


# MiCOM P532

## Modular Line Differential Protection and Bay Control Unit

## PICS and MICS

This document does not replace the Technical Manual

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**Schneider**  
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## Introduction

## 1 Protocol Implementation Conformance Statement (PICS)

### 1.1 Introduction

This specification is the Protocol Implementation Conformance Statement (PICS) and presents the ACSI conformance statements as defined in Annex A of part 7-2 of the IEC 61850 standard specifications.

### 1.2 ACSI Basic Conformance Statement

The basic conformance statement shall be as defined in Table 1

**Table 1 – Basic conformance statement**

		Client / Subscriber		Server / Publisher		Value / Comments
Client-Server roles						
B11	Server side (of TWO-PARTY-APPLICATION-ASSOCIATION)	—	—	c1	Y	
B12	Client side (of TWO-PARTY-APPLICATION-ASSOCIATION)	c1	N	—	—	
SCSMs supported						
B21	SCSM: IEC 61850-8-1 used		N		Y	
B22	SCSM: IEC 61850-9-1 used					
B23	SCSM: IEC 61850-9-2 used					
B24	SCSM: other					
Generic substation event model (GSE)						
B31	Publisher side	—	—	O	Y	
B32	Subscriber side	O	Y	—	—	
Transmission of sampled value model (SVC)						
B41	Publisher side	—	—	O	N	
B42	Subscriber side	O	N	—	—	

c1 – shall be 'M' if support for LOGICAL-DEVICE model has been declared.

O – Optional

M – Mandatory

Y – Yes (supported)

N – No (not supported)

### 1.3 ACSI Models Conformance Statement

The ACSI models conformance statement shall be as defined in Table 2.

**Table 2 – ACSI models conformance statement**

		Client / Subscriber		Server / Publisher		Value / Comments
If Server side (B1) supported						
M1	Logical device	a	N	c2	Y	
M2	Logical node	c3	N	c3	Y	
M3	Data	c4	N	c4	Y	
M4	Data set	c5	N	c5	Y	
M5	Substitution	O	N	O	N	
M6	Setting group control	O	N	O	y	supp.Phase 2
Reporting						
M7	Buffered report control	O	N	O	y	supp.Phase 2
M7-1	sequence-number				y	supp.Phase 2
M7-2	report-time-stamp				y	supp.Phase 2
M7-3	reason-for-inclusion				y	supp.Phase 2
M7-4	data-set-name				y	supp.Phase 2
M7-5	data-reference				y	supp.Phase 2
M7-6	buffer-overflow				y	supp.Phase 2
M7-7	entryID				y	supp.Phase 2
M7-8	BufTim				y	supp.Phase 2
M7-9	IntgPd				y	supp.Phase 2
M7-10	GI				y	supp.Phase 2
M7-11	conf-revision				Y	supp.Phase 2
M8	Unbuffered report control	O	N	O	Y	
M8-1	sequence-number		N		Y	
M8-2	report-time-stamp		N		Y	
M8-3	reason-for-inclusion		N		Y	
M8-4	data-set-name		N		Y	
M8-5	data-reference		N		Y	
M8-6	BufTim		N		Y	
M8-7	IntgPd		N		Y	
M8-8	GI		N		Y	
M8-9	conf-revision		N		Y	supp.Phase 2
Logging		O	N	O	N	
M9	Log control	O	N	O	N	
M9-1	IntgPd		N		N	
M10	Log	O	N	O	N	
M11	Control	M	N	M	Y	

**ACSI Service Conformance Statement**

		Client / Subscriber		Server / Publisher		Value / Comments
If GSE (B31/32) is supported						
	GOOSE	O	Y	O	Y	
M12-1	entryID		Y	O	Y	
M12-2	DataRefInc		Y	O	Y	
M13	GSSE	O	Y	O	Y	
If SVC (41/42) is supported						
M14	Multicast SVC	O	N	O	N	
M15	Unicast SVC	O	N	O	N	
M16	Time	M	Y	M	N	Time source with required accuracy shall be available
M17	File Transfer	O	N	O	Y	

c2 – shall be 'M' if support for LOGICAL-NODE model has been declared

c3 – shall be 'M' if support for DATA model has been declared

c4 – shall be 'M' if support for DATA-SET, Substitution, Report, Log Control, or Time model has been declared

c5 – shall be 'M' if support for Report, GSE, or SMV models has been declared

**1.4 ACSI Service Conformance Statement**

The ACSI service conformance statement shall be as defined in Table 3 – ACSI service Conformance statement (depending on the statements in Table 1 ).

**Table 3 – ACSI service Conformance statement**

	Services	AA: TP/MC	Client/ Subscriber		Server/ Publisher		Comments
<b>Server (clause 6)</b>							
S1	ServerDirectory	TP		N	M	Y	
<b>Application association (clause 7)</b>							
S2	Associate		M	N	M	Y	
S3	Abort		M	N	M	Y	
S4	Release		M	N	M	Y	
<b>Logical device (clause 8)</b>							
S5	LogicalDeviceDirectory	TP	M	N	M	Y	

	Services	AA: TP/MC	Client/ Subscriber		Server/ Publisher		Comments
<b>Logical node (clause 9)</b>							
S6	LogicalNodeDirectory	TP	M	N	M	Y	
S7	GetAllDataValues	TP	O	N	M	Y	
<b>Data (clause 10)</b>							
S8	GetDataValues	TP	M	N	M	Y	
S9	SetDataValues	TP	O	N	O	Y	
S10	GetDataDirectory	TP	O	N	M	Y	
S11	GetDataDefinition	TP	O	N	M	Y	
<b>Data set (clause 11)</b>							
S12	GetDataSetValues	TP	O	N	M	Y	
S13	SetDataSetValues	TP	O	N	O	N	
S14	CreateDataSet	TP	O	N	O	N	
S15	DeleteDataSet	TP	O	N	O	N	
S16	GetDataSetDirectory	TP	O	N	O	Y	
<b>Substitution (clause 12)</b>							
S17	SetDataValues	TP	M	N	M	Y	
<b>Setting group control (clause 13)</b>							
S18	SelectActiveSG	TP	O	N	O	Y	supp.by Phase 2
S19	SelectEditSG	TP	O	N	O	N	
S20	SetSGValues	TP	O	N	O	N	
S21	ConfirmEditSGValues	TP	O	N	O	N	
S22	GetSGValues	TP	O	N	O	N	
S23	GetSGCBValues	TP	O	N	O	N	
<b>Reporting (clause 14)</b>							
<b>Buffered report control block (BRCB)</b>							
S24	Report	TP	c6	N	c6	Y	supp.by Phase 2
S24-1	data-change (dchg)					Y	supp.by Phase 2
S24-2	qchg-change (qchg)					Y	supp.by Phase 2
S24-3	data-update (dupd)					N	
S25	GetBRCBValues	TP	c6	N	c6	Y	supp.by Phase 2
S26	SetBRCBValues	TP	c6	N	c6	Y	supp.by Phase 2

ACSI Service Conformance Statement

	Services	AA: TP/MC	Client/ Subscriber		Server/ Publisher		Comments
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**Unbuffered report control block (URCB)**

S27	Report	TP	c6	N	c6	Y	
S27-1	data-change (dchg)			N		Y	
S27-2	qchg-change (qchg)			N		Y	
S27-3	data-update (dup)			N		N	
S28	GetURCBValues	TP	c6	N	c6	Y	
S29	SetURCBValues	TP	c6	N	c6	Y	supp.by Phase 2

c6 – shall declare support for at least one (BRCB or URCB)

**Logging (clause 14)**

**Log control block**

S30	GetLCBValues	TP	M	N	M	N	
S31	SetLCBValues	TP	O	N	M	N	

**Log**

S32	QueryLogByTime	TP	c7	N	M	N	
S33	QueryLogAfter	TP	c7	N	M	N	
S34	GetLogStatusValues	TP	M	N	M	N	

c7 – shall declare support for at least one (QueryLogByTime or QueryLogByEntry)

**Generic substation event model (GSE) (clause 15)**

**GOOSE-CONTROL-BLOCK**

S35	SendGOOSEMessage	MC	c8	N	c8	Y	
S36	GetGoReference	TP	O	N	c9	Y	
S37	GetGOOSEElementNumber	TP	O	N	c9	Y	
S38	GetGoCBValues	TP	O	N	O	Y	
S39	SetGoCBValues	TP	O	N	O	Y	

**GSSE-CONTROL-BLOCK**

S40	SendGSSEMessage	MC	c8	N	c8	N	
S41	GetGsReference	TP	O	N	c9	N	
S42	GetGSSEElementNumber	TP	O	N	c9	N	
S43	GetGsCBValues	TP	O	N	O	N	
S44	SetGsCBValues	TP	O	N	O	N	

c8 – shall declare support for at least one (SendGOOSEMessage or SendGSSEMessage)

c9 – shall declare support if TP association is available

	Services	AA: TP/MC	Client/ Subscriber		Server/ Publisher		Comments
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**Transmission of sampled value model (SVC) (clause 16)****Multicast SVC**

S45	SendMSVMessage	MC	c10	N	c10	N	
S46	GetMSVCBValues	TP	O	N	O	N	
S47	SetMSVCBValues	TP	O	N	O	N	

**Unicast SVC**

S48	SendUSVMessage	TP	c10	N	c10	N	
S49	GetUSVCBValues	TP	O	N	O	N	
S50	SetUSVCBValues	TP	O	N	O	N	

c10 – shall declare support for at least one (SendMSVMessage or SendUSVMessage)

**Control (clause 17.5.1)**

S51	Select		M	N	O	Y	
S52	SelectWithValue	TP	M	N	O	Y	
S53	Cancel	TP	O	N	O	Y	
S54	Operate	TP	M	N	M	Y	
S55	Command-Termination	TP	M	N	O	Y	
S56	TimeActivated-Operate	TP	O	N	O	N	

**File transfer (clause 20)**

S57	GetFile	TP	O	N	M	Y	
S58	SetFile	TP	O	N	O	N	
S59	DeleteFile	TP	O	N	O	N	
S60	GetFileAttributeValues	TP	O	N	M	Y	

**Time (5.5)**

T1	Time resolution of internal clock		1ms		1ms		Nearest negative power of 2 in seconds
T2	Time accuracy of internal clock				1ms		T0
					N		T1
					N		T2
					N		T3
					N		T4
					N		T5
T3	Supported TimeStamp resolution	-			1ms		Nearest value of 2 <sup>**</sup> -n in seconds according to 5.5.3.7.3.3



## 2 Model Implementation Conformance Statement (MICS)

### 2.1 Introduction

This specification is the Model Implementation Conformance Statement (MICS) and presents the top-level IEC 61850 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 IEC 61850 part 7 series of specifications.

### 2.2 Objective

To provide comprehensive details of the standard data object model elements supported by the device. The MICS is conformant to the devices associated ICD (Substation Configuration Language) file, according to part 6 of the IEC 61850 standards. The layout of the presented tables within this document are conformant to the part 7 series of the IEC 61850 standard specifications with the following exceptions:

- The "Trigger Options" field is not presented.
- The "M/O" field is not present as the definitions are as deployed within the model.
- An additional column "X" is used to signify AREVA custom attributes.

### 2.3 Logical Device Definitions

The MiCOM relay implements an IEC 61850 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 IEC 61850 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	PX532 Controls Domain
Measurements	PX532 Measurements Domain
Protection	PX532 Protection Domain
Records	PX532 Records Domain
System	PX532 System Domain

### 2.3.1 IEC 61850 Logical Device Data Model

The IEC 61850 Logical Device top-level 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.)

LD	LN Instance	LN Type	Description
Control			
	CILO1	tp30_CILO_1	Interlocking
	CILO10	tp30_CILO_1	Interlocking
	CILO2	tp30_CILO_1	Interlocking
	CILO3	tp30_CILO_1	Interlocking
	CILO4	tp30_CILO_1	Interlocking
	CILO5	tp30_CILO_1	Interlocking
	CILO6	tp30_CILO_1	Interlocking
	CILO7	tp30_CILO_1	Interlocking
	CILO8	tp30_CILO_1	Interlocking
	CILO9	tp30_CILO_1	Interlocking
	CSWI1	tp30_CSWI_1	Switch controller
	CSWI10	tp30_CSWI_1	Switch controller
	CSWI2	tp30_CSWI_1	Switch controller
	CSWI3	tp30_CSWI_1	Switch controller
	CSWI4	tp30_CSWI_1	Switch controller
	CSWI5	tp30_CSWI_1	Switch controller
	CSWI6	tp30_CSWI_1	Switch controller
	CSWI7	tp30_CSWI_1	Switch controller
	CSWI8	tp30_CSWI_1	Switch controller
	CSWI9	tp30_CSWI_1	Switch controller
	LLN0	tp30_LLN0_1	Logical node device
	LPHD1	tp30_LPHD_1	Physical device
	RREC1	tp30_RREC_1	Automatic reclosing
	RSYN1	tp30_RSYN_1	Synchroncheck
	XCBR1	tp30_XCBR_1	Circuit breaker
	XCBR2	tp30_XCBR_2	Circuit breaker
	XSWI1	tp30_XSWI_1	Switch
	XSWI10	tp30_XSWI_1	Switch
	XSWI2	tp30_XSWI_1	Switch
	XSWI3	tp30_XSWI_1	Switch
	XSWI4	tp30_XSWI_1	Switch
	XSWI5	tp30_XSWI_1	Switch

## Logical Device Definitions

LD	LN Instance	LN Type	Description
	XSWI6	tp30_XSWI_1	Switch
	XSWI7	tp30_XSWI_1	Switch
	XSWI8	tp30_XSWI_1	Switch
	XSWI9	tp30_XSWI_1	Switch
Measurements			
	LLN0	tp30_LLNO_2	Logical node device
	LPHD1	tp30_LPHD_1	Physical device
	MmuMMTR1	tp30_MMTR_1	Metering
	MmuMSQI1	tp30_MSQI_1	Sequence and Imbalance Measurements
	MmuPriMMXN1	tp30_MMXN_1	Primary Basic Measurements
	MmuPriMMXU1	tp30_MMXU_1	Primary Basic Measurements
	MmuPriMSTA1	tp30_MSTA_1	Metering statistics
	MmuSecMMXN1	tp30_MMXN_1	Basic Measurements
	MmuSecMMXN2	tp30_MMXN_2	Basic Measurements
	MmuSecMMXU1	tp30_MMXU_2	Secondary Basic Measurements
	MmuSecMSTA1	tp30_MSTA_1	Measuring statistics
Protection			
	DtpEftPTOC1	tp30_PTOC_1	Time over current
	DtpEftPTOC2	tp30_PTOC_1	Time over current
	DtpEftPTOC3	tp30_PTOC_1	Time over current
	DtpEftPTOC4	tp30_PTOC_1	Time over current
	DtpNgsPTOC1	tp30_PTOC_2	Time over current
	DtpNgsPTOC2	tp30_PTOC_1	Time over current
	DtpNgsPTOC3	tp30_PTOC_1	Time over current
	DtpPhsPTOC1	tp30_PTOC_1	Time over current
	DtpPhsPTOC2	tp30_PTOC_1	Time over current
	DtpPhsPTOC3	tp30_PTOC_1	Time over current
	DtpPhsRDIR1	tp30_RDIR_1	Direction
	DtpResRDIR1	tp30_RDIR_1	Direction
	ItpEftPTOC1	tp30_PTOC_1	Time over current
	ItpEftPTOC2	tp30_PTOC_1	Time over current
	ItpNgsPTOC1	tp30_PTOC_1	Time over current
	ItpNgsPTOC2	tp30_PTOC_1	Time over current
	ItpPhsPTOC1	tp30_PTOC_1	Time over current
	ItpPhsPTOC2	tp30_PTOC_1	Time over current
	LLN0	tp30_LLNO_2	Logical node device
	LPHD1	tp30_LPHD_1	Physical device
	PHAR1	tp30_PHAR_1	Harmonic restraint
	PSCH1	tp30_PSCH_1	Harmonic restraint
	PSDE1	tp30_PSDE_1	Sensitive earth fault prot.
	PSOF1	tp30_PSOF_1	Switch on fault
	PTEF1	tp30_PTEF_1	Transient earth fault

LD	LN Instance	LN Type	Description
	PTRC1	tp30_PTRC_1	Trip conditioning
	PTRC2	tp30_PTRC_2	Trip conditioning
	PdpActPDOP1	tp30_PDOP_1	Directional overpower
	PdpActPDOP2	tp30_PDOP_1	Directional overpower
	PdpActPDUP1	tp30_PDUP_1	Directional underpower
	PdpActPDUP2	tp30_PDUP_1	Directional underpower
	PdpReaPDOP1	tp30_PDOP_1	Directional overpower
	PdpReaPDOP2	tp30_PDOP_1	Directional overpower
	PdpReaPDUP1	tp30_PDUP_1	Directional underpower
	PdpReaPDUP2	tp30_PDUP_1	Directional underpower
	PhsPDIF1	tp30_PDIF_1	Differential Protection
	RBRF1	tp30_RBRF_1	Breaker failure
	RBRF2	tp30_RBRF_2	Breaker failure
	RFLO1	tp30_RFLO_1	Fault locator
	ThmPTTR1	tp30_PTTR_1	Thermal overload
	UbpNgsPTOC1	tp30_PTOC_3	Time over current
	UbpNgsPTOC2	tp30_PTOC_3	Time over current
	VtpNgsPTOV1	tp30_PTOV_1	Time over voltage
	VtpNgsPTOV2	tp30_PTOV_1	Time over voltage
	VtpPhsPTOV1	tp30_PTOV_1	Time over voltage
	VtpPhsPTOV2	tp30_PTOV_1	Time over voltage
	VtpPhsPTUV1	tp30_PTUV_1	Time under voltage
	VtpPhsPTUV2	tp30_PTUV_1	Time under voltage
	VtpPssPTOV1	tp30_PTOV_1	Time over voltage
	VtpPssPTOV2	tp30_PTOV_1	Time over voltage
	VtpPssPTUV1	tp30_PTUV_1	Time under voltage
	VtpPssPTUV2	tp30_PTUV_1	Time under voltage
	VtpRefPTOV1	tp30_PTOV_1	Time over voltage
	VtpRefPTOV2	tp30_PTOV_1	Time over voltage
	VtpRefPTUV1	tp30_PTUV_1	Time under voltage
	VtpRefPTUV2	tp30_PTUV_1	Time under voltage
	VtpResPTOV1	tp30_PTOV_1	Time over voltage
	VtpResPTOV2	tp30_PTOV_1	Time over voltage
Records			
	LLN0	tp30_LLNO_2	Logical node device
	LPHD1	tp30_LPHD_1	Physical device
	RDRE1	tp30_RDRE_1	Disturbance recording
System			
	AlmGGIO1	tp30_GGIO_1	Generic process I/O
	CtlGGIO1	tp30_GGIO_2	Generic process I/O
	CtlGGIO2	tp30_GGIO_3	Generic process I/O
	DevGosGGIO1	tp30_GGIO_4	Generic process I/O

## Logical Node Definitions

LD	LN Instance	LN Type	Description
	GosGGIO1	tp30_GGIO_5	Generic process I/O
	GosGGIO2	tp30_GGIO_5	Generic process I/O
	IdcGGIO1	tp30_GGIO_6	Generic process I/O
	LLN0	tp30_LLNO_3	Logical node device
	LPHD1	tp30_LPHD_1	Physical device
	OrdRunGGIO1	tp30_GGIO_7	Generic process I/O
	PloGGIO1	tp30_GGIO_8	Generic process I/O
	PloGGIO2	tp30_GGIO_9	Generic process I/O
	PloGGIO3	tp30_GGIO_9	Generic process I/O
	PloGGIO4	tp30_GGIO_10	Generic process I/O
	RtdGGIO1	tp30_GGIO_6	Generic process I/O
	SigGGIO1	tp30_GGIO_11	Signalselection
	ZAXN1	tp30_ZAXN_1	Auxiliary network
	ZAXN2	tp30_ZAXN_1	Auxiliary network

## 2.4 Logical Node Definitions

The definition tables for each of the Logical Nodes in the top-level data model are presented in the following sub-sections.

The following table presents a summary of the Logical Node templates used across the Logical Devices within the overall IEC 61850 product data model:

LN Type	(LN Class)	Description	Name Space
tp30_CILO_1	(CILO)	Interlocking	
tp30_CSWI_1	(CSWI)	Switch controller	
tp30_GGIO_1	(GGIO)	Generic process I/O	
tp30_GGIO_10	(GGIO)	Generic process I/O	
tp30_GGIO_11	(GGIO)	Signalselection	
tp30_GGIO_2	(GGIO)	Generic process I/O	
tp30_GGIO_3	(GGIO)	Generic process I/O	
tp30_GGIO_4	(GGIO)	Generic process I/O	
tp30_GGIO_5	(GGIO)	Generic process I/O	
tp30_GGIO_6	(GGIO)	Generic process I/O	
tp30_GGIO_7	(GGIO)	Generic process I/O	
tp30_GGIO_8	(GGIO)	Generic process I/O	
tp30_GGIO_9	(GGIO)	Generic process I/O	
tp30_LLNO_1	(LLNO)	Logical node device	
tp30_LLNO_2	(LLNO)	Logical node device	
tp30_LLNO_3	(LLNO)	Logical node device	
tp30_LPHD_1	(LPHD)	Physical device	
tp30_MMTR_1	(MMTR)	Metering	

LN Type	(LN Class)	Description	Name Space
tp30_MMXN_1	(MMXN)	Primary Basic Measurements	
tp30_MMXN_2	(MMXN)	Basic Measurements	
tp30_MMXU_1	(MMXU)	Primary Basic Measurements	
tp30_MMXU_2	(MMXU)	Secondary Basic Measurements	
tp30_MSQI_1	(MSQI)	Sequence and Imbalance Measurements	
tp30_MSTA_1	(MSTA)	Measuring statistics	
tp30_PDIF_1	(PDIF)	Differential Protection	
tp30_PDOP_1	(PDOP)	Directional overpower	
tp30_PDUP_1	(PDUP)	Directional underpower	
tp30_PHAR_1	(PHAR)	Harmonic restraint	
tp30_PSCH_1	(PSCH)	Harmonic restraint	
tp30_PSDE_1	(PSDE)	Sensitive earth fault prot.	
tp30_PSOE_1	(PSOE)	Switch on fault	
tp30_PTEF_1	(PTEF)	Transient earth fault	
tp30_PTOC_1	(PTOC)	Time over current	
tp30_PTOC_2	(PTOC)	Time over current	
tp30_PTOC_3	(PTOC)	Time over current	
tp30_PTOV_1	(PTOV)	Time over voltage	
tp30_PTRC_1	(PTRC)	Trip conditioning	
tp30_PTRC_2	(PTRC)	Trip conditioning	
tp30_PTTR_1	(PTTR)	Thermal overload	
tp30_PTUV_1	(PTUV)	Time under voltage	
tp30_RBRF_1	(RBRF)	Breaker failure	
tp30_RBRF_2	(RBRF)	Breaker failure	
tp30_RDIR_1	(RDIR)	Direction	
tp30_RDRE_1	(RDRE)	Disturbance recording	
tp30_RFLO_1	(RFLO)	Fault locator	
tp30_RREC_1	(RREC)	Automatic reclosing	
tp30_RSYN_1	(RSYN)	Synchroncheck	
tp30_XCBB_1	(XCBB)	Circuit breaker	
tp30_XCBB_2	(XCBB)	Circuit breaker	
tp30_XSWI_1	(XSWI)	Switch	
tp30_ZAXN_1	(ZAXN)	Auxiliary network	

## Logical Node Definitions

### 2.4.1 LOGICAL NODE : tp30\_CILO\_1

**Description** : Interlocking

**LN Class** : CILO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_1	Mode	
Beh	tp30_Beh_1	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
EnaOpn	tp30_Alm10_1	Enable open	
EnaCls	tp30_Alm10_1	Enable close	

### 2.4.2 LOGICAL NODE : tp30\_CSWI\_1

**Description** : Switch controller

**LN Class** : CSWI

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_1	Mode	
Beh	tp30_Beh_1	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Alm10_1	Local operation	
Pos	tp30_Pos_1	Switch position	

### 2.4.3 LOGICAL NODE : tp30\_GGIO\_1

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Alm1	tp30_Alm10_1	Alarm	
Alm2	tp30_Alm10_1	Alarm	
Alm3	tp30_Alm10_1	Alarm	
Alm4	tp30_Alm10_1	Alarm	
Alm5	tp30_Alm10_1	Alarm	
Alm6	tp30_Alm10_1	Alarm	
Alm7	tp30_Alm10_1	Alarm	
Alm8	tp30_Alm10_1	Alarm	
Alm9	tp30_Alm10_1	Alarm	
Alm10	tp30_Alm10_1	Alarm	
Alm11	tp30_Alm10_1	Alarm	

Attribute	Attr. Type	Explanation	X
Alm12	tp30_Alm10_1	Alarm	
Alm13	tp30_Alm10_1	Alarm	
Alm16	tp30_Alm10_1	Alarm	
Alm15	tp30_Alm10_1	Alarm	
Alm14	tp30_Alm10_1	Alarm	

#### 2.4.4 LOGICAL NODE : tp30\_GGIO\_10

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_2	Name Plate	
Ind1	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind2	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind3	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind4	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind5	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind6	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind7	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind8	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind9	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind10	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind11	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind12	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind13	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind14	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind15	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind16	tp30_Alm10_1	Gen. ind. (bin. input)	



## Logical Node Definitions

## 2.4.5 LOGICAL NODE : tp30\_GGIO\_11

**Description** : Signalselection**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Ind1	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind2	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind3	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind4	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind5	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind6	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind7	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind8	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind9	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind10	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind11	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind12	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind13	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind14	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind15	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind16	tp30_Ind10_1	Gen. ind. (bin. input)	

## 2.4.6 LOGICAL NODE : tp30\_GGIO\_2

**Description** : Generic process I/O**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Ind10_1	Local operation	
Ind1	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind2	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind3	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind4	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind5	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind6	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind7	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind8	tp30_Alm10_1	Gen. ind. (bin. input)	

Attribute	Attr. Type	Explanation	X
Ind9	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind10	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind11	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind12	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind13	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind14	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind15	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind16	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind17	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind18	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind19	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind20	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind21	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind22	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind23	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind24	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind25	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind26	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind27	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind28	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind29	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind30	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind31	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind32	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind33	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind34	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind35	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind36	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind37	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind38	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind39	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind40	tp30_Alm10_1	Gen. ind. (bin. input)	

## Logical Node Definitions

## 2.4.7 LOGICAL NODE : tp30\_GGIO\_3

**Description** : Generic process I/O**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Ind10_1	Local operation	
SPCSO1	tp30_SPCSO10_1	Single point controllable status output	
SPCSO2	tp30_SPCSO10_1	Single point controllable status output	
SPCSO3	tp30_SPCSO10_1	Single point controllable status output	
SPCSO4	tp30_SPCSO10_1	Single point controllable status output	
SPCSO5	tp30_SPCSO10_1	Single point controllable status output	
SPCSO6	tp30_SPCSO10_1	Single point controllable status output	
SPCSO7	tp30_SPCSO10_1	Single point controllable status output	
SPCSO8	tp30_SPCSO10_1	Single point controllable status output	
SPCSO9	tp30_SPCSO10_1	Single point controllable status output	
SPCSO10	tp30_SPCSO10_1	Single point controllable status output	
SPCSO11	tp30_SPCSO10_1	Single point controllable status output	
SPCSO12	tp30_SPCSO10_1	Single point controllable status output	
SPCSO13	tp30_SPCSO10_1	Single point controllable status output	
SPCSO14	tp30_SPCSO10_1	Single point controllable status output	
SPCSO15	tp30_SPCSO10_1	Single point controllable status output	
SPCSO16	tp30_SPCSO10_1	Single point controllable status output	
SPCSO17	tp30_SPCSO10_1	Single point controllable status output	
SPCSO18	tp30_SPCSO10_1	Single point controllable status output	
SPCSO19	tp30_SPCSO10_1	Single point controllable status output	
SPCSO20	tp30_SPCSO10_1	Single point controllable status output	
SPCSO21	tp30_SPCSO10_1	Single point controllable status output	
SPCSO22	tp30_SPCSO10_1	Single point controllable status output	
SPCSO23	tp30_SPCSO10_1	Single point controllable status output	
SPCSO24	tp30_SPCSO10_1	Single point controllable status output	
SPCSO25	tp30_SPCSO10_1	Single point controllable status output	
SPCSO26	tp30_SPCSO10_1	Single point controllable status output	

## 2.4.8 LOGICAL NODE : tp30\_GGIO\_4

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Pos1	tp30_Pos10_1	Switch position	
Pos2	tp30_Pos10_1	Switch position	
Pos3	tp30_Pos10_1	Switch position	
Pos4	tp30_Pos10_1	Switch position	
Pos5	tp30_Pos10_1	Switch position	
Pos6	tp30_Pos10_1	Switch position	
Pos7	tp30_Pos10_1	Switch position	
Pos8	tp30_Pos10_1	Switch position	
Pos9	tp30_Pos10_1	Switch position	
Pos10	tp30_Pos10_1	Switch position	
Pos11	tp30_Pos10_1	Switch position	
Pos12	tp30_Pos10_1	Switch position	
Pos13	tp30_Pos10_1	Switch position	
Pos14	tp30_Pos10_1	Switch position	
Pos15	tp30_Pos10_1	Switch position	
Pos16	tp30_Pos10_1	Switch position	
Pos17	tp30_Pos10_1	Switch position	
Pos18	tp30_Pos10_1	Switch position	
Pos19	tp30_Pos10_1	Switch position	
Pos20	tp30_Pos10_1	Switch position	
Pos21	tp30_Pos10_1	Switch position	
Pos22	tp30_Pos10_1	Switch position	
Pos23	tp30_Pos10_1	Switch position	
Pos24	tp30_Pos10_1	Switch position	
Pos25	tp30_Pos10_1	Switch position	
Pos26	tp30_Pos10_1	Switch position	
Pos27	tp30_Pos10_1	Switch position	
Pos28	tp30_Pos10_1	Switch position	
Pos29	tp30_Pos10_1	Switch position	
Pos30	tp30_Pos10_1	Switch position	
Pos31	tp30_Pos10_1	Switch position	
Pos32	tp30_Pos10_1	Switch position	

## Logical Node Definitions

## 2.4.9 LOGICAL NODE : tp30\_GGIO\_5

**Description** : Generic process I/O**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Ind1	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind2	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind3	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind4	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind5	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind6	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind7	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind8	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind9	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind10	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind11	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind12	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind13	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind14	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind15	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind16	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind17	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind18	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind19	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind20	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind21	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind22	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind23	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind24	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind25	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind26	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind27	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind28	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind29	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind30	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind31	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind32	tp30_Alm10_1	Gen. ind. (bin. input)	

### 2.4.10 LOGICAL NODE : tp30\_GGIO\_6

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_2	Name Plate	
AnIn1	tp30_Amp1_1	Analogue input	
AnIn2	tp30_Amp1_1	Analogue input	

### 2.4.11 LOGICAL NODE : tp30\_GGIO\_7

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Ind1	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind2	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind3	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind4	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind5	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind6	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind7	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind8	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind9	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind10	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind11	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind12	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind13	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind14	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind15	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind16	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind17	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind18	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind19	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind20	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind21	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind22	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind23	tp30_Ind10_1	Gen. ind. (bin. input)	

## Logical Node Definitions

Attribute	Attr. Type	Explanation	X
Ind24	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind25	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind26	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind27	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind28	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind29	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind30	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind31	tp30_Ind10_1	Gen. ind. (bin. input)	
Ind32	tp30_Ind10_1	Gen. ind. (bin. input)	

## 2.4.12 LOGICAL NODE : tp30\_GGIO\_8

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_2	Name Plate	
Ind1	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind2	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind3	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind4	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind5	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind6	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind7	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind8	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind9	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind10	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind11	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind12	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind13	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind14	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind15	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind16	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind17	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind18	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind19	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind20	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind21	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind22	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind23	tp30_Alm10_1	Gen. ind. (bin. input)	

Attribute	Attr. Type	Explanation	X
Ind24	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind25	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind26	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind27	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind28	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind29	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind30	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind31	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind32	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind33	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind34	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind35	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind36	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind37	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind38	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind39	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind40	tp30_Alm10_1	Gen. ind. (bin. input)	

### 2.4.13 LOGICAL NODE : tp30\_GGIO\_9

**Description** : Generic process I/O

**LN Class** : GGIO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_2	Name Plate	
Ind1	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind2	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind3	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind4	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind5	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind6	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind7	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind8	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind9	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind10	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind11	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind12	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind13	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind14	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind15	tp30_Alm10_1	Gen. ind. (bin. input)	



## Logical Node Definitions

Attribute	Attr. Type	Explanation	X
Ind16	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind17	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind18	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind19	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind20	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind21	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind22	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind23	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind24	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind25	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind26	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind27	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind28	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind29	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind30	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind31	tp30_Alm10_1	Gen. ind. (bin. input)	
Ind32	tp30_Alm10_1	Gen. ind. (bin. input)	

## 2.4.14 LOGICAL NODE : tp30\_LLNO\_1

**Description** : Logical node device

**LN Class** : LLN0

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_3	Name Plate	
Loc	tp30_Ind10_1	Local operation	
Lock	tp30_CBTripped_1	Interlocking	
OrdRun	tp30_CBTripped_1	Switch reservation	

## 2.4.15 LOGICAL NODE : tp30\_LLNO\_2

**Description** : Logical node device

**LN Class** : LLN0

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_3	Name Plate	

## 2.4.16 LOGICAL NODE : tp30\_LLNO\_3

**Description** : Logical node device**LN Class** : LLNO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_3	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_3	Name Plate	
Loc	tp30_Ind10_1	Local operation	
CurSG	tp30_CurSG_1	Current Setting Group	
SyncSt	tp30_CBTripped_1	Synchronisation Status	
SGCB	tp30_SGCB_1	Setting group control block	
LEDRs	tp30_LEDRs_1	Led Reset	
urcbA01	tp30_urcbA01	Unbuffered Report Control Block	
urcbB01	tp30_urcbA01	Unbuffered Report Control Block	
urcbC01	tp30_urcbA01	Unbuffered Report Control Block	
urcbD01	tp30_urcbA01	Unbuffered Report Control Block	
urcbE01	tp30_urcbA01	Unbuffered Report Control Block	
urcbF01	tp30_urcbA01	Unbuffered Report Control Block	
urcbG01	tp30_urcbA01	Unbuffered Report Control Block	
urcbH01	tp30_urcbA01	Unbuffered Report Control Block	
urcbI01	tp30_urcbA01	Unbuffered Report Control Block	
urcbJ01	tp30_urcbA01	Unbuffered Report Control Block	
urcbK01	tp30_urcbA01	Unbuffered Report Control Block	
urcbL01	tp30_urcbA01	Unbuffered Report Control Block	
urcbM01	tp30_urcbA01	Unbuffered Report Control Block	
urcbN01	tp30_urcbA01	Unbuffered Report Control Block	
urcbO01	tp30_urcbA01	Unbuffered Report Control Block	
urcbP01	tp30_urcbA01	Unbuffered Report Control Block	
brcbA01	tp30_brcbA01	Buffered Report Control Block	
brcbB01	tp30_brcbA01	Buffered Report Control Block	
brcbC01	tp30_brcbA01	Buffered Report Control Block	
brcbD01	tp30_brcbA01	Buffered Report Control Block	
brcbE01	tp30_brcbA01	Buffered Report Control Block	
brcbF01	tp30_brcbA01	Buffered Report Control Block	
brcbG01	tp30_brcbA01	Buffered Report Control Block	
brcbH01	tp30_brcbA01	Buffered Report Control Block	

## Logical Node Definitions

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### 2.4.17 LOGICAL NODE : tp30\_LPHD\_1

**Description** : Physical device

**LN Class** : LPHD

Attribute	Attr. Type	Explanation	X
PhyNam	tp30_PhyNam_1	Physical device name plate	
PhyHealth	tp30_PhyHealth_1	Physical device health	
Proxy	tp30_Ind10_1	Indicates if the LN is a proxy	

### 2.4.18 LOGICAL NODE : tp30\_MMTR\_1

**Description** : Metering

**LN Class** : MMTR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_1	Health	
SupWh	tp30_DmdVArh_1	Real energy supply	
NamPlt	tp30_NamPlt_1	Name Plate	
SupVArh	tp30_DmdVArh_1	Reactive energy supply	
DmdWh	tp30_DmdVArh_1	Real energy demand	
DmdVArh	tp30_DmdVArh_1	Reactive energy demand	
MTRRs	tp30_MTRRs_1	Metering reset	

### 2.4.19 LOGICAL NODE : tp30\_MMXN\_1

**Description** : Primary Basic Measurements

**LN Class** : MMXN

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Vol	tp30_Amp1_1	Voltage	

### 2.4.20 LOGICAL NODE : tp30\_MMXN\_2

**Description** : Basic Measurements

**LN Class** : MMXN

Attribute	Attr. Type	Explanation	X
Hz	tp30_Amp1_1	Frequency	
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	

### 2.4.21 LOGICAL NODE : tp30\_MMXU\_1

**Description** : Primary Basic Measurements

**LN Class** : MMXU

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
TotW	tp30_Amp1_1	Total active power	
TotVAr	tp30_Amp1_1	Total reactive power	
TotVA	tp30_Amp1_1	Total apparent power	
Hz	tp30_Amp1_1	Frequency	
PPV	tp30_PPV_1	Phase to phase voltage	
PhV	tp30_A_1	Phase to ground voltage	
A	tp30_A_1	Phase current	

## Logical Node Definitions

## 2.4.22 LOGICAL NODE : tp30\_MMXU\_2

**Description** : Secondary Basic Measurements**LN Class** : MMXU

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
AngN	tp30_AngN_1	Angle between U0/I0	
LodAngC	tp30_AngN_1	Load angle Phase C	
LodAngB	tp30_AngN_1	Load angle Phase B	
LodAngA	tp30_AngN_1	Load angle Phase A	
TotW	tp30_Amp1_1	Total active power	
TotVAr	tp30_Amp1_1	Total reactive power	
TotVA	tp30_Amp1_1	Total apparent power	
TotPF	tp30_Amp1_1	Average power factor (Total PF)	
PPV	tp30_PPV_1	Phase to phase voltage	
PhV	tp30_A_1	Phase to ground voltage	
A	tp30_A_1	Phase current	

## 2.4.23 LOGICAL NODE : tp30\_MSQI\_1

**Description** : Sequence and Imbalance Measurements**LN Class** : MSQI

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
SeqA	tp30_SeqA_1	Sequence Current	
SeqV	tp30_SeqV_1	Sequence Voltage	

### 2.4.24 LOGICAL NODE : tp30\_MSTA\_1

**Description** : Measuring statistics

**LN Class** : MSTA

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
MaxAmpsMe	tp30_AngN_1	Maximum current (measured)	
MaxAmpsM1	tp30_AngN_1	Maximum current (measured)	
MaxAmpsM2	tp30_AngN_1	Maximum current (measured)	
MaxAmpsM3	tp30_AngN_1	Maximum current (measured)	
MaxAmpsDI	tp30_AngN_1	Maximum current (delayed)	
MaxAmpsD1	tp30_AngN_1	Maximum current (delayed)	
MaxAmpsD2	tp30_AngN_1	Maximum current (delayed)	
MaxAmpsD3	tp30_AngN_1	Maximum current (delayed)	
MinAmps	tp30_Amp1_1	Minimum current	
MinVpp	tp30_AngN_1	Minimum phase to phase voltage	
MaxVpp	tp30_AngN_1	Maximum phase to phase voltage	
MinVpg	tp30_AngN_1	Minimum phase to ground voltage	
MaxVpg	tp30_AngN_1	Maximum phase to ground voltage	
MaxAmps	tp30_Amp1_1	Maximum current	

### 2.4.25 LOGICAL NODE : tp30\_PDIF\_1

**Description** : Differential Protection

**LN Class** : PDIF

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_4	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Op	tp30_AlmThm_1	Operate	
DifAClc	tp30_DifAClc_1	Difference Current	
RstA	tp30_DifAClc_1	Restraint Current	

## Logical Node Definitions

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### 2.4.26 LOGICAL NODE : tp30\_PDOP\_1

**Description** : Directional overpower

**LN Class** : PDOP

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkmThm1_1	Block	

### 2.4.27 LOGICAL NODE : tp30\_PDUP\_1

**Description** : Directional underpower

**LN Class** : PDUP

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkmThm1_1	Block	

### 2.4.28 LOGICAL NODE : tp30\_PHAR\_1

**Description** : Harmonic restraint

**LN Class** : PHAR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Str_1	Start	

### 2.4.29 LOGICAL NODE : tp30\_PSCH\_1

**Description** : Harmonic restraint

**LN Class** : PSCH

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
ProTx	tp30_Alm10_1	Teleprotection signal transmitted	
ProRx	tp30_Alm10_1	Teleprotection signal received	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_Blkm1_1	Block	

### 2.4.30 LOGICAL NODE : tp30\_PSDE\_1

**Description** : Sensitive earth fault prot.

**LN Class** : PSDE

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	

### 2.4.31 LOGICAL NODE : tp30\_PSOE\_1

**Description** : Switch on fault

**LN Class** : PSOE

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_4	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
ParArcExt	tp30_AlmThm_1	Parameter external autoreclose start	



## Logical Node Definitions

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### 2.4.32 LOGICAL NODE : tp30\_PTEF\_1

**Description** : Transient earth fault

**LN Class** : PTEF

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Blk	tp30_BlkJThm1_1	Block	

### 2.4.33 LOGICAL NODE : tp30\_PTOC\_1

**Description** : Time over current

**LN Class** : PTOC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkJThm1_1	Block	

### 2.4.34 LOGICAL NODE : tp30\_PTOC\_2

**Description** : Time over current

**LN Class** : PTOC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
BlkJThm	tp30_BlkJThm1_1	Block Thermal	

### 2.4.35 LOGICAL NODE : tp30\_PTOC\_3

**Description** : Time over current

**LN Class** : PTOC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
BlkThm1	tp30_BlkThm1_1	Block Thermal	
BlkThm2	tp30_BlkThm1_1	Block Thermal	

### 2.4.36 LOGICAL NODE : tp30\_PTOV\_1

**Description** : Time over voltage

**LN Class** : PTOV

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkThm1_1	Block	

### 2.4.37 LOGICAL NODE : tp30\_PTRC\_1

**Description** : Trip conditioning

**LN Class** : PTRC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Str_1	Start	
Tr	tp30_AlmThm_1	Trip	
TrBlk	tp30_LaTrRs_1	Trip blocked	
LaTrRs	tp30_LaTrRs_1	Latched Trip reset	
StrEf	tp30_StrEf_1	Start earth fault	
TrPhIG	tp30_LaTrRs_1	Trip phase I>	
TrResIG	tp30_LaTrRs_1	Trip earth IN>	

## Logical Node Definitions

## 2.4.38 LOGICAL NODE : tp30\_PTRC\_2

**Description** : Trip conditioning**LN Class** : PTRC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Str_1	Start	
Tr	tp30_AlmThm_1	Trip	
TrBlk	tp30_LaTrRs_1	Trip blocked	
LaTrRs	tp30_LaTrRs_1	Latched Trip reset	

## 2.4.39 LOGICAL NODE : tp30\_PTTR\_1

**Description** : Thermal overload**LN Class** : PTTR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkmThm1_1	Block	
Amp1	tp30_Amp1_1	Current IDC	
Amp2	tp30_Amp1_1	Current IDC	
AlmThm	tp30_AlmThm_1	Thermal alarm	

## 2.4.40 LOGICAL NODE : tp30\_PTUV\_1

**Description** : Time under voltage**LN Class** : PTUV

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
Op	tp30_AlmThm_1	Operate	
Blk	tp30_BlkmThm1_1	Block	

## 2.4.41 LOGICAL NODE : tp30\_RBRF\_1

**Description** : Breaker failure**LN Class** : RBRF

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
OpEx	tp30_AlmThm_1	Breaker failure trip	
Blk	tp30_BlkmThm1_1	Block	

## 2.4.42 LOGICAL NODE : tp30\_RBRF\_2

**Description** : Breaker failure**LN Class** : RBRF

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Str	tp30_Dir_1	Start	
OpEx	tp30_AlmThm_1	Breaker failure trip	
OpIn	tp30_AlmThm_1	Operate retrip	
Blk	tp30_BlkmThm1_1	Block	

## 2.4.43 LOGICAL NODE : tp30\_RDIR\_1

**Description** : Direction**LN Class** : RDIR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Dir	tp30_Dir_1	Direction	

## Logical Node Definitions

## 2.4.44 LOGICAL NODE : tp30\_RDRE\_1

**Description** : Disturbance recording**LN Class** : RDRE

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
RcdMade	tp30_Alm10_1	Disturbance recording complete	
FltNum	tp30_FltNum_1	Fault number	
GriFltNum	tp30_FltNum_1	Grid fault number	
RcdStr	tp30_Alm10_1	Disturbance recording process started	

## 2.4.45 LOGICAL NODE : tp30\_RFLO\_1

**Description** : Fault locator**LN Class** : RFLO

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
FltZ	tp30_FltZ_1	Fault Impedance	
FltDiskm	tp30_Amp1_1	Fault Distance in km	

## 2.4.46 LOGICAL NODE : tp30\_RREC\_1

**Description** : Automatic reclosing**LN Class** : RREC

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Op	tp30_AlmThm_1	Operate	
AutoRecSt	tp30_AutoRecSt_1	Auto reclosing status	
RecHsr	tp30_RecHsr_1	Recloser high speed	
RecTdr	tp30_RecHsr_1	Recloser delayed	
Blk	tp30_BlKThm1_1	Block	

### 2.4.47 LOGICAL NODE : tp30\_RSYN\_1

**Description** : Synchroncheck

**LN Class** : RSYN

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_5	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
DifVClc	tp30_Amp1_1	Difference voltage	
DifHzClc	tp30_Amp1_1	Difference frequency	
DifAngClc	tp30_Amp1_1	Difference angle	
MeasRefV	tp30_AngN_1	Reference Voltage	
MeasLoopV	tp30_AngN_1	Measuring loop	
Rel	tp30_Alm10_1	Release	
ClRej	tp30_CBTripped_1	Close rejection	
Blk	tp30_BlKThm1_1	Block	

### 2.4.48 LOGICAL NODE : tp30\_XCBR\_1

**Description** : Circuit breaker

**LN Class** : XCBR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_1	Mode	
Beh	tp30_Beh_1	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Alm10_1	Local operation	
OpCnt	tp30_FltNum_1	Operation counter	
Pos	tp30_Pos_1	Switch position	
BlkOpn	tp30_BlKCls_1	Block opening	
BlkCls	tp30_BlKCls_1	Block closing	
SumSwARsA	tp30_SumSwARsA_1	Sum of switched Ampers A	
SumSwARsB	tp30_SumSwARsA_1	Sum of switched Ampers B	
SumSwARsC	tp30_SumSwARsA_1	Sum of switched Ampers C	
CBOpCap	tp30_CBOpCap_1	Circuit breaker operating capability	
MaxOpCap	tp30_FltNum_1	Max operating Capability	
CBTripped	tp30_CBTripped_1	Circuit breaker tripped	

## Logical Node Definitions

## 2.4.49 LOGICAL NODE : tp30\_XCBR\_2

**Description** : Circuit breaker**LN Class** : XCBR

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_1	Mode	
Beh	tp30_Beh_1	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Alm10_1	Local operation	
OpCnt	tp30_FltNum_1	Operation counter	
Pos	tp30_Pos_1	Switch position	
BlkOpn	tp30_BlkCls_1	Block opening	
BlkCls	tp30_BlkCls_1	Block closing	
CBOpCap	tp30_CBOpCap_1	Circuit breaker operating capability	
MaxOpCap	tp30_FltNum_1	Max operating Capability	

## 2.4.50 LOGICAL NODE : tp30\_XSWI\_1

**Description** : Switch**LN Class** : XSWI

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_1	Mode	
Beh	tp30_Beh_1	Behaviour	
Health	tp30_Health_1	Health	
NamPlt	tp30_NamPlt_1	Name Plate	
Loc	tp30_Alm10_1	Local operation	
OpCnt	tp30_FltNum_1	Operation counter	
Pos	tp30_Pos_1	Switch position	
BlkOpn	tp30_BlkCls_1	Block opening	
BlkCls	tp30_BlkCls_1	Block closing	
SwTyp	tp30_FltNum_1	Type of switch	
SwOpCap	tp30_FltNum_1	Switch operating capability	
MaxOpCap	tp30_FltNum_1	Max operating Capability	

### 2.4.51 LOGICAL NODE : tp30\_ZAXN\_1

**Description** : Auxiliary network

**LN Class** : ZAXN

Attribute	Attr. Type	Explanation	X
Mod	tp30_Mod_2	Mode	
Beh	tp30_Beh_2	Behaviour	
Health	tp30_Health_2	Health	
NamPlt	tp30_NamPlt_3	Name Plate	
EEHealth	tp30_EEHealth_1	External equipment health	

## 2.5 Common Data Class Definitions

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

From an application point-of-view the data attributes of a Common Data Class are classified according to their specific use. The characterisation of data attributes, and the services that they support/provide, will be through the use of 'Functional Constraints'. The Functional Constraints are specified by the table below:

### Semantic

FC	Name Source Definition
BR	Buffered reports IEC 61850-7-2
CF	Configuration IEC 61850-7-2
CO	Control IEC 61850-7-2
DC	Description IEC 61850-7-2
EX	Extended Definition IEC 61850-7-2
GO	GOOSE Control IEC 61850-7-2
GS	GSSE Control (UCA2 GOOSE) IEC 61850-7-2
LG	Logging IEC 61850-7-2
MS	Multicast sampled value control IEC 61850-7-2
MX	Measurands (Analogue values) IEC 61850-7-2
RP	Unbuffered reports IEC 61850-7-2
SE	Setting Group Editable IEC 61850-7-2
SG	Setting Group IEC 61850-7-2
SP	Set Point IEC 61850-7-2
ST	Status Information IEC 61850-7-2
SV	Substitution Values IEC 61850-7-2
US	Unicast sampled value control IEC 61850-7-2
XX	Data attribute service parameters IEC 61850-7-2



## Common Data Class Definitions

## 2.5.1 COMMON DATA CLASS : tp30\_A\_1

Description :

CDC Class : Vector

Attribute	Type	FC	Enumeration	Comment	X
phsA	tp30_c1_1	MX		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 the configuration parameter db.	
phsB	tp30_c1_1	MX		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 the configuration parameter db.	
phsC	tp30_c1_1	MX		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 the configuration parameter db.	
neut	tp30_c1_1	MX		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 the configuration parameter db.	
res	tp30_c1_1	MX		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 the configuration parameter db.	
d	Vstring255	DC		Description of the status element	

## 2.5.2 COMMON DATA CLASS : tp30\_Alm10\_1

Description :

CDC Class : SPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection, activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

### 2.5.3 COMMON DATA CLASS : tp30\_AlmThm\_1

**Description :**

**CDC Class :** ACT

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

### 2.5.4 COMMON DATA CLASS : tp30\_Amp1\_1

**Description :**

**CDC Class :** MV

Attribute	Type	FC	Enumeration	Comment	X
mag	tp30_mag_1	MX		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 the configuration parameter db.	
q	Quality	MX		Quality of the protection,activation information	
t	TimeStamp	MX		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
db	INT32U	CF		Measurement deadband	
d	Vstring255	DC		Description of the status element	

### 2.5.5 COMMON DATA CLASS : tp30\_AngN\_1

**Description :**

**CDC Class :** MV

Attribute	Type	FC	Enumeration	Comment	X
mag	tp30_mag_1	MX		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 the configuration parameter db.	
q	Quality	MX		Quality of the protection,activation information	
t	TimeStamp	MX		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
db	INT32U	CF		Measurement deadband	
d	Vstring255	DC		Description of the status element	
dataNs	Vstring255	EX		Data Name Space	

## Common Data Class Definitions

## 2.5.6 COMMON DATA CLASS : tp30\_AutoRecSt\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	AutoRecSt	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.7 COMMON DATA CLASS : tp30\_Beh\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Beh	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.8 COMMON DATA CLASS : tp30\_Beh\_2

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Beh	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.9 COMMON DATA CLASS : tp30\_BlKCls\_1

Description :

CDC Class : SPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
d	Vstring255	DC		Description of the status element	

## 2.5.10 COMMON DATA CLASS : tp30\_BlKThm1\_1

**Description :**  
**CDC Class :** SPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	
dataNs	Vstring255	EX		Data Name Space	

## 2.5.11 COMMON DATA CLASS : tp30\_CBOpCap\_1

**Description :**  
**CDC Class :** INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	CBOpCap	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.12 COMMON DATA CLASS : tp30\_CBTripped\_1

**Description :**  
**CDC Class :** SPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
dataNs	Vstring255	EX		Data Name Space	

## Common Data Class Definitions

## 2.5.13 COMMON DATA CLASS : tp30\_Cancel\_1

Description :

CDC Class : CANCEL

Attribute	Type	FC	Enumeration	Comment	X
ctlVal	BOOLEAN	CO		Determines the control activity	
origin	tp30_origin_2	CO	orCategory	Related to the originator of the last change of data	
ctlNum	INT8U	CO		Show the control sequence number of the control service	
T	TimeStamp	CO		Timestamp of the last change in state of protection, activation information	
Test	BOOLEAN	CO		Test	

## 2.5.14 COMMON DATA CLASS : tp30\_CurSG\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	INT32	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection, activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
dataNs	Vstring255	EX		Data Name Space	

## 2.5.15 COMMON DATA CLASS : tp30\_DifAClc\_1

Description :

CDC Class : WYE

Attribute	Type	FC	Enumeration	Comment	X
phsA	tp30_c1_1	MX		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 the configuration parameter db.	
phsB	tp30_c1_1	MX		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 the configuration parameter db.	
phsC	tp30_c1_1	MX		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 the configuration parameter db.	

## 2.5.16 COMMON DATA CLASS : tp30\_Dir\_1

Description :

CDC Class : ACD

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
dirGeneral	Enumerated	ST	dir	General direction (unknown,forward,backward or both)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.17 COMMON DATA CLASS : tp30\_DmdVArh\_1

Description :

CDC Class : BCR

Attribute	Type	FC	Enumeration	Comment	X
actVal	INT128	ST		Binary counter status	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
pulsQty	FLOAT32	CF		Magnitude of the countered value per count	
d	Vstring255	DC		Description of the status element	

## 2.5.18 COMMON DATA CLASS : tp30\_EEHealth\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Health	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## Common Data Class Definitions

## 2.5.19 COMMON DATA CLASS : tp30\_FltNum\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	INT32	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.20 COMMON DATA CLASS : tp30\_FltZ\_1

Description :

CDC Class : CMV

Attribute	Type	FC	Enumeration	Comment	X
q	Quality	MX		Quality of the protection,activation information	
t	TimeStamp	MX		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
db	INT32U	CF		Measurement deadband	
d	Vstring255	DC		Description of the status element	
cVal	tp30_cVal_1	MX		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 the configuration parameter db.	

## 2.5.21 COMMON DATA CLASS : tp30\_Health\_1

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Health	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.22 COMMON DATA CLASS : tp30\_Health\_2

Description :

CDC Class : INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Health	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.23 COMMON DATA CLASS : tp30\_Ind10\_1

Description :

CDC Class : SPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.24 COMMON DATA CLASS : tp30\_LEDRs\_1

Description :

CDC Class : SPC

Attribute	Type	FC	Enumeration	Comment	X
stVal	BOOLEAN	ST		Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
ctlModel	Enumerated	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
dataNs	Vstring255	EX		Data Name Space	
Oper	tp30_Oper_1	CO		Determines the control activity	



## Common Data Class Definitions

## 2.5.25 COMMON DATA CLASS : tp30\_LaTrRs\_1

Description :

CDC Class : ACT

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	
dataNs	Vstring255	EX		Data Name Space	

## 2.5.26 COMMON DATA CLASS : tp30\_MTRRs\_1

Description :

CDC Class : SPC

Attribute	Type	FC	Enumeration	Comment	X
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
dataNs	Vstring255	EX		Data Name Space	
Oper	tp30_Oper_1	CO		Determines the control activity	

## 2.5.27 COMMON DATA CLASS : tp30\_Mod\_1

Description :

CDC Class : INC

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Mod	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	

## 2.5.28 COMMON DATA CLASS : tp30\_Mod\_2

Description :

CDC Class : INC

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Mod	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	

## 2.5.29 COMMON DATA CLASS : tp30\_Mod\_3

Description :

CDC Class : INC

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Mod	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
measCyc	INT32U	CF		Measurement update cycle	
enCyc	INT32U	CF		Energy update cycle	
comtrade	Enum	CF	comtrade	Disturbance record or measurement sample files	
distExtr	BOOLEAN	CF		Disturbance Extraction	
dirExtend	BOOLEAN	CF		Directory Extension	
Oper	tp30_Oper_2	CO		Determines the control activity	

## 2.5.30 COMMON DATA CLASS : tp30\_Mod\_4

Description :

CDC Class : INC

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Mod	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
Oper	tp30_Oper_2	CO		Determines the control activity	

## Common Data Class Definitions

## 2.5.31 COMMON DATA CLASS : tp30\_Mod\_5

Description :

CDC Class : INC

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Mod	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
Oper	tp30_Oper_2	CO		Determines the control activity	

## 2.5.32 COMMON DATA CLASS : tp30\_NamPlt\_1

Description :

CDC Class : LPL

Attribute	Type	FC	Enumeration	Comment	X
vendor	Vstring255	DC		Unit of the attribute representing the data	
swRev	Vstring255	DC		Software revision	
d	Vstring255	DC		Description of the status element	

## 2.5.33 COMMON DATA CLASS : tp30\_NamPlt\_2

Description :

CDC Class : LPL

Attribute	Type	FC	Enumeration	Comment	X
vendor	Vstring255	DC		Unit of the attribute representing the data	
swRev	Vstring255	DC		Software revision	
d	Vstring255	DC		Description of the status element	
configRev	Vstring255	DC		Uniquely identifies the configuration of a local device instance	

## 2.5.34 COMMON DATA CLASS : tp30\_NamPlt\_3

Description :

CDC Class : LPL

Attribute	Type	FC	Enumeration	Comment	X
vendor	Vstring255	DC		Unit of the attribute representing the data	
swRev	Vstring255	DC		Software revision	
d	Vstring255	DC		Description of the status element	
configRev	Vstring255	DC		Uniquely identifies the configuration of a local device instance	
ldNs	Vstring255	EX		Logical Device name space	

## 2.5.35 COMMON DATA CLASS : tp30\_NamPlt\_4

**Description :****CDC Class :** LPL

Attribute	Type	FC	Enumeration	Comment	X
vendor	Vstring255	DC		Unit of the attribute representing the data	
swRev	Vstring255	DC		Software revision	
d	Vstring255	DC		Description of the status element	
InNs	Vstring255	EX		Logical Node name space	

## 2.5.36 COMMON DATA CLASS : tp30\_Oper\_1

**Description :****CDC Class :** OPER

Attribute	Type	FC	Enumeration	Comment	X
ctlVal	BOOLEAN	CO		Determines the control activity	
origin	tp30_origin_2	CO	orCategory	Related to the originator of the last change of data	
ctlNum	INT8U	CO		Show the control sequence number of the control service	
T	TimeStamp	CO		Timestamp of the last change in state of protection, activation information	
Test	BOOLEAN	CO		Test	
Check	VBSTR2	CO		Check	

## 2.5.37 COMMON DATA CLASS : tp30\_Oper\_2

**Description :****CDC Class :** OPER

Attribute	Type	FC	Enumeration	Comment	X
ctlVal	INT32	CO		Determines the control activity	
origin	tp30_origin_1	CO	orCategory	Related to the originator of the last change of data	
ctlNum	INT8U	CO		Show the control sequence number of the control service	
T	TimeStamp	CO		Timestamp of the last change in state of protection, activation information	
Test	BOOLEAN	CO		Test	
Check	VBSTR2	CO		Check	

## Common Data Class Definitions

## 2.5.38 COMMON DATA CLASS : tp30\_PPV\_1

**Description :****CDC Class :** Vector

Attribute	Type	FC	Enumeration	Comment	X
phsAB	tp30_c1_1	MX		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 the configuration parameter db.	
phsBC	tp30_c1_1	MX		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 the configuration parameter db.	
phsCA	tp30_c1_1	MX		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 the configuration parameter db.	
d	Vstring255	DC		Description of the status element	

## 2.5.39 COMMON DATA CLASS : tp30\_PhyHealth\_1

**Description :****CDC Class :** INS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Enum	ST	Health	Status value of the data (Intermediate state, Off, On or Bad-state)	
q	Quality	ST		Quality of the protection, activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.40 COMMON DATA CLASS : tp30\_PhyNam\_1

**Description :****CDC Class :** DPL

Attribute	Type	FC	Enumeration	Comment	X
vendor	Vstring255	DC		Unit of the attribute representing the data	
hwRev	Vstring255	DC		Hardware revision	
swRev	Vstring255	DC		Software revision	
serNum	Vstring255	DC		Serial Number	

## 2.5.41 COMMON DATA CLASS : tp30\_Pos10\_1

**Description :****CDC Class :** DPS

Attribute	Type	FC	Enumeration	Comment	X
stVal	Dbpos	ST		Status value of the data (DoublePoint Status)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	

## 2.5.42 COMMON DATA CLASS : tp30\_Pos\_1

**Description :****CDC Class :** DPC

Attribute	Type	FC	Enumeration	Comment	X
origin	tp30_origin_2	ST	orCategory	Related to the originator of the last change of data	
stVal	Dbpos	ST	Dbpos	Status value of the data (DoublePoint Status)	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
stSeld	BOOLEAN	ST		The controllable data is in the status selected	
d	Vstring255	DC		Description of the status element	
ctlModel	Enum	CF	tp30_ctlModel	Control model (Corresponding to the behaviour of the data)	
sboTimeout	INT32U	CF		Determines the control activity	
Oper	tp30_Oper_1	CO		Determines the control activity	
SBOw	tp30_SBOw_1	CO		Determines the control activity	
Cancel	tp30_Cancel_1	CO		Determines the control activity	

## 2.5.43 COMMON DATA CLASS : tp30\_RecHsr\_1

**Description :****CDC Class :** ACT

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
dataNs	Vstring255	EX		Data Name Space	

## Common Data Class Definitions

## 2.5.44 COMMON DATA CLASS : tp30\_SBOw\_1

Description :

CDC Class : SBOw

Attribute	Type	FC	Enumeration	Comment	X
ctlVal	BOOLEAN	CO		Determines the control activity	
origin	tp30_origin_2	CO	orCategory	Related to the originator of the last change of data	
ctlNum	INT8U	CO		Show the control sequence number of the control service	
T	TimeStamp	CO		Timestamp of the last change in state of protection, activation information	
Test	BOOLEAN	CO		Test	
Check	VBSTR2	CO		Check	

## 2.5.45 COMMON DATA CLASS : tp30\_SGCB\_1

Description :

CDC Class : SGC

Attribute	Type	FC	Enumeration	Comment	X
NumOfSG	INT8U	SP		Number of setting group	
ActSG	INT8U	SP		Actual setting group	
EditSG	INT8U	SP		Edit setting group)	
CnfEdit	BOOLEAN	SP		Confirm editing	
LActTm	TimeStamp	SP		Last activation time	

## 2.5.46 COMMON DATA CLASS : tp30\_SPCSO10\_1

Description :

CDC Class : SPC

Attribute	Type	FC	Enumeration	Comment	X
ctlModel	Enum	CF	ctlModel	Control model (Corresponding to the behaviour of the data)	
Oper	tp30_Oper_1	CO		Determines the control activity	

## 2.5.47 COMMON DATA CLASS : tp30\_SeqA\_1

Description :

CDC Class : SEQ

Attribute	Type	FC	Enumeration	Comment	X
c1	tp30_c1_1	MX		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 the configuration parameter db.	
c2	tp30_c1_1	MX		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 the configuration parameter db.	
c3	tp30_c1_1	MX		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 the configuration parameter db.	
d	Vstring255	DC		Description of the status element	
seqT	Enum	MX	seqT	Specify the type of the sequence	

## 2.5.48 COMMON DATA CLASS : tp30\_SeqV\_1

Description :

CDC Class : SEQ

Attribute	Type	FC	Enumeration	Comment	X
c1	tp30_c1_1	MX		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 the configuration parameter db.	
c2	tp30_c1_1	MX		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 the configuration parameter db.	
c3	tp30_c1_1	MX		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 the configuration parameter db.	
seqT	Enum	MX	seqT	Specify the type of the sequence	
d	Vstring255	DC		Description of the status element	



## Common Data Class Definitions

## 2.5.49 COMMON DATA CLASS : tp30\_StrEf\_1

Description :

CDC Class : ACD

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
dirGeneral	Enumerated	ST	dir	General direction (unknown,forward,backward or both)	
phsA	BOOLEAN	ST		Trip or start event of Phase A has happened	
dirPhsA	Enumerated	ST	dir	Direction of the fault for phase A	
phsB	BOOLEAN	ST		Trip or start event of Phase B has happened	
dirPhsB	Enumerated	ST	dir	Direction of the fault for phase B	
phsC	BOOLEAN	ST		Trip or start event of Phase C has happened	
dirPhsC	Enumerated	ST	dir	Direction of the fault for phase C	
neut	BOOLEAN	ST		Trip or start event with earth current has happened	
dirNeut	Enumerated	ST	dir	Direction of the fault for neut	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	
dataNs	Vstring255	EX		Data Name Space	

## 2.5.50 COMMON DATA CLASS : tp30\_Str\_1

Description :

CDC Class : ACD

Attribute	Type	FC	Enumeration	Comment	X
general	BOOLEAN	ST		Trip or start has happened	
dirGeneral	Enumerated	ST	dir	General direction (unknown,forward,backward or both)	
phsA	BOOLEAN	ST		Trip or start event of Phase A has happened	
dirPhsA	Enumerated	ST	dir	Direction of the fault for phase A	
phsB	BOOLEAN	ST		Trip or start event of Phase B has happened	
dirPhsB	Enumerated	ST	dir	Direction of the fault for phase B	
phsC	BOOLEAN	ST		Trip or start event of Phase C has happened	
dirPhsC	Enumerated	ST	dir	Direction of the fault for phase C	
neut	BOOLEAN	ST		Trip or start event with earth current has happened	
dirNeut	Enumerated	ST	dir	Direction of the fault for neut	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
d	Vstring255	DC		Description of the status element	

## 2.5.51 COMMON DATA CLASS : tp30\_SumSwARsA\_1

Description :

CDC Class : BCR

Attribute	Type	FC	Enumeration	Comment	X
actVal	INT128	ST		Binary counter status	
q	Quality	ST		Quality of the protection,activation information	
t	TimeStamp	ST		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
pulsQty	FLOAT32	CF		Magnitude of the countered value per count	
d	Vstring255	DC		Description of the status element	
dataNs	Vstring255	EX		Data Name Space	

## 2.5.52 COMMON DATA CLASS : tp30\_brcbA01

Description :

CDC Class :

Attribute	Type	FC	Enumeration	Comment	X
	BASRCB	BR			

## 2.5.53 COMMON DATA CLASS : tp30\_c1\_1

Description :

CDC Class : Vector

Attribute	Type	FC	Enumeration	Comment	X
cVal	tp30_cVal_1	MX		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 the configuration parameter db.	
q	Quality	MX		Quality of the protection,activation information	
t	TimeStamp	MX		Timestamp of the last change in state of protection, activation information	
units	tp30_units_1	CF	SIUnit	Unit of the attribute representing the data	
db	INT32U	CF		Measurement deadband	

## 2.5.54 COMMON DATA CLASS : tp30\_cVal\_1

Description :

CDC Class : Vector

Attribute	Type	FC	Enumeration	Comment	X
mag	tp30_mag_1	MX		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 the configuration parameter db.	

## Common Data Class Definitions

## 2.5.55 COMMON DATA CLASS : tp30\_mag\_1

Description :

CDC Class : MV

Attribute	Type	FC	Enumeration	Comment	X
f	FLOAT32	MX		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 the configuration parameter db.	

## 2.5.56 COMMON DATA CLASS : tp30\_origin\_1

Description :

CDC Class : OPER

Attribute	Type	FC	Enumeration	Comment	X
orCat	ENUM8	CO	orCategory	Related to the originator of the last change of data	
orIdent	VOSTR64	CO		Related to the originator of the last change of data	

## 2.5.57 COMMON DATA CLASS : tp30\_origin\_2

Description :

CDC Class : DPC

Attribute	Type	FC	Enumeration	Comment	X
orCat	ENUM8	ST	orCategory	Related to the originator of the last change of data	
orIdent	VOSTR64	ST		Related to the originator of the last change of data	

## 2.5.58 COMMON DATA CLASS : tp30\_units\_1

Description :

CDC Class : MV

Attribute	Type	FC	Enumeration	Comment	X
SIUnit	Enumerated	CF	SIUnit	Unit of the attribute representing the data	
multiplier	Enumerated	CF	multiplier	Unit of the attribute representing the data	

## 2.5.59 COMMON DATA CLASS : tp30\_urcbA01

Description :

CDC Class :

Attribute	Type	FC	Enumeration	Comment	X
	BASRCB	RP			

## 2.6 Common Data Attribute Type Definitions

Common data attribute types, known herein as components, are defined for use in the Common Data Classes defined in the sections above.

## 2.7 Enumerated Type Definitions

The following sub-sections specify the enumerations that are associated to some Common Data Class attributes. The definition of the enumerations are according to IEC 61850-7-3 and IEC 61850-7-4 unless otherwise stated.

### 2.7.1 Enumerated Type : AutoRecSt

**Description** : Auto reclosing status

Ordinal	Semantic
1	Ready
2	InProgress
3	Successful

### 2.7.2 Enumerated Type : Beh

**Description** : Behaviour

Ordinal	Semantic
1	on
2	blocked
3	test
4	test/blocked
5	off

### 2.7.3 Enumerated Type : CBOpCap

**Description** : Circuit breaker operating capability

Ordinal	Semantic
1	None
2	Open
3	Close-Open
4	Open-Close-Open
5	Close-Open-Close-Open

## Enumerated Type Definitions

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### 2.7.4 Enumerated Type : Dbpos

**Description :** Status value of the data (DoublePoint Status)

Ordinal	Semantic
0	intermediate
1	off
2	on
3	bad

### 2.7.5 Enumerated Type : Health

**Description :** Health

Ordinal	Semantic
1	Ok
2	Warning
3	Alarm

### 2.7.6 Enumerated Type : Mod

**Description :** Mode

Ordinal	Semantic
1	on
2	blocked
3	test
4	test/blocked
5	off

### 2.7.7 Enumerated Type : SIUnit

**Description :** Unit of the attribute representing the data

Ordinal	Semantic
1	none
2	m
3	kg
4	s
5	A

Ordinal	Semantic
6	K
7	mol
8	cd
9	deg
10	rad
11	sr
21	Gy
22	q
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
41	m <sup>2</sup>
42	m <sup>3</sup>
43	m/s
44	m/s <sup>2</sup>
45	m <sup>3</sup> /s
46	m/m <sup>3</sup>
47	M
48	kg/m <sup>3</sup>
49	m <sup>2</sup> /s
50	W/m K
51	J/K
52	ppm
53	1/s
54	rad/s
61	VA
62	Watts
63	VAr

## Enumerated Type Definitions

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Ordinal	Semantic
64	theta
65	cos(theta)
66	Vs
67	V <sup>2</sup>
68	As
69	A <sup>2</sup>
70	A <sup>2</sup> t
71	VAh
72	Wh
73	VArh
74	V/Hz

### 2.7.8 Enumerated Type : comtrade

**Description** : Disturbance record or measurement sample files

Ordinal	Semantic
0	ASCII
1	BINARY

### 2.7.9 Enumerated Type : ctIModel

**Description** : Control model (Corresponding to the behaviour of the data)

Ordinal	Semantic
0	status-only
1	direct-with-normal-security
2	sbo-with-normal-security
3	direct-with-enhanced-security
4	sbo-with-enhanced-security

### 2.7.10 Enumerated Type : dir

**Description** : General direction (unknown,forward,backward or both)

Ordinal	Semantic
0	unknown
1	forward
2	backward
3	both

### 2.7.11 Enumerated Type : multiplier

**Description** : Unit of the attribute representing the data

Ordinal	Semantic
-24	y
-21	z
-18	a
-15	f
-12	p
-9	n
-6	$\mu$
-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



## Enumerated Type Definitions

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### 2.7.12 Enumerated Type : orCategory

**Description** : Related to the originator of the last change of data

Ordinal	Semantic
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

### 2.7.13 Enumerated Type : seqT

**Description** : Specify the type of the sequence

Ordinal	Semantic
0	pos-neg-zero

### 2.7.14 Enumerated Type : tp30\_ctlModel

**Description** : Control model (Corresponding to the behaviour of the data)

Ordinal	Semantic
0	status-only
3	direct-with-enhanced-security
4	sbo-with-enhanced-security

## 2.8 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
BVstring13	BVstring13	Variable bit string (upto 13 bits)
CODED_ENUM	Byte	Coded enumeration
CODED_ENUM2	Byte	Coded enumeration (2)
EntryTime	Btime6	8.1 Section 8.1.3.7
ENUMERATED16	Short	16 bit enumerated value
ENUMERATED8	Byte	8 bit enumerated value
FLOAT32	Float	32 bit floating point value
FLOAT64	Double	64 bit floating point value
INT128	Long	128 bit signed integer 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
INT8	Byte	8 bit signed integer value
INT8U	Ubyte	8 bit unsigned integer value
OCTET_STRING6	Ostring6	6 character string (8 bits per character)
OCTET_STRING64	Ostring64	64 character string (8 bits per character)
OCTET_STRING8	Ostring8	8 character string (8 bits per character)
Quality	BVstring13	IEC61850 Quality
RTYP_BOOL	Bool	Reporting type - BOOLEAN
RTYP_BSTR6	Bstring6	Reporting type - 6 bit string
RTYP_BSTR8	Bstring8	Reporting type - 8 bit string
RTYP_BSTR9	Bstring9	Reporting type - 9 bit string
RTYP_BTIME6	Btime6	Reporting type - 6 byte timestamp
RTYP_BVSTR10	BVstring10	Reporting type - Variable bit string (upto 10 bits)
RTYP_BVSTR6	BVstring6	Reporting type - Variable bit string (upto 6 bits)
RTYP_BVSTR8	Bvstring8	Reporting type - Variable bit string (upto 8 bits)
RTYP_INT16U	Ushort	Reporting type - 16 bit unsigned integer value
RTYP_INT32U	Ulong	Reporting type - 32 bit unsigned integer value
RTYP_INT8U	Ubyte	Reporting type - 8 bit unsigned integer value
RTYP_OSTR8	Ostring8	Reporting type - 8 character string (8 bits per character)
RTYP_VSTR32	Vstring32	Reporting type - 32 character string
RTYP_VSTR65	Vstring65	Reporting type - 65 character string
TimeStamp	Utctime	IEC61850 Time stamp
UNICODE_STRING255	UTF8Vstring255	255 character string (16 bits per unicode character)

**MMS Data-Type Conversions**

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Part 7 Type	MMS Type	Part 7 Description
UTC_TM	Utctime	UTC Timestamp
VISIBLE_STRING255	Vstring65	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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