE_RES_ANG_NS	Phase currents (ISEF Magnitude)		E	
I1	MV_FLOAT_NS	I1 Magnitude		E	
I2	MV_FLOAT_NS	I2 Magnitude		E	
I0	MV_FLOAT_NS	I0 Magnitude		E	
V1	MV_FLOAT_NS	V1 Magnitude		E	
V2	MV_FLOAT_NS	V2 Magnitude		E	
V0	MV_FLOAT_NS	V0 Magnitude		E	

3.19 LN: MMXU_RMS_P145

Description: Standard measurements (w.r.t RMS Values - P145)
LN Class: MMXU

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
PhV	WYE_SEG_D	Phase to Ground voltages		O	
A	WYE_SEG_D	Phase currents		O	

3.20 LN: MMXU_SPEC

Description: Specific measurements
LN Class: MMXU

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
AphW	MV_FLOAT_D_NS	Aph Senitive Watts		E	
AphVar	MV_FLOAT_D_NS	Aph Senitive VArs		E	
AphAng	MV_FLOAT_D_NS	Aph Power Angle		E	
BEf	MV_FLOAT_D_NS	Susceptance EF		E	
BSef	MV_FLOAT_D_NS	Susceptance SEF		E	
DfDt	MV_FLOAT_D_NS	df/dt		E	
GEf	MV_FLOAT_D_NS	Conductance EF		E	
GSef	MV_FLOAT_D_NS	Conductance SEF		E	
IA2nd	MV_FLOAT_D_NS	IA 2nd Harmonic		E	
IB2nd	MV_FLOAT_D_NS	IB 2nd Harmonic		E	
IC2nd	MV_FLOAT_D_NS	IC 2nd Harmonic		E	
WSef	MV_FLOAT_D_NS	SEF Power		E	
YEf	MV_FLOAT_D_NS	Admittance EF		E	
YSef	MV_FLOAT_D_NS	Admittance SEF		E	
ZAMag	MV_FLOAT_D_NS	Phase A Impendance Magnitude		E	
ZAAng	MV_FLOAT_D_NS	Phase A Impendance Angle		E	
ZBMag	MV_FLOAT_D_NS	Phase B Impendance Magnitude		E	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
ZBAng	MV_FLOAT_D_NS	Phase B Impendance Angle		E	
ZCMag	MV_FLOAT_D_NS	Phase C Impendance Magnitude		E	
ZCAng	MV_FLOAT_D_NS	Phase C Impendance Angle		E	
ZposMag	MV_FLOAT_D_NS	Positive sequence Impendance Magnitude		E	
ZposAng	MV_FLOAT_D_NS	Positive Sequence Impendance Angle		E	

3.21 LN: MSQI_ALL

Description: Sequence and imbalance (w.r.t Pos, Neq, Zero)

LN Class: MSQI

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
SeqA	SEQ_MAG_ANG	Positive, Negative and Zero sequence current		C	
SeqV	SEQ_MAG_ANG	Positive, Negative and Zero sequence voltage		C	
ImbNgA	MV_FLOAT	Imbalance negative sequence current		O	

3.22 LN: MSTA_I_W_VAR

Description: Metering Statistics (w.r.t Current, Real + Reactive Power - Average + Max values)

LN Class: MSTA

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN_NS	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
AvAmpsse1	MV_FLOAT_D	Average current		O	
AvAmpsse2	MV_FLOAT_D	Average current		O	
AvAmpsse3	MV_FLOAT_D	Average current		O	
AvAmpsse4	MV_FLOAT_D	Average current		O	
AvAmpsse5	MV_FLOAT_D	Average current		O	
AvAmpsse6	MV_FLOAT_D	Average current		O	
MaxAmpsse1	MV_FLOAT_D	Maximum current		O	
MaxAmpsse2	MV_FLOAT_D	Maximum current		O	
MaxAmpsse3	MV_FLOAT_D	Maximum current		O	
AvWse1	MV_FLOAT_D	Average real power		O	
AvWse2	MV_FLOAT_D	Average real power		O	
MaxW	MV_FLOAT_D	Maximum real power		O	
AvVArse1	MV_FLOAT_D	Average reactive power		O	
AvVArse2	MV_FLOAT_D	Average reactive power		O	
MaxVAr	MV_FLOAT_D	Maximum reactive power		O	

3.23 LN: PDIF_NEU

Description: Differential (w.r.t Neutral)
LN Class: PDIF

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Op	ACT_NEU	Operate	T	M	
DifAClc	WYE_INET	Differential current		O	
RstA	WYE_INET	Restraint current		O	

3.24 LN: PFRC_NO_SEG

Description: Rate of change of frequency (w.r.t No Phase Segregation)
LN Class: PFRC

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NO_SEG	Start		M	
Op	ACT_NO_SEG	Operate	T	M	

3.25 LN: PTOC_NEU

Description: Timed Overcurrent (w.r.t Neutral)
LN Class: PTOC

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NEU	Start		M	
Op	ACT_NEU	Operate	T	M	

3.26 LN: PTOC_NO_SEG

Description: Timed Overcurrent (w.r.t No Phase Segregation)
LN Class: PTOC

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NO_SEG	Start		M	
Op	ACT_NO_SEG	Operate	T	M	

3.27 LN: PTOC_SEG

Description: Timed Overcurrent (w.r.t Phase Segregation)
LN Class: PTOC

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_SEG	Start		M	
Op	ACT_SEG	Operate	T	M	

3.28 LN: PTOF_NO_SEG

Description: Over frequency (w.r.t No Phase Segregation)
LN Class: PTOF

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NO_SEG	Start		M	
Op	ACT_NO_SEG	Operate	T	M	

3.29 LN: PTOV_NEU

Description: Overvoltage (w.r.t Neutral)
LN Class: PTOV

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NEU	Start		M	
Op	ACT_NEU	Operate	T	O	

3.30 LN: PTOV_NO_SEG

Description: Overvoltage (w.r.t Phase Segregation)
LN Class: PTOV

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NO_SEG	Start		M	
Op	ACT_NO_SEG	Operate	T	O	

3.31 LN: PTOV_SEG

Description: Overvoltage (w.r.t Phase Segregation)

LN Class: PTOV

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_SEG	Start		M	
Op	ACT_SEG	Operate	T	O	

3.32 LN: PTRC_NO_SEG

Description: Protection trip conditioning (w.r.t No Phase Segregation)

LN Class: PTRC

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Tr	ACT_NO_SEG	Trip		C	
Str	ACD_NO_SEG	Sum of all starts of all connected Logical Nodes		O	

3.33 LN: PTTR_NO_SEG

Description: Thermal overload (w.r.t No Phase Segregation)

LN Class: PTTR

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Op	ACT_NO_SEG	Operate	T	M	
AlmThm	SPS_NO_SEG	Thermal alarm		O	
Amp	MV_FLOAT	Current for thermal load model		O	
TmpRl	MV_FLOAT	Relation between temperature and maximum temperature		O	
MTRRs	SPC_CTRL_PRV_NS	Reset Thermal State		E	

3.34 LN: PTUF_NO_SEG

Description: Under frequency (w.r.t No Phase Segregation)

LN Class: PTUF

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_NO_SEG	Start		M	
Op	ACT_NO_SEG	Operate	T	M	

3.35 LN: PTUV_SEG

Description: Undervoltage (w.r.t Phase Segregation)
LN Class: PTUV

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
Str	ACD_SEG	Start		M	
Op	ACT_SEG	Operate	T	M	

3.36 LN: RBRF_EXTTRIP

Description: Breaker Failure (w.r.t External Tripping)
LN Class: RBRF

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
OpEx	ACT_NO_SEG	Breaker failure trip ("External trip")	T	C	

3.37 LN: RDRE_BASIC

Description: Disturbance Recorder function (w.r.t Mandatory Attributes only)
LN Class: RDRE

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
RcdMade	SPS_WD	Recording made		M	
FltNum	INS_BASIC	Fault number		M	
GriFltNum	INS_BASIC	Grid fault number		O	

3.38 LN: RFLO_PRIV_NDB

Description: Fault locatorFault record values (including fault Fault record values (including fault locator) without deadband and RangeC
LN Class: RFLO

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
FltPhs	INS_D_NS	Fault phase		E	
FltSt1U	INS_D_NS	Fault start element 1 upper bits		E	
FltSt1L	INS_D_NS	Fault start element 1 lower bits		E	
FltSt2U	INS_D_NS	Fault start element 2 upper bits		E	

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
FltSt2L	INS_D_NS	Fault start element 2 lower bits		E	
FltSt3U	INS_D_NS	Fault start element 3 upper bits		E	
FltSt3L	INS_D_NS	Fault start element 3 lower bits		E	
FltSt4U	INS_D_NS	Fault start element 4 upper bits		E	
FltSt4L	INS_D_NS	Fault start element 4 lower bits		E	
FltOp1U	INS_D_NS	Fault trip element 1 upper bits		E	
FltOp1L	INS_D_NS	Fault trip element 1 lower bits		E	
FltOp2U	INS_D_NS	Fault trip element 2 upper bits		E	
FltOp2L	INS_D_NS	Fault trip element 2 lower bits		E	
FltOp3U	INS_D_NS	Fault trip element 3 upper bits		E	
FltOp3L	INS_D_NS	Fault trip element 3 lower bits		E	
FltOp4U	INS_D_NS	Fault trip element 4 upper bits		E	
FltOp4L	INS_D_NS	Fault trip element 4 lower bits		E	
FltAlmU	INS_D_NS	Fault alarm upper bits		E	
FltAlmL	INS_D_NS	Fault alarm lower bits		E	
FltTU	INS_D_NS	Fault time upper bits		E	
FltTL	INS_D_NS	Fault time lower bits		E	
FltTms	INS_D_NS	Fault time ms		E	
ActiveSG	INS_D_NS	Active setting group		E	
FltNum	INS_D_NS	Total number of Fault Records		E	
FltHz	MV_FLOAT_D_NS_NDB	Fault frequency		E	
FltDur	MV_FLOAT_D_NS_NDB	Fault duration		E	
CBOpTm	MV_FLOAT_D_NS_NDB	CB Operation time		E	
RlyOpTm	MV_FLOAT_D_NS_NDB	Rly operation time		E	
FltDiskm	MV_FLOAT_NDB	Fault distance in km		O	
FltDismi	MV_FLOAT_D_NS_NDB	Fault distance in mile		E	
FltZ	CMV_MAG_FLOAT_NDB	Fault impedance		M	
FltLoc	MV_FLOAT_D_NS_NDB	Fault location in percentage		E	
FltA	WYE_SEG_D_NS	Fault Phase current		E	
FltINMea	MV_FLOAT_D_NS_NDB	Fault current IN measured		E	
FltINDer	MV_FLOAT_D_NS_NDB	Fault current IN derived		E	
FltINSen	MV_FLOAT_D_NS_NDB	Fault sensitive current		E	
FltIDiff	MV_FLOAT_D_NS_NDB	Fault differential current		E	
FltIBias	MV_FLOAT_D_NS_NDB	Fault bias current		E	
FltPPV	DEL_SEG_D_NS	Fault record phase-phase voltage		E	
FltPhV	WYE_SEG_D_NS	Fault record phase voltage		E	
FltVN	MV_FLOAT_D_NS_NDB	Fault voltage VN measured/derived		E	
SEFAdmit	MV_FLOAT_D_NS_NDB	Sensitive Neutral Admittance		E	
SEFCond	MV_FLOAT_D_NS_NDB	Sensitive Neutral Conductance		E	
SEFSusc	MV_FLOAT_D_NS_NDB	Sensitive Neutral Susceptance		E	
EFAdmit	MV_FLOAT_D_NS_NDB	Standard Neutral Admittance		E	
EFCond	MV_FLOAT_D_NS_NDB	Standard Neutral Conductance		E	
EFSusc	MV_FLOAT_D_NS_NDB	Standard Neutral Susceptance		E	

3.39 LN: XCBR_BASIC

Description: Circuit Breaker (w.r.t Mandatory Attributes Only)
LN Class: XCBR

Attribute	Attr. Type	Explanation	T	M/O/E	Remarks
NamPlt	LPL_LN	Name Plate		C	
Beh	ENS_BEH	Behaviour		M	
Health	ENS_HEALTH	Health		C	
Mod	ENC_MOD	Mode		C	
EEHealth	ENS_HEALTH	External equipment health		O	
Loc	SPS_WD	Local operation		M	
OpCnt	INS_BASIC	Operation counter		M	
CBOpCap	ENS_CBCAP	Circuit Breaker operating capacity		O	
Pos	DPC_CONTROL	Switch position		M	
BlkOpn	SPC_STATUS	Block opening		M	
BlkCls	SPC_STATUS	Block closing		M	
Lock	SPC_CTRL_PRV_NS	Prevention, i.e Lock, Trip/Close operations of the Circuit Breaker over IEC61850		E	

4 Common Data Classes

The definition tables for each of the Common Data Classes used in the Logical Node definitions are presented in the following sub-sections.

4.1 CDC: ACD_NEU

Description: Directional Protection Activation Information (w.r.t Neutral)
CDC Class: ACD

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
dirGeneral	ENUMERATED8	ST	dchg	FaultDirectionKind	General direction (unknown, forward, backward or both)	M
neut	BOOLEAN	ST	dchg	--	Trip or start event with earth current has happened	GC_2
dirNeut	ENUMERATED8	ST	dchg	FaultDirectionKind	Earth current direction (unknown, forward or backward)	GC_2
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.2 CDC: ACD_NO_SEG

Description: Directional Protection Activation Information (w,r,t No Phase Segregation)
CDC Class: ACD

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
dirGeneral	ENUMERATED8	ST	dchg	FaultDirectionKind	General direction (unknown, forward, backward or both)	M
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.3 CDC: ACD_SEG

Description: Directional Protection Activation Information (w.r.t Phase Segregation)
CDC Class: ACD

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
dirGeneral	ENUMERATED8	ST	dchg	FaultDirectionKind	General direction (unknown, forward, backward or both)	M

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	BOOLEAN	ST	dchg	--	Trip or start event of Phase A has happened	GC_2
dirPhsA	ENUMERATED8	ST	dchg	FaultDirectionKind	Phase A direction (unknown, forward or backward)	GC_2
phsB	BOOLEAN	ST	dchg	--	Trip or start event of Phase B has happened	GC_2
dirPhsB	ENUMERATED8	ST	dchg	FaultDirectionKind	Phase B direction (unknown, forward or backward)	GC_2
phsC	BOOLEAN	ST	dchg	--	Trip or start event of Phase C has happened	GC_2
dirPhsC	ENUMERATED8	ST	dchg	FaultDirectionKind	Phase C direction (unknown, forward or backward)	GC_2
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.4 CDC: ACT_NEU

Description: Protection Activation Information (w.r.t Neutral)

CDC Class: ACT

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
neut	BOOLEAN	ST	dchg	--	Trip or start event with earth current has happened	O
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.5 CDC: ACT_NO_SEG

Description: Protection Activation Information (w.r.t No Phase Segregation)

CDC Class: ACT

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.6 CDC: ACT_SEG

Description: Protection Activation Information (w.r.t Phase Segregation)

CDC Class: ACT

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
general	BOOLEAN	ST	dchg	--	Trip or start has happened	M
phsA	BOOLEAN	ST	dchg	--	Trip or start event of Phase A has happened	O
phsB	BOOLEAN	ST	dchg	--	Trip or start event of Phase B has happened	O
phsC	BOOLEAN	ST	dchg	--	Trip or start event of Phase C has happened	O
q	Quality	ST	qchg	--	Quality of the protection activation information	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of protection activation information	M

4.7 CDC: BCR_PRIV

Description: Binary Counter Reading

CDC Class: BCR

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
actVal	INT64	ST	dchg	--	Binary counter status represented as an integer	M
q	Quality	ST	qchg	--	Quality of counter value	M
t	TimeStamp	ST	--	--	Time of last counter change	M
pulsQty	FLOAT32	CF	dchg	--	Magnitude of the counted value 'per count' (value = actVal x pulsQty)	M

4.8 CDC: CMV_MAG_ANG_FLOAT

Description: Complex Measured value (w.r.t Floating Point Magnitude and Angle)

CDC Class: CMV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
cVal	Vector_MagnitudeAngle_Float	MX	dchg, dupd	--	Deadbanded complex measured vector. Updated to the current value of instCVal when the value has changed according to the configuration parameter db.	M
q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON

4.9 CDC: CMV_MAG_FLOAT

Description: Complex Measured value (w.r.t Floating Point Magnitude)
CDC Class: CMV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
cVal	Vector_Magnitude_Float	MX	dchg, dupd	--	Deadbanded complex measured vector. Updated to the current value of instCVal when the value has changed according to the configuration parameter db.	M
q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON

4.10 CDC: CMV_MAG_FLOAT_NDB

Description: Complex Measured value without deadband and RangeC
CDC Class: CMV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
cVal	Vector_Magnitude_Float	MX	dchg, dupd	--	Deadbanded complex measured vector. Updated to the current value of instCVal when the value has changed according to the configuration parameter db.	M
q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON

4.11 CDC: DEL_SEG_ANG

Description: Phase to phase measurements for a 3-Phase system (w.r.t Phase Seggregation + Angle)

CDC Class: DEL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsAB	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase A to Phase B	GC_1
phsBC	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase B to Phase C	GC_1
phsCA	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase C to Phase A	GC_1

4.12 CDC: DEL_SEG_D_NS

Description: Phase to phase measurements for a 3-Phase system

CDC Class: DEL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsAB	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase A to Phase B	GC_1
phsBC	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase B to Phase C	GC_1
phsCA	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase C to Phase A	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.13 CDC: DPC_CONTROL

Description: Controllable Double Point

CDC Class: DPC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
origin	Originator	ST	--	--	Originator of the last change of the controllable data	AC_CO_O
stVal	Dbpos	ST	dchg	--	Status value of the data (Intermediate state, Off, On or Bad-state)	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of status value	M
stSeld	BOOLEAN	ST	dchg	--	The controllable data is in the status "Selected"	O
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Control model (Corresponding to the behaviour of the data)	M
sboTimeout	INT32U	CF	dchg	--	Select Before Operate timeout period (in milliseconds)	AC_CO_O

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
ctlVal	BOOLEAN	CO	--	--	Control value (Off - FALSE, On - TRUE)	AC_CO_M

4.14 CDC: DPL_STANDARD

Description: Standard Device Name Plate
CDC Class: DPL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
vendor	VISIBLE_STRING255	DC	--	--	Name of the vendor	M
hwRev	VISIBLE_STRING255	DC	--	--	Hardware revision	O
swRev	VISIBLE_STRING255	DC	--	--	Software revision	O
serNum	VISIBLE_STRING255	DC	--	--	Serial Number	O
model	VISIBLE_STRING255	DC	--	--	Model Number	O
location	VISIBLE_STRING255	DC	--	--	Physical location of device	O

4.15 CDC: ENC_CTRL_PRV_NS

Description: Controllable enumerated status (with NameSpace)
CDC Class: ENC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg	ModKind	Status value of the data	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state of status value	M
stSeld	BOOLEAN	ST	dchg	--	The controllable data is in the status "selected".	O
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Control model (Corresponding to the behaviour of the data)	M
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M
ctlVal	ENUMERATED8	CO	--	--	Control value	AC_CO_M

4.16 CDC: ENC_MOD

Description: Controllable enumerated status(w.r.t Mode)
CDC Class: ENC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg	ModKind	Status value of the data.	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Specifies the control model[status-only,direct-with-normal-security,sbo-with-normal-security,direct-with-enhanced-security,sbo-with-enhanced-security].	M

4.17 CDC: ENS_BEH

Description: Enumerated status (w.r.t Behaviour)
CDC Class: ENS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg,dupd	BehKind	Status value of the data.	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.18 CDC: ENS_BEH_D_PRIV

Description: Enumerated status (w.r.t Behaviour, with Description (Private DO))
CDC Class: ENS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg,dupd	BehKind	Status value of the data.	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M
d	VISIBLE_STRING255	DC	--	--	Textual description of the data.	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.19 CDC: ENS_CBCAP

Description: Enumerated status (w.r.t Circuit Breaker Operating)
CDC Class: ENS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg, dupd	CBOpCapKind	The element status	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.20 CDC: ENS_HEALTH

Description: Enumerated status(w.r.t health)
CDC Class: ENS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	ENUMERATED8	ST	dchg,dupd	HealthKind	Status value of the data.	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.21 CDC: ING_BASIC

Description: Integer Status Setting
CDC Class: ING

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
setVal	INT32	SP	dchg	--	Setting value	AC_NSG_M
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.22 CDC: INS_BASIC

Description: Integer Status (w.r.t Mandatory Options Only)
CDC Class: INS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	INT32	ST	dchg,dupd	--	The element status	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.23 CDC: INS_D_NS

Description: Integer Status with description
CDC Class: INS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	INT32	ST	dchg,dupd	--	The element status	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.24 CDC: LPL_LLN0

Description: Logical Node 0 Name Plate
CDC Class: LPL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
vendor	VISIBLE_STRING255	DC	--	--	Name of the vendor	M
swRev	VISIBLE_STRING255	DC	--	--	Software revision	M
d	VISIBLE_STRING255	DC	--	--	Description	O
configRev	VISIBLE_STRING255	DC	--	--	Uniquely identifies the configuration of a local device instance	AC_LN0_M
ldNs	VISIBLE_STRING255	EX	--	--	Logical Device name space	AC_LN0_EX

4.25 CDC: LPL_LN

Description: Standard Logical Node Name Plate
CDC Class: LPL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
vendor	VISIBLE_STRING255	DC	--	--	Name of the vendor	M
swRev	VISIBLE_STRING255	DC	--	--	Software revision	M
d	VISIBLE_STRING255	DC	--	--	Description	O

4.26 CDC: LPL_LN_NS

Description: Private Logical Node name plate
CDC Class: LPL

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
vendor	VISIBLE_STRING255	DC	--	--	Name of the vendor	M
swRev	VISIBLE_STRING255	DC	--	--	Software revision	M
d	VISIBLE_STRING255	DC	--	--	Description	O
lnNs	VISIBLE_STRING255	EX	--	--	Logical Node name space	AC_DLD_M

4.27 CDC: MV_FLOAT

Description: Measured value (w.r.t. Floating Point value)
CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON

4.28 CDC: MV_FLOAT_D

Description: Measured value (w.r.t Floating Point Value with Description)
CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.29 CDC: MV_FLOAT_D_NS

Description: Measured value with namespace

CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.30 CDC: MV_FLOAT_D_NS_NDB

Description: Measured value

CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.31 CDC: MV_FLOAT_NDB

Description: Measured value without deadband and rangeC

CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit_Multiplier	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON

4.32 CDC: MV_FLOAT_NS

Description: Measured value with NS

CDC Class: MV

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
mag	AnalogueValue_Float	MX	dchg, dupd	--	Deadbanded magnitude of the instantaneous value of a measured value or harmonic value. Updated to the current value of instMag when the value has changed according to	M
the configuration parameter db.q	Quality	MX	qchg	--	Quality of the measurement value	M
t	TimeStamp	MX	--	--	Time deadbanded magnitude last exceeded its db configuration parameter	M
units	Unit	CF	dchg	--	Unit of the attribute representing the data	O
db	INT32U	CF	dchg	--	Measurement deadband	O
rangeC	RangeConfig_Deadband	CF	dchg	--	Measurement range configuration attributes	GC_CON
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.33 CDC: ORG_SRC

Description: Object reference setting

CDC Class: ORG

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
setSrcRef	ObjectReference	SP	dchg	--	The value of the object reference setting.	M
setSrcCB	ObjectReference	SP	dchg	--	The value of the object reference to the control block	O

4.34 CDC: SEQ_MAG_ANG

Description: Sequence components of a measurement value (w.r.t Magnitudes + Angles)

CDC Class: SEQ

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
c1	CMV_MAG_ANG_FLOAT	--	--	--	Sequence component 1 (For semantic meaning see seqT)	M
c2	CMV_MAG_ANG_FLOAT	--	--	--	Sequence component 2 (For semantic meaning see seqT)	M
c3	CMV_MAG_ANG_FLOAT	--	--	--	Sequence component 3 (For semantic meaning see seqT)	M
seqT	ENUMERATED8	MX	--	SequenceKind	Sequence quantity measurement type (Pos-Neg-Zero or Dir-Quad-Zero)	M

4.35 CDC: SPC_CONTROL_NS

Description: Controllable Single Point (NAME SPACE)

CDC Class: SPC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
origin	Originator	ST	--	--	Originator of the last change of the controllable data	AC_CO_O
stVal	BOOLEAN	ST	dchg	--	Status value of the data	AC_ST
q	Quality	ST	qchg	--	Quality of the status value	AC_ST
t	TimeStamp	ST	--	--	Timestamp of the last change in state of status value	AC_ST
stSeld	BOOLEAN	ST	dchg	--	The controllable data is in the status "Selected"	O
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Control model (Corresponding to the behaviour of the data)	M
sboTimeout	INT32U	CF	dchg	--	Select Before Operate timeout period (in milliseconds)	AC_CO_O
ctlVal	BOOLEAN	CO	--	--	Control value (Off - FALSE, On - TRUE)	AC_CO_M

4.36 CDC: SPC_CTRL_PRV_NS

Description: Controllable Single Point (NAME SPACE)

CDC Class: SPC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
origin	Originator	ST	--	--	Originator of the last change of the controllable data	AC_CO_O
stVal	BOOLEAN	ST	dchg	--	Status value of the data	AC_ST
q	Quality	ST	qchg	--	Quality of the status value	AC_ST
t	TimeStamp	ST	--	--	Timestamp of the last change in state of status value	AC_ST
stSeld	BOOLEAN	ST	dchg	--	The controllable data is in the status "Selected"	O
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Control model (Corresponding to the behaviour of the data)	M
sboTimeout	INT32U	CF	dchg	--	Select Before Operate timeout period (in milliseconds)	AC_CO_O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M
ctlVal	BOOLEAN	CO	--	--	Control value (Off - FALSE, On - TRUE)	AC_CO_M

4.37 CDC: SPC_STATUS

Description: Controllable Single Point (w.r.t Status Only)

CDC Class: SPC

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	BOOLEAN	ST	dchg	--	Status value of the data	AC_ST

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
q	Quality	ST	qchg	--	Quality of the status value	AC_ST
t	TimeStamp	ST	--	--	Timestamp of the last change in state of status value	AC_ST
ctlModel	ENUMERATED8	CF	dchg	CtlModelKind	Control model (Corresponding to the behaviour of the data)	M

4.38 CDC: SPG_BASIC

Description: Single Point Setting
CDC Class: SPG

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
setVal	BOOLEAN	SP	dchg	--	Setting value (Off - FALSE, On - TRUE)	AC_NSG_M
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.39 CDC: SPS_D

Description: Standard Single Point Status (with Description)
CDC Class: SPS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	BOOLEAN	ST	dchg	--	The element status (TRUE or FALSE)	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.40 CDC: SPS_NO_SEG

Description: Single Point Status(w.r.t No Phase Segregation)
CDC Class: SPS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	BOOLEAN	ST	dchg	--	The element status (TRUE or FALSE)	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.41 CDC: SPS_WD

Description: Single Point Status (without Description)
CDC Class: SPS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	BOOLEAN	ST	dchg	--	The element status (TRUE or FALSE)	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.42 CDC: SPS_WD_PRIV

Description: Single Point Status (without Description with Name Space))

CDC Class: SPS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	BOOLEAN	ST	dchg	--	The element status (TRUE or FALSE)	M
q	Quality	ST	qchg	--	The quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.43 CDC: VSS_BASIC

Description: Visible string status

CDC Class: VSS

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
stVal	VISIBLE_STRING255	ST	dchg	--	Status value of the data.	M
q	Quality	ST	qchg	--	Quality of the status value	M
t	TimeStamp	ST	--	--	Timestamp of the last change in state	M

4.44 CDC: WYE_INET

Description: Phase to ground measurements for a 3-Phase system (w.r.t Net Current)

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
net	CMV_MAG_FLOAT	--	--	--	Measurement values for the net (sum of all phases) system current	GC_1

4.45 CDC: WYE_RES_ANG_NS

Description: Phase to ground measurements for a 3-Phase system (w.r.t Residual + Description + Angle) with NS

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
res	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for the residual system current	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.46 CDC: WYE_SEG

Description: Phase to ground measurements for a 3-Phase system (w.r.t Phase Seggregation)

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase A	GC_1
phsB	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase B	GC_1
phsC	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase C	GC_1

4.47 CDC: WYE_SEG_D

Description: Phase to ground measurements for a 3-Phase system (w.r.t Phase Seggregation + Description)

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase A	GC_1
phsB	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase B	GC_1
phsC	CMV_MAG_FLOAT	--	--	--	Measurement values for Phase C	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.48 CDC: WYE_SEG_D_NS

Description: Phase to ground measurements for a 3-Phase system

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase A	GC_1
phsB	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase B	GC_1
phsC	CMV_MAG_FLOAT_NDB	--	--	--	Measurement values for Phase C	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

4.49 CDC: WYE_SEG_RES_D

Description: Phase to ground measurements for a 3-Phase system (w.r.t Phase Seggregation + Residual + Description)

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase A	GC_1
phsB	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase B	GC_1
phsC	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase C	GC_1
neut	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for neutral input	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O

4.50 CDC: WYE_SEG_RES_NS

Description: Phase to ground measurements for a 3-Phase system (w.r.t Phase Seggregation + Residual + Description) with NS

CDC Class: WYE

Attribute	Type	FC	TrgOp	Value/Value Range	Comment	M/O/E
phsA	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase A	GC_1
phsB	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase B	GC_1
phsC	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for Phase C	GC_1
neut	CMV_MAG_ANG_FLOAT	--	--	--	Measurement values for neutral input	GC_1
d	VISIBLE_STRING255	DC	--	--	Description of the status element	O
dataNs	VISIBLE_STRING255	EX	--	--	Data name space	AC_DLN_M

5 Enumerated Types

The following sub-sections specify the enumerations that are associated to some Common Data Class attributes. The definition of the enumerations are according to IEC61850-7-3 and IEC61850-7-4 unless otherwise stated.

5.1 Enumerated type: AddCause

Description: AddCause

Value	Description	Remarks
0	Unknown	
1	Not-supported	
2	Blocked-by-switching-hierarchy	
3	Select-failed	
4	Invalid-position	
5	Position-reached	
6	Parameter-change-in-execution	
7	Step-limit	
8	Blocked-by-Mode	
9	Blocked-by-process	
10	Blocked-by-interlocking	
11	Blocked-by-synchrocheck	
12	Command-already-in-execution	
13	Blocked-by-health	
14	1-of-n-control	
15	Abortion-by-cancel	
16	Time-limit-over	
17	Abortion-by-trip	
18	Object-not-selected	
19	Object-already-selected	
20	No-access-authority	
21	Ended-with-overshoot	
22	Abortion-due-to-deviation	
23	Abortion-by-communication-loss	
24	Blocked-by-command	
25	None	
26	Inconsistent-parameters	
27	Locked-by-other-client	

5.2 Enumerated type: BehKind

Description: Behaviour

Value	Description	Remarks
1	on	
2	blocked	
3	test	
4	test/blocked	
5	off	

5.3 Enumerated type: CBOpCapKind

Description: Enumeration for CB Operation

Value	Description	Remarks
1	None	
2	Open	
3	Close-Open	
4	Open-Close-Open	
5	Close-Open-Close-Open	
6	Open-Close-Open-Close-Open	
7	more	

5.4 Enumerated type: CtlModelKind

Description: Control Model

Value	Description	Remarks
0	status-only	
1	direct-with-normal-security	
2	sbo-with-normal-security	
3	direct-with-enhanced-security	
4	sbo-with-enhanced-security	

5.5 Enumerated type: FaultDirectionKind

Description: Direction

Value	Description	Remarks
0	unknown	
1	forward	
2	backward	
3	both	

5.6 Enumerated type: HealthKind

Description: Health

Value	Description	Remarks
1	Ok	
2	Warning	
3	Alarm	

5.7 Enumerated type: ModKind

Description: Mode

Value	Description	Remarks
1	on	
2	blocked	
3	test	
4	test/blocked	
5	off	

5.8 Enumerated type: MultiplierKind

Description: Exponents of the multiplier value in base 10.

Value	Description	Remarks
-24	y	
-21	z	
-18	a	
-15	f	
-12	p	
-9	n	
-6	µ	
-3	m	
-2	c	
-1	d	
0		
1	da	
2	h	
3	k	
6	M	
9	G	
12	T	
15	P	
18	E	
21	Z	
24	Y	

5.9 Enumerated type: OriginatorCategoryKind

Description: orCategory

Value	Description	Remarks
0	not-supported	
1	bay-control	
2	station-control	
3	remote-control	
4	automatic-bay	
5	automatic-station	
6	automatic-remote	
7	maintenance	
8	process	

5.10 Enumerated type: SequenceKind

Description: Sequence Measurement Type

Value	Description	Remarks
0	pos-neg-zero	
1	dir-quad-zero	

5.11 Enumerated type: SIUnitKind

Description: SI Units derived from ISO/IEC 1000

Value	Description	Remarks
-16	years	

Value	Description	Remarks
-15	months	
-14	weeks	
-13	V/s	
-12	mins	
-11	hours	
-10	days	
-9	°F	
-8	ratio	
-7	miles	
-6	inches	
-5	feet	
-4	df/dt	
-2	%	
-1	pu	
1		
2	m	
3	kg	
4	s	
5	A	
6	K	
7	mol	
8	cd	
9	deg	
10	rad	
11	sr	
21	Gy	
22	Bq	
23	°C	
24	Sv	
25	F	
26	C	
27	S	
28	H	
29	V	
30	ohm	
31	J	
32	N	
33	Hz	
34	lx	
35	Lm	
36	Wb	
37	T	
38	W	
39	Pa	

Value	Description	Remarks
41	m²	
42	m³	
43	m/s	
44	m/s²	
45	m³/s	
46	m/m³	
47	M	
48	kg/m³	
49	m²/s	
50	W/m K	
51	J/K	
52	ppm	
53	1/s	
54	rad/s	
55	W/m²	
56	J/m²	
57	S/m	
58	K/s	
59	Pa/s	
60	J/kg K	
61	VA	
62	Watts	
63	VAr	
64	phi	
65	cos(phi)	
66	Vs	
67	V²	
68	As	
69	A²	
70	A²t	
71	VAh	
72	Wh	
73	VArh	
74	V/Hz	
75	Hz/s	
76	char	
77	char/s	
78	kgm²	
79	dB	
80	J/Wh	
81	W/s	
82	l/s	
83	dBm	

6 MMS Data-Type Conversions

The following table shows the relationships between the Part 7 and Part 8-1 data types. The definitions presented above use Part 7 data types, however these are subject to 'translation' when exposed over an MMS (Part 8-1) interface:

Part 7 Type	MMS Type	Part 7 Description
BOOLEAN	Bool	Logical TRUE/FALSE value
BSTR16	Bstring16	Bit-string -16 bits
BVstring13	BVstring13	Variable bit string (upto 13 bits)
Check	BVstring2	Control Object check flags
CODED_ENUM	Byte	Coded enumeration
CODED_ENUM2	Byte	Coded enumeration (2)
Currency	Vstring3	3-character currency
Dbpos	Bstring2	Switch positions
EntryTime	Btime6	8.1 Section 8.1.3.7
ENUMERATED16	Short	16 bit enumerated value
ENUMERATED32	Long	32 bit enumerated value
ENUMERATED8	Byte	8 bit enumerated value
FLOAT32	Float	32 bit floating point value
FLOAT64	Double	64 bit floating point value
INT16	Short	16 bit signed integer value
INT16U	Ushort	16 bit unsigned integer value
INT24U	Ulong	24 bit unsigned integer value
INT32	Long	32 bit signed integer value
INT32U	Ulong	32 bit unsigned integer value
INT64	Int64	64 bit signed integer value
INT8	Byte	8 bit signed integer value
INT8U	Ubyte	8 bit unsigned integer value
ObjectReference	Vstring129	Object Reference
OCTET_STRING6	OVstring6	6 character string (8 bits per character)
OCTET_STRING64	OVstring64	64 character string (8 bits per character)
OCTET_STRING8	OVstring8	8 character string (8 bits per character)
Quality	BVstring13	IEC61850 Quality
TimeStamp	Utctime	IEC61850 Time stamp
UNICODE_STRING255	UTF8Vstring255	255 character string (16 bits per unicode character)
UTC_TM	Utctime	UTC Timestamp
VISIBLE_STRING129	Vstring129	129 character string
VISIBLE_STRING255	Vstring255	255 character string
VISIBLE_STRING64	Vstring64	64 character string
VISIBLE_STRING65	Vstring65	65 character string
VISIBLE_STRING97	Vstring97	97 character string

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