



High**PROTEC**

IEC 61850 | MICS

---

**MRI4**

Software-Version: 3.4.a

Model Implementation Conformance Statement (MICS)

UCA International Users Group Testing Sub Committee

English

---

# INDEX

1.	Introduction.....	5
2.	Logical Nodes.....	6
2.1.	Logical Nodes List.....	6
2.2.	Logical Node definitions.....	7
2.2.1	WW CILO1.....	9
2.2.2	WW CSWI1.....	9
2.2.3	WW GAPC1.....	9
2.2.4	WW GGIO3.....	10
2.2.5	WW GGIO4.....	10
2.2.6	WW GGIO5.....	11
2.2.7	WW IHMI1.....	12
2.2.8	WW LLN0CON.....	13
2.2.9	WW LLN0MEA.....	13
2.2.10	WW LLN0PRO.....	13
2.2.11	WW LLN0REC.....	13
2.2.12	WW LLN0SYS.....	14
2.2.13	WW LPHDCON.....	14
2.2.14	WW LPHDMEA.....	14
2.2.15	WW LPHDPRO.....	14
2.2.16	WW LPHDREC.....	15
2.2.17	WW LPHDSYS.....	15
2.2.18	WW MMXU7.....	15
2.2.19	WW MSTA1.....	15
2.2.20	WW PHAR1.....	16
2.2.21	WW PSOF1.....	16
2.2.22	WW PTOC1.....	16
2.2.23	WW PTOC3.....	17
2.2.24	WW PTOC4.....	17
2.2.25	WW PTTR3.....	17
2.2.26	WW RBRF1.....	18
2.2.27	WW RDRE1.....	18
2.2.28	WW RREC1.....	18

---

2.2.29	WW SCBR1.....	19
2.2.30	WW XCBR2.....	19
2.2.31	WW XSWI1.....	19
3.	Common Data Class.....	21
3.1.	Common Data Class definitions.....	21
3.1.1	WW ACD1.....	22
3.1.2	WW ACT1.....	22
3.1.3	WW CMV2.....	22
3.1.4	WW DPC1.....	22
3.1.5	WW DPC2.....	22
3.1.6	WW DPL1.....	23
3.1.7	WW INC1.....	23
3.1.8	WW INS1.....	23
3.1.9	WW INS2.....	23
3.1.10	WW INS3.....	23
3.1.11	WW INS4.....	24
3.1.12	WW INS5.....	24
3.1.13	WW LPL1.....	24
3.1.14	WW LPL2.....	24
3.1.15	WW LPL3.....	24
3.1.16	WW MV1.....	25
3.1.17	WW SPC1.....	25
3.1.18	WW SPC2.....	25
3.1.19	WW SPS1.....	25
3.1.20	WW WYE2.....	25
3.2.	Common Data Attributes type definitions.....	26
3.2.1	WW analogValue1.....	26
3.2.2	WW Cancel1.....	26
3.2.3	WW Oper1.....	26
3.2.4	WW origin1.....	26
3.2.5	WW units1.....	26
3.2.6	WW vector1.....	27
3.3.	Enumerated type definitions.....	27

---

---

3.3.1	AutoRecSt.....	27
3.3.2	Beh.....	27
3.3.3	CBOPCap.....	27
3.3.4	ctlModel.....	27
3.3.5	Dbpos.....	28
3.3.6	dir.....	28
3.3.7	Health.....	28
3.3.8	Mod.....	28
3.3.9	multiplier.....	28
3.3.10	orCategory.....	29
3.3.11	sboClass.....	29
3.3.12	SIUnit.....	29
4.	Appendix – Register Maps.....	31
4.1.	Device Planing Dependencies.....	42

## 1. Introduction

This model implementation conformance statement is applicable to the device MRI4, Version 3.4.a (Firmware-Build 35596).

This MICS document specifies the modelling extensions compared to IEC 61850 edition 1.

Clause 2 contains the list of implemented logical nodes.

Clause 3 describes the new and extended logical nodes.

Clause 4 describes the existing common data classes.

Clause 5 describes the existing enum types.

## 2. Logical Nodes

### 2.1. Logical Nodes List

The following table contains the list of logical nodes implemented in the device:

<b>L : System Logical Nodes</b>
LLN0 (Logical Node device)
LPHD (Physical device)
<b>P : Logical Nodes for protection functions</b>
PHAR (Harmonic restraint)
PSOF (Switch Onto Fault)
PTOC (Time overcurrent)
PTTR (Thermal overload protection)
<b>R : Logical Nodes for protection related functions</b>
RBRF (Breaker failure)
RDRE (Disturbance recorder function)
RREC (Autoreclosing)
<b>G : Logical Nodes for generic references</b>
GAPC (Generic automatic process control)
GGIO (Generic process I/O)
<b>M : Logical Nodes for metering and measurement</b>
MMXU (Measurement)
MSTA (Metering Statistics)
<b>X : Logical Nodes for switchgear</b>
XCBR (Circuit Breaker)

## Logical Nodes

XSWI (Circuit Switch)
<b>C : Logical Nodes for control</b>
CILO (Interlocking)
CSWI (Switch controller)
<b>I : Logical Nodes for interfacing and archiving</b>
IHMI (Human machine interface)
<b>S : Logical Nodes for sensors and monitoring</b>
SCBR (Circuit breaker monitoring)

## 2.2. Logical Node definitions

The following table use

- M: Data is mandatory in the IEC-61850-7-4.
- O: Data is optional in the IEC-61850-7-4 and is used in the device.
- E: Data is an extension to the IEC-61850-7-4.

LN Type	LN Class	Description
WW_CILO1	CILO	Interlocking
WW_CSWI1	CSWI	Switch controller
WW_GAPC1	GAPC	Generic automatic process control
WW_GGIO3	GGIO	Generic process I/O
WW_GGIO4	GGIO	Generic process I/O
WW_GGIO5	GGIO	Generic process I/O
WW_IHMI1	IHMI	Human machine interface
WW_LLNOCON	LLNO	Logical Node device
WW_LLNOMEA	LLNO	Logical Node device

## Logical Nodes

---

LN Type	LN Class	Description
WW_LLNOPRO	LLNO	Logical Node device
WW_LLNOREC	LLNO	Logical Node device
WW_LLNOSYS	LLNO	Logical Node device
WW_LPHDCON	LPHD	Physical device
WW_LPHDMEA	LPHD	Physical device
WW_LPHDPRO	LPHD	Physical device
WW_LPHDREC	LPHD	Physical device
WW_LPHDSYS	LPHD	Physical device
WW_MMXU7	MMXU	Measurement
WW_MSTA1	MSTA	Metering Statistics
WW_PHAR1	PHAR	Harmonic restraint
WW_PSOFF1	PSOF	Switch Onto Fault
WW_PTOC1	PTOC	Time overcurrent
WW_PTOC3	PTOC	Time overcurrent
WW_PTOC4	PTOC	Time overcurrent
WW_PTTR3	PTTR	Thermal overload protection
WW_RBRF1	RBRF	Breaker failure
WW_RDRE1	RDRE	Disturbance recorder function
WW_RREC1	RREC	Autoreclosing
WW_SCBR1	SCBR	Circuit breaker monitoring
WW_XCBR2	XCBR	Circuit Breaker
WW_XSWI1	XSWI	Circuit Switch



## Logical Nodes

---

### 2.2.1 WW\_CILO1

CILO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
CILO	WW_CILO1	Interlocking		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behavior	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
EnaOpn	WW_SPS1	Enable Open	M	
EnaCls	WW_SPS1	Enable Close	M	

### 2.2.2 WW\_CSWI1

CSWI class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
CSWI	WW_CSWI1	Switch Controller		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Loc	WW_SPS1	Local operation	O	
Controls				
Pos	WW_DPC2	Switch position	M	

### 2.2.3 WW\_GAPC1

GAPC class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
GAPC	WW_GAPC1	Generic automatic process control		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Loc	WW_SPS1	Local operation	O	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## Logical Nodes

### 2.2.4 WW\_GGIO3

<b>GGIO class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
GGIO	WW_GGIO3	Generic process I/O		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status information</b>				
Ind1	WW_SPS1	General indication (binary input)	O	
Ind2	WW_SPS1	General indication (binary input)	O	
Ind3	WW_SPS1	General indication (binary input)	O	
Ind4	WW_SPS1	General indication (binary input)	O	
Ind5	WW_SPS1	General indication (binary input)	O	
Ind6	WW_SPS1	General indication (binary input)	O	
Ind7	WW_SPS1	General indication (binary input)	O	
Ind8	WW_SPS1	General indication (binary input)	O	
Ind9	WW_SPS1	General indication (binary input)	O	
Ind10	WW_SPS1	General indication (binary input)	O	
Ind11	WW_SPS1	General indication (binary input)	O	
Ind12	WW_SPS1	General indication (binary input)	O	
Ind13	WW_SPS1	General indication (binary input)	O	
Ind14	WW_SPS1	General indication (binary input)	O	
Ind15	WW_SPS1	General indication (binary input)	O	
Ind16	WW_SPS1	General indication (binary input)	O	
Ind17	WW_SPS1	General indication (binary input)	O	
Ind18	WW_SPS1	General indication (binary input)	O	
Ind19	WW_SPS1	General indication (binary input)	O	
Ind20	WW_SPS1	General indication (binary input)	O	
Ind21	WW_SPS1	General indication (binary input)	O	
Ind22	WW_SPS1	General indication (binary input)	O	
Ind23	WW_SPS1	General indication (binary input)	O	
Ind24	WW_SPS1	General indication (binary input)	O	
Ind25	WW_SPS1	General indication (binary input)	O	
Ind26	WW_SPS1	General indication (binary input)	O	
Ind27	WW_SPS1	General indication (binary input)	O	
Ind28	WW_SPS1	General indication (binary input)	O	
Ind29	WW_SPS1	General indication (binary input)	O	
Ind30	WW_SPS1	General indication (binary input)	O	
Ind31	WW_SPS1	General indication (binary input)	O	
Ind32	WW_SPS1	General indication (binary input)	O	

### 2.2.5 WW\_GGIO4

<b>GGIO class</b>				
<b>Attribute</b>	<b>Attribute</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>

## Logical Nodes

Name	Type			
GGIO		Generic process I/O		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status information</b>				
Ind1	WW_SPS1	General indication (binary input)	O	
Ind2	WW_SPS1	General indication (binary input)	O	
Ind3	WW_SPS1	General indication (binary input)	O	
Ind4	WW_SPS1	General indication (binary input)	O	
Ind5	WW_SPS1	General indication (binary input)	O	
Ind6	WW_SPS1	General indication (binary input)	O	
Ind7	WW_SPS1	General indication (binary input)	O	
Ind8	WW_SPS1	General indication (binary input)	O	
Ind9	WW_SPS1	General indication (binary input)	O	
Ind10	WW_SPS1	General indication (binary input)	O	
Ind11	WW_SPS1	General indication (binary input)	O	
Ind12	WW_SPS1	General indication (binary input)	O	
Ind13	WW_SPS1	General indication (binary input)	O	
Ind14	WW_SPS1	General indication (binary input)	O	
Ind15	WW_SPS1	General indication (binary input)	O	
Ind16	WW_SPS1	General indication (binary input)	O	
Ind17	WW_SPS1	General indication (binary input)	O	
Ind18	WW_SPS1	General indication (binary input)	O	
Ind19	WW_SPS1	General indication (binary input)	O	
Ind20	WW_SPS1	General indication (binary input)	O	
Ind21	WW_SPS1	General indication (binary input)	O	
Ind22	WW_SPS1	General indication (binary input)	O	
Ind23	WW_SPS1	General indication (binary input)	O	
Ind24	WW_SPS1	General indication (binary input)	O	
Ind25	WW_SPS1	General indication (binary input)	O	
Ind26	WW_SPS1	General indication (binary input)	O	
Ind27	WW_SPS1	General indication (binary input)	O	
Ind28	WW_SPS1	General indication (binary input)	O	
Ind29	WW_SPS1	General indication (binary input)	O	
Ind30	WW_SPS1	General indication (binary input)	O	
Ind31	WW_SPS1	General indication (binary input)	O	
Ind32	WW_SPS1	General indication (binary input)	O	

### 2.2.6 WW\_GGIO5

<b>GGIO class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
GGIO		Generic process I/O		
<b>Data</b>				
<b>Common Logical Node Information</b>				

## Logical Nodes

Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status information</b>				
SPCSO1	WW_SPC2	Single point controllable status output	O	
SPCSO2	WW_SPC2	Single point controllable status output	O	
SPCSO3	WW_SPC2	Single point controllable status output	O	
SPCSO4	WW_SPC2	Single point controllable status output	O	
SPCSO5	WW_SPC2	Single point controllable status output	O	
SPCSO6	WW_SPC2	Single point controllable status output	O	
SPCSO7	WW_SPC2	Single point controllable status output	O	
SPCSO8	WW_SPC2	Single point controllable status output	O	
SPCSO9	WW_SPC2	Single point controllable status output	O	
SPCSO10	WW_SPC2	Single point controllable status output	O	
SPCSO11	WW_SPC2	Single point controllable status output	O	
SPCSO12	WW_SPC2	Single point controllable status output	O	
SPCSO13	WW_SPC2	Single point controllable status output	O	
SPCSO14	WW_SPC2	Single point controllable status output	O	
SPCSO15	WW_SPC2	Single point controllable status output	O	
SPCSO16	WW_SPC2	Single point controllable status output	O	
SPCSO17	WW_SPC2	Single point controllable status output	O	
SPCSO18	WW_SPC2	Single point controllable status output	O	
SPCSO19	WW_SPC2	Single point controllable status output	O	
SPCSO20	WW_SPC2	Single point controllable status output	O	
SPCSO21	WW_SPC2	Single point controllable status output	O	
SPCSO22	WW_SPC2	Single point controllable status output	O	
SPCSO23	WW_SPC2	Single point controllable status output	O	
SPCSO24	WW_SPC2	Single point controllable status output	O	
SPCSO25	WW_SPC2	Single point controllable status output	O	
SPCSO26	WW_SPC2	Single point controllable status output	O	
SPCSO27	WW_SPC2	Single point controllable status output	O	
SPCSO28	WW_SPC2	Single point controllable status output	O	
SPCSO29	WW_SPC2	Single point controllable status output	O	
SPCSO30	WW_SPC2	Single point controllable status output	O	
SPCSO31	WW_SPC2	Single point controllable status output	O	
SPCSO32	WW_SPC2	Single point controllable status output	O	

### 2.2.7 WW\_IHMI1

<b>IHMI class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
IHMI	WW_IHMI1	Human machine interface		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	

## Logical Nodes

---

### 2.2.8 WW\_LLNOCON

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNOCON	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

### 2.2.9 WW\_LLNOMEA

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNOMEA	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

### 2.2.10 WW\_LLNOPRO

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNOPRO	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

### 2.2.11 WW\_LLNOREC

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNOREC	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	

## Logical Nodes

---

NamPlt	WW_LPL2	Name plate	M	
--------	---------	------------	---	--

### 2.2.12 WW\_LLNO SYS

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNO SYS	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

### 2.2.13 WW\_LPHDCON

LPHD class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LPHD	WW_LPHDCON	Physical device information		
Data				
Common Logical Node Information				
PhyNam	WW_DPL1	Physical device name plate	M	
PhyHealth	WW_INS3	Physical Device Health	M	
Proxy	WW_SPS1	Indicates if this LN is a proxy	M	

### 2.2.14 WW\_LPHDMEA

LPHD class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LPHD	WW_LPHDMEA	Physical device information		
Data				
Common Logical Node Information				
PhyNam	WW_DPL1	Physical device name plate	M	
PhyHealth	WW_INS3	Physical Device Health	M	
Proxy	WW_SPS1	Indicates if this LN is a proxy	M	

### 2.2.15 WW\_LPHDPRO

LPHD class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LPHD	WW_LPHDPRO	Physical device information		
Data				
Common Logical Node Information				
PhyNam	WW_DPL1	Physical device name plate	M	
PhyHealth	WW_INS3	Physical Device Health	M	
Proxy	WW_SPS1	Indicates if this LN is a proxy	M	

## Logical Nodes

---

### 2.2.16 WW\_LPHDREC

LPHD class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LPHD	WW_LPHDREC	Physical device information		
Data				
Common Logical Node Information				
PhyNam	WW_DPL1	Physical device name plate	M	
PhyHealth	WW_INS3	Physical Device Health	M	
Proxy	WW_SPS1	Indicates if this LN is a proxy	M	

### 2.2.17 WW\_LPHDSYS

LPHD class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LPHD	WW_LPHDSYS	Physical device information		
Data				
Common Logical Node Information				
PhyNam	WW_DPL1	Physical device name plate	M	
PhyHealth	WW_INS3	Physical Device Health	M	
Proxy	WW_SPS1	Indicates if this LN is a proxy	M	

### 2.2.18 WW\_MMXU7

MMXU class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
MMXU	WW_MMXU7	Measurement		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Measured values				
A	WW_WYE2	Phase currents (IL1, IL2, IL3)	O	

### 2.2.19 WW\_MSTA1

MSTA class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
MSTA	WW_MSTA1	Metering Statistics		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	

## Logical Nodes

NamPlt	WW_LPL1	Name plate	M	
<b>Metered values</b>				
AvAPhA	WW_MV1	Average current IL1	E	
AvAPhB	WW_MV1	Average current IL2	E	
AvAPhC	WW_MV1	Average current IL3	E	
MaxAPhA	WW_MV1	Maximum current IL1	E	
MaxAPhB	WW_MV1	Maximum current IL2	E	
MaxAPhC	WW_MV1	Maximum current IL3	E	
MinAPhA	WW_MV1	Minimum current IL1	E	
MinAPhB	WW_MV1	Minimum current IL2	E	
MinAPhC	WW_MV1	Minimum current IL3	E	

### 2.2.20 WW\_PHAR1

<b>PHAR class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PHAR	WW_PHAR1	Harmonic restraint		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
Str	WW_ACD1	Start	M	

### 2.2.21 WW\_PSO1

<b>PSOF class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PSOF	WW_PSO1	Protection Switch Onto fault		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL3	Name plate	M	
<b>Status Information</b>				
Str	WW_ACD1	Start	M	

This is new logical node.

### 2.2.22 WW\_PTOC1

<b>PTOC class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOC	WW_PTOC1	Time overcurrent		
<b>Data</b>				



## Logical Nodes

Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.23 WW\_PTOC3

PTOC class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOC	WW_PTOC3	Time overcurrent		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.24 WW\_PTOC4

PTOC class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOC	WW_PTOC4	Time overcurrent		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.25 WW\_PTTR3

PTTR class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTTR	WW_PTTR3	Thermal overload		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only

## Logical Nodes

Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
Op	WW_ACT1	Operate	M	

### 2.2.26 WW\_RBRF1

<b>RBRF class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
RBRF	WW_RBRF1	Breaker failure		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
Str	WW_ACD1	Start	M	
OpEx	WW_ACT1	Breaker failure trip	M	

### 2.2.27 WW\_RDRE1

<b>RDRE class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
RDRE	WW_RDRE1	Disturbance recorder function		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
RcdMade	WW_SPS1	Recording made	M	
FltNum	WW_INS2	Fault Number	M	
GriFltNum	WW_INS2	Grid Fault Number	O	
RcdStr	WW_SPS1	Recording startet	O	

### 2.2.28 WW\_RREC1

<b>RREC class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
RREC	WW_RREC1	Autoreclosing		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	

## Logical Nodes

Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
Op	WW_ACT1	Operate (used here to provide close to XCBR)	M	
AutoRecSt	WW_INS4	Autoreclosing Status	M	

### 2.2.29 WW\_SCBR1

<b>RBRF class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
SCBR	WW_SCBR1	Circuit breaker monitoring		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<b>Status Information</b>				
TrCctAlm	WW_ACD1	Alarm signal	E	

### 2.2.30 WW\_XCBR2

<b>XCBR class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
XCBR	WW_XCBR2	Circuit Breaker		
<b>Data</b>				
<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Loc	WW_SPS1	Local operation	M	
OpCnt	WW_INS2	Operation counter	M	
<b>Status Information</b>				
CBOPcap	WW_INS5	Circuit breaker operating capability	M	
<b>Controls</b>				
Pos	WW_DPC1	Switch position	M	
BlkOpn	WW_SPC1	Block opening	M	
BlkCls	WW_SPC1	Block closing	M	

### 2.2.31 WW\_XSWI1

<b>XSWI class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
XSWI	WW_XSWI1	Circuit switch		
<b>Data</b>				

## Logical Nodes

---

<b>Common Logical Node Information</b>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Loc	WW_SPS1	Local operation	M	
OpCnt	WW_INS2	Operation counter	M	
<b>Status Information</b>				
SwTyp	WW_INS5	Switch type	M	
SwOpCap	WW_INS5	Switch operating capability	M	
<b>Controls</b>				
Pos	WW_DPC1	Switch position	M	
BlkOpn	WW_SPC1	Block opening	M	
BlkCls	WW_SPC1	Block closing	M	

### 3. Common Data Class

#### 3.1. Common Data Class definitions

The following table contains the list of Common Data Class implemented in the device:

<b>CDC Type</b>	<b>CDC Class</b>	<b>Description</b>
WW_ACD1	ACD	Directional Protection activation information
WW_ACT1	ACT	Protection Activation Information
WW_analogValue1	analogValue	Analogue value
WW_Cancel1	Cancel	Cancel operating
WW_CMV2	CMV	Complex measured value
WW_DPC1	DPC	Controllable Double Point
WW_DPC2	DPC	Controllable Double Point
WW_DPL1	DPL	Device name plate
WW_INC1	INC	Controllable Integer Status
WW_INS1	INS	Integer Status
WW_INS2	INS	Integer Status
WW_INS3	INS	Integer Status
WW_INS4	INS	Integer Status
WW_INS5	INS	Integer Status
WW_LPL1	LPL	Logical node name plate
WW_LPL2	LPL	Logical node name plate
WW_LPL3	LPL	Logical node name plate
WW_MV1	MV	Measured Value
WW_Oper1	Oper	Start/Select operating
WW_origin1	origin	Originator
WW_SPC1	SPC	Controllable Single Point
WW_SPC2	SPC	Controllable Single Point
WW_SPS1	SPS	Single Point Status
WW_units1	units	Unit definition
WW_vector1	vector	Vector definition
WW_WYE2	WYE	Phase to ground related measured values of a three phase system

## Common Data Class

---

### 3.1.1 WW\_ACD1

ACD class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
General	BOOLEAN	ST	dchg		M	
dirGeneral	Enum	ST	dchg	ACDdir	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.2 WW\_ACT1

ACT class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
General	BOOLEAN	ST	dchg		M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.3 WW\_CMV2

CMV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
cVal	Struct	MX		WW_vector1	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
instCVal	Struct	MX		WW_vector1	O	
units	Struct	CF		WW_units1	O	
db	INT32U	CF			O	
dbAng	INT32U	CF			E	

### 3.1.4 WW\_DPC1

DPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Dbpos	ST	dchg	Dbpos	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
ctlModel	Enum	CF		ctlmodel	M	

### 3.1.5 WW\_DPC2

DPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
origin	Struct	ST		WW_origin1	O	
ctlNum	INT8U	ST			O	
stVal	Dbpos	ST	dchg	Dbpos	M	

## Common Data Class

q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
stSeld	BOOLEAN	ST	dchg		O	
ctlModel	Enum	CF		ctlmodel	M	
sboTimeout	INT32U	CF			O	
sboClass	Enum	CF		sboClass	O	
cdcNs	VisString255	EX			O	
Oper	Struct	CO		WW_Oper1		
SBOw	Struct	CO		WW_Oper1		
Cancel	Struct	CO		WW_Cancel1		

### 3.1.6 WW\_DPL1

DPL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
vendor	VisString255	DC			M	

### 3.1.7 WW\_INC1

INC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Enum	ST	dchg	Mode	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
ctlModel	Enum	CF		ctlModel	M	

### 3.1.8 WW\_INS1

INS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Enum	ST	dchg	Behaviour	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.9 WW\_INS2

INS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	INT32	ST	dchg		M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.10 WW\_INS3

INS class						
-----------	--	--	--	--	--	--

## Common Data Class

Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Enum	ST	dchg	AutoRecSt	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.11 WW\_INS4

INS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Enum	ST	dchg	Health	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.12 WW\_INS5

INS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	Enum	ST	dchg	CBOpCap	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.13 WW\_LPL1

LPL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
vendor	visString255	DC			M	
swRev	visString255	DC			M	
d	visString255	DC			M	

### 3.1.14 WW\_LPL2

LPL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
vendor	visString255	DC			M	
swRev	visString255	DC			M	
d	visString255	DC			M	
ldNs	visString255	EX				

### 3.1.15 WW\_LPL3

LPL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
vendor	visString255	DC			M	
swRev	visString255	DC			M	



## Common Data Class

d	visString255	DC			M	
LnNS	visString255	EX				

### 3.1.16 WW\_MV1

MV class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
mag	Struct	MX		WW_analogValue1	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
units	Struct	CF		WW_units1	O	
db	INT32U	CF			O	
d	visString255	DC			O	
dataNs	visString255	DC			O	

### 3.1.17 WW\_SPC1

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	BOOLEAN	ST	dchg		M	
q	Quality	ST	dchg		M	
t	Timestamp	ST			M	
ctlModel	Enum	CF		ctlModel	M	

### 3.1.18 WW\_SPC2

SPC class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
Oper	Struct	CO		WW_Oper1		
stVal	BOOLEAN	ST	dchg		M	
q	Quality	ST	dchg		M	
t	Timestamp	ST			M	
ctlModel	Enum	CF		ctlModel	M	

### 3.1.19 WW\_SPS1

SPS class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
stVal	BOOLEAN	ST	dchg		M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.20 WW\_WYE2

WYE class						
Attribute	Attribute	FC	TrgOp	Value/Value range	M/O/E	Remarks

## Common Data Class

---

Name	Type					
phsAB	WW_CMV2					
phsBC	WW_CMV2					
phsCA	WW_CMV2					
neut	WW_CMV2					

### 3.2. Common Data Attributes type definitions

#### 3.2.1 WW\_analogValue1

analogValue class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
f	FLOAT32	MX			M	

#### 3.2.2 WW\_Cancel1

Cancel class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
ctlval	BOOLEAN	CO			M	
origin	Struct	ST		WW_origin1	O	
ctlNum	INT8U	ST			O	
T	Timestamp	CO			O	
Test	BOOLEAN	CO			O	

#### 3.2.3 WW\_Oper1

Oper class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
ctlval	BOOLEAN	CO			M	
origin	Struct	ST		WW_origin1	O	
ctlNum	INT8U	ST			O	
T	Timestamp	CO			O	
Test	BOOLEAN	CO			O	
Check	Check	CO			O	

#### 3.2.4 WW\_origin1

origin class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
orCat	Enum	ST		orCategory	M	
orIdent	Octet64	ST			M	

#### 3.2.5 WW\_units1

unit class						
Attribute	Attribute	FC	TrgOp	Value/Value range	M/O/E	Remarks

## Common Data Class

---

Name	Type					
SIUnit	Enum			SIUnit	M	
multiplier	Enum			multiplier	O	

### 3.2.6 WW\_vector1

vector class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
mag	Struct			WW_analogValue1	M	
ang	Struct			WW_analogValue1	O	

## 3.3. Enumerated type definitions

### 3.3.1 AutoRecSt

Ordinal	Semantic
1	Ready
2	InProgress
3	Successful

### 3.3.2 Beh

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

### 3.3.3 CBOpCap

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

### 3.3.4 ctlModel

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

## Common Data Class

---

### 3.3.5 Dbpos

Ordinal	Semantic
1	intermediate
2	off
3	on
4	bad

### 3.3.6 dir

Ordinal	Semantic
1	unknown
2	forward
3	backward
4	both

### 3.3.7 Health

Ordinal	Semantic
1	Ok
2	Warning
3	Alarm

### 3.3.8 Mod

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

### 3.3.9 multiplier

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

## Common Data Class

---

9	G
12	T
15	P
18	E
21	Z
24	Y

### 3.3.10 orCategory

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

### 3.3.11 sboClass

Ordinal	Semantic
0	operate-once
1	operate-many

### 3.3.12 SIUnit

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

## Common Data Class

---

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
64	phi
65	cos(phi)
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

## 4. Appendix – Register Maps

LDevice::CTRL

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
CILO1* (WW_CILO1 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	EnaOpn	SG[1] . Interl OFF
	EnaCls	SG[1] . Interl ON
CSWI1* (WW_CSWI1 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	Loc	
	Pos	SG[1] . Pos
LLN0 (WW_LLNOCON )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDCON )		
	PhyNam	
	PhyHealth	
	Proxy	
TCSSCBR1 (WW_SCBR1 )		
	Mod	TCS - 74TC . active
	Beh	
	Health	
	NamPlt	
	TrCctAlm	TCS - 74TC . Alarm
XCBR1* (WW_XCBR2 )		

## Appendix – Register Maps

	Mod	
	Beh	
	Health	
	NamPlt	
	Loc	
	OpCnt	
	Pos	SG[1] . Pos
	BlkOpn	
	BlkCls	
	CBOpCap	

### XSWI1\* (WW\_XSWI1 )

	Mod	
	Beh	
	Health	
	NamPlt	
	Loc	
	OpCnt	
	Pos	SG[1] . Pos
	BlkOpn	
	BlkCls	
	SwTyp	
	SwOpCap	

LDevice::DR

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
LLNO (WW_LLNOREC )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDREC )		
	PhyNam	
	PhyHealth	
	Proxy	
RDRE1 (WW_RDRE1 )		
	Mod	
	Beh	



## Appendix – Register Maps

	Health	
	NamPlt	
	RcdMade	Disturb rec . recording
	FltNum	
	GriFltNum	
	RcdStr	Disturb rec . recording

LDevice::EXT

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
COUTGGIO1 (WW_GGIO4 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	Ind1	IEC61850 . VirtOut1-I
	Ind2	IEC61850 . VirtOut2-I
	Ind3	IEC61850 . VirtOut3-I
	Ind4	IEC61850 . VirtOut4-I
	Ind5	IEC61850 . VirtOut5-I
	Ind6	IEC61850 . VirtOut6-I
	Ind7	IEC61850 . VirtOut7-I
	Ind8	IEC61850 . VirtOut8-I
	Ind9	IEC61850 . VirtOut9-I
	Ind10	IEC61850 . VirtOut10-I
	Ind11	IEC61850 . VirtOut11-I
	Ind12	IEC61850 . VirtOut12-I
	Ind13	IEC61850 . VirtOut13-I
	Ind14	IEC61850 . VirtOut14-I
	Ind15	IEC61850 . VirtOut15-I
	Ind16	IEC61850 . VirtOut16-I
	Ind17	IEC61850 . VirtOut17-I
	Ind18	IEC61850 . VirtOut18-I
	Ind19	IEC61850 . VirtOut19-I
	Ind20	IEC61850 . VirtOut20-I
	Ind21	IEC61850 . VirtOut21-I
	Ind22	IEC61850 . VirtOut22-I
	Ind23	IEC61850 . VirtOut23-I

## Appendix – Register Maps

	Ind24	IEC61850 . VirtOut24-I
	Ind25	IEC61850 . VirtOut25-I
	Ind26	IEC61850 . VirtOut26-I
	Ind27	IEC61850 . VirtOut27-I
	Ind28	IEC61850 . VirtOut28-I
	Ind29	IEC61850 . VirtOut29-I
	Ind30	IEC61850 . VirtOut30-I
	Ind31	IEC61850 . VirtOut31-I
	Ind32	IEC61850 . VirtOut32-I
CTLGGIO1 (WW_GGIO5 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	SPCSO1	
	SPCSO2	
	SPCSO3	
	SPCSO4	
	SPCSO5	
	SPCSO6	
	SPCSO7	
	SPCSO8	
	SPCSO9	
	SPCSO10	
	SPCSO11	
	SPCSO12	
	SPCSO13	
	SPCSO14	
	SPCSO15	
	SPCSO16	
	SPCSO17	
	SPCSO18	
	SPCSO19	
	SPCSO20	
	SPCSO21	
	SPCSO22	
	SPCSO23	

## Appendix – Register Maps

	SPCSO24	
	SPCSO25	
	SPCSO26	
	SPCSO27	
	SPCSO28	
	SPCSO29	
	SPCSO30	
	SPCSO31	
	SPCSO32	
EPGAPC1 (WW_GAPC1 )		
	Mod	ExP[1] . active ExP[1] . Blo TripCmd ExP[1] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	ExP[1] . Alarm
	Op	ExP[1] . Trip
EPGAPC2 (WW_GAPC1 )		
	Mod	ExP[2] . active ExP[2] . Blo TripCmd ExP[2] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	ExP[2] . Alarm
	Op	ExP[2] . Trip
EPGAPC3 (WW_GAPC1 )		
	Mod	ExP[3] . active ExP[3] . Blo TripCmd ExP[3] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	ExP[3] . Alarm
	Op	ExP[3] . Trip
EPGAPC4 (WW_GAPC1 )		
	Mod	ExP[4] . active ExP[4] . Blo TripCmd ExP[4] . ExBlo TripCmd

## Appendix – Register Maps

	Beh	
	Health	
	NamPlt	
	Str	ExP[4] . Alarm
	Op	ExP[4] . Trip
GOSINGGIO1 (WW_GGIO3 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	Ind1	
	Ind2	
	Ind3	
	Ind4	
	Ind5	
	Ind6	
	Ind7	
	Ind8	
	Ind9	
	Ind10	
	Ind11	
	Ind12	
	Ind13	
	Ind14	
	Ind15	
	Ind16	
	Ind17	
	Ind18	
	Ind19	
	Ind20	
	Ind21	
	Ind22	
	Ind23	
	Ind24	
	Ind25	
	Ind26	
	Ind27	

## Appendix – Register Maps

	Ind28	
	Ind29	
	Ind30	
	Ind31	
	Ind32	
LLN0 (WW_LLN0SYS )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDSYS )		
	PhyNam	
	PhyHealth	
	Proxy	

LDevice::MEAS

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
CMMXU1 (WW_MMXU7 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	A	CT . IL1 RMS CT . phi IL1 CT . IL2 RMS CT . phi IL2 CT . IL3 RMS CT . phi IL3 CT . IG meas RMS CT . phi IG meas CT . IG calc RMS CT . phi IG calc
CMSTA1 (WW_MSTA1 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	AvAPhsA	CT . IL1 avg
	AvAPhsB	CT . IL2 avg
	AvAPhsC	CT . IL3 avg

## Appendix – Register Maps

	MaxAPhsA	CT . IL1 max
	MaxAPhsB	CT . IL2 max
	MaxAPhsC	CT . IL3 max
	MinAPhsA	CT . IL1 min
	MinAPhsB	CT . IL2 min
	MinAPhsC	CT . IL3 min
LLNO (WW_LLNOMEA )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDMEA )		
	PhyNam	
	PhyHealth	
	Proxy	

LDevice::PROT

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
GFPTOC1 (WW_PTOC3 )		
	Mod	IG[1] - 50N, 51N . active IG[1] - 50N, 51N . Blo TripCmd IG[1] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[1] - 50N, 51N . Alarm
	Op	IG[1] - 50N, 51N . Trip
GFPTOC2 (WW_PTOC3 )		
	Mod	IG[2] - 50N, 51N . active IG[2] - 50N, 51N . Blo TripCmd IG[2] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[2] - 50N, 51N . Alarm
	Op	IG[2] - 50N, 51N . Trip
GFPTOC3 (WW_PTOC3 )		

## Appendix – Register Maps

	Mod	IG[3] - 50N, 51N . active IG[3] - 50N, 51N . Blo TripCmd IG[3] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[3] - 50N, 51N . Alarm
	Op	IG[3] - 50N, 51N . Trip
GFPTOC4 (WW_PTOC3 )		
	Mod	IG[4] - 50N, 51N . active IG[4] - 50N, 51N . Blo TripCmd IG[4] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[4] - 50N, 51N . Alarm
	Op	IG[4] - 50N, 51N . Trip
IHMI1 (WW_IHMI1 )		
	Mod	
	Beh	
	Health	
	NamPlt	
INRPHAR1 (WW_PHAR1 )		
	Mod	IH2 . active
	Beh	
	Health	
	NamPlt	
	Str	IH2 . 3-ph Blo
LLN0 (WW_LLNOPRO )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDPRO )		
	PhyNam	
	PhyHealth	
	Proxy	
PSOF1 (WW_PSOF1 )		

## Appendix – Register Maps

	Mod	SOTF . active SOTF . ExBlo SOTF . Ex rev Interl
	Beh	
	Health	
	NamPlt	
	Str	SOTF . enabled
PTOC1 (WW_PTOC1 )		
	Mod	I[1] - 50, 51 . active I[1] - 50, 51 . Blo TripCmd I[1] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[1] - 50, 51 . Alarm
	Op	I[1] - 50, 51 . Trip
PTOC2 (WW_PTOC1 )		
	Mod	I[2] - 50, 51 . active I[2] - 50, 51 . Blo TripCmd I[2] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[2] - 50, 51 . Alarm
	Op	I[2] - 50, 51 . Trip
PTOC3 (WW_PTOC1 )		
	Mod	I[3] - 50, 51 . active I[3] - 50, 51 . Blo TripCmd I[3] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[3] - 50, 51 . Alarm
	Op	I[3] - 50, 51 . Trip
PTOC4 (WW_PTOC1 )		
	Mod	I[4] - 50, 51 . active I[4] - 50, 51 . Blo TripCmd I[4] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	



## Appendix – Register Maps

	NamPlt	
	Str	I[4] - 50, 51 . Alarm
	Op	I[4] - 50, 51 . Trip
PTOC5 (WW_PTOC1 )		
	Mod	I[5] - 50, 51 . active I[5] - 50, 51 . Blo TripCmd I[5] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[5] - 50, 51 . Alarm
	Op	I[5] - 50, 51 . Trip
PTOC6 (WW_PTOC1 )		
	Mod	I[6] - 50, 51 . active I[6] - 50, 51 . Blo TripCmd I[6] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[6] - 50, 51 . Alarm
	Op	I[6] - 50, 51 . Trip
RBRF1 (WW_RBRF1 )		
	Mod	CBF - 50BF, 62BF . active CBF - 50BF, 62BF . ExBlo CBF - 50BF, 62BF . ExBlo
	Beh	
	Health	
	NamPlt	
	Str	CBF - 50BF, 62BF . running
	OpEx	CBF - 50BF, 62BF . Alarm
RREC1 (WW_RREC1 )		
	Mod	AR - 79 . active AR - 79 . ExBlo AR - 79 . ExBlo
	Beh	
	Health	
	NamPlt	
	Op	AR - 79 . CB ON Cmd
	AutoRecSt	AR - 79 . ARRecCState
TRPTR1 (WW_PTR3 )		

## Appendix – Register Maps

	Mod	ThR - 49 . active ThR - 49 . Blo TripCmd ThR - 49 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Op	ThR - 49 . Trip
ULPTOC1 (WW_PTOC4 )		
	Mod	I2>[1] - 46 . active I2>[1] - 46 . Blo TripCmd I2>[1] - 46 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I2>[1] - 46 . Alarm
	Op	I2>[1] - 46 . Trip
ULPTOC2 (WW_PTOC4 )		
	Mod	I2>[2] - 46 . active I2>[2] - 46 . Blo TripCmd I2>[2] - 46 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I2>[2] - 46 . Alarm
	Op	I2>[2] - 46 . Trip

\* Logical Node is dependent from settings in the “Device Planing”. (See 4.1 Device Planing Dependencies)

### 4.1. Device Planing Dependencies

Depending on the settings in the Device Planing section Logical Node instances will be available in the generated ICD file. The following list will give you an overview about the different selections for each Module which have an effect on the existence of a Logical Node.

Module (- ANSI/IEEE Device Number ) . Name	Value
CILO1	
SG[1] . SwitchgearType	Controlled SG
	Controlled Make Break SG
CSWI1	
	Controlled SG

## Appendix – Register Maps

---

Module ( - ANSI/IEEE Device Number ) . Name	Value
	Controlled Make Break SG
XCBR1	
	Monitored Make Break SG
	Controlled Make Break SG
XSWI1	
	Monitored SG
	Controlled SG