



High**PROTEC**

IEC 61850 | MICS

**MRU4**

Software-Version: 3.0.c

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.....	10
2.2.4	WW GGIO3.....	10
2.2.5	WW GGIO4.....	11
2.2.6	WW GGIO5.....	12
2.2.7	WW IHMI1.....	13
2.2.8	WW LLN0CON.....	13
2.2.9	WW LLN0MEA.....	13
2.2.10	WW LLN0PRO.....	13
2.2.11	WW LLN0REC.....	14
2.2.12	WW LLN0SYS.....	14
2.2.13	WW LPHDCON.....	14
2.2.14	WW LPHDMEA.....	14
2.2.15	WW LPHDPRO.....	15
2.2.16	WW LPHDREC.....	15
2.2.17	WW LPHDSYS.....	15
2.2.18	WW MMXU6.....	15
2.2.19	WW MSTA2.....	16
2.2.20	WW PFRC1.....	16
2.2.21	WW PPAM1.....	17
2.2.22	WW PTOF1.....	17
2.2.23	WW PTOV1.....	17
2.2.24	WW PTOV2.....	18
2.2.25	WW PTOV3.....	18
2.2.26	WW PTUF1.....	18
2.2.27	WW PTUV1.....	19
2.2.28	WW PTUV2.....	19

---

2.2.29	WW PTUV3.....	19
2.2.30	WW PTUV4.....	20
2.2.31	WW RBRF1.....	20
2.2.32	WW RDRE1.....	20
2.2.33	WW RSYN2.....	21
2.2.34	WW SCBR1.....	21
2.2.35	WW XCBR2.....	21
2.2.36	WW XSWI1.....	22
3.	Common Data Class.....	23
3.1.	Common Data Class definitions.....	23
3.1.1	WW ACD1.....	23
3.1.2	WW ACT1.....	24
3.1.3	WW CMV2.....	24
3.1.4	WW DEL2.....	24
3.1.5	WW DPC1.....	24
3.1.6	WW DPC2.....	25
3.1.7	WW DPL1.....	25
3.1.8	WW INC1.....	25
3.1.9	WW INS1.....	25
3.1.10	WW INS2.....	25
3.1.11	WW INS3.....	26
3.1.12	WW INS5.....	26
3.1.13	WW LPL1.....	26
3.1.14	WW LPL2.....	26
3.1.15	WW MV1.....	26
3.1.16	WW SPC1.....	27
3.1.17	WW SPC2.....	27
3.1.18	WW SPS1.....	27
3.1.19	WW WYE2.....	27
3.2.	Common Data Attributes type definitions.....	27
3.2.1	WW analogValue1.....	27
3.2.2	WW Cancel1.....	28
3.2.3	WW Oper1.....	28

---

---

3.2.4	WW origin1.....	28
3.2.5	WW units1.....	28
3.2.6	WW vector1.....	28
3.3.	Enumerated type definitions.....	29
3.3.1	Beh.....	29
3.3.2	CBOpCap.....	29
3.3.3	ctlModel.....	29
3.3.4	Dbpos.....	29
3.3.5	dir.....	29
3.3.6	Health.....	29
3.3.7	Mod.....	30
3.3.8	multiplier.....	30
3.3.9	orCategory.....	30
3.3.10	sboClass.....	31
3.3.11	SIUnit.....	31
4.	Appendix – Register Maps.....	33
4.1.	Device Planing Dependencies.....	56

## 1. Introduction

This model implementation conformance statement is applicable to the device MRU4, Version 3.0.c (Firmware-Build 28192).

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>
PFRC (Rate of change of frequency)
PPAM (Phase angle or out-of-step protection)
PTOF (Overfrequency)
PTOV (Overvoltage)
PTUF (Underfrequency)
PTUV (Undervoltage)
<b>R : Logical Nodes for protection related functions</b>
RBRF (Breaker failure)
RDRE (Disturbance recorder function)
RSYN (Synchronism-check or synchronising)
<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)

## Logical Nodes

---

<b>X : Logical Nodes for switchgear</b>
XCBR (Circuit Breaker)
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

## Logical Nodes

---

LN Type	LN Class	Description
WW_LLNOCON	LLNO	Logical Node device
WW_LLNOMEA	LLNO	Logical Node device
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_MMXU6	MMXU	Measurement
WW_MSTA2	MSTA	Metering Statistics
WW_PFRC1	PFRC	Rate of change of frequency
WW_PPAM1	PPAM	Phase angle or out-of-step protection
WW_PTOF1	PTOF	Overfrequency
WW_PTOV1	PTOV	Overvoltage
WW_PTOV2	PTOV	Overvoltage
WW_PTOV3	PTOV	Overvoltage
WW_PTUF1	PTUF	Underfrequency
WW_PTUV1	PTUV	Undervoltage
WW_PTUV2	PTUV	Undervoltage
WW_PTUV3	PTUV	Undervoltage



## Logical Nodes

LN Type	LN Class	Description
WW_PTUV4	PTUV	Undervoltage
WW_RBRF1	RBRF	Breaker failure
WW_RDRE1	RDRE	Disturbance recorder function
WW_RSYN2	RSYN	Synchronism-check or synchronising
WW_SCBR1	SCBR	Circuit breaker monitoring
WW_XCBR2	XCBR	Circuit Breaker
WW_XSWI1	XSWI	Circuit Switch

### 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	

## Logical Nodes

### 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	

### 2.2.4 WW\_GGIO3

GGIO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
GGIO		Generic process I/O		
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				
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	

## Logical Nodes

Ind21	WW_SPS1	General indication (binary input)	0	
Ind22	WW_SPS1	General indication (binary input)	0	
Ind23	WW_SPS1	General indication (binary input)	0	
Ind24	WW_SPS1	General indication (binary input)	0	
Ind25	WW_SPS1	General indication (binary input)	0	
Ind26	WW_SPS1	General indication (binary input)	0	
Ind27	WW_SPS1	General indication (binary input)	0	
Ind28	WW_SPS1	General indication (binary input)	0	
Ind29	WW_SPS1	General indication (binary input)	0	
Ind30	WW_SPS1	General indication (binary input)	0	
Ind31	WW_SPS1	General indication (binary input)	0	
Ind32	WW_SPS1	General indication (binary input)	0	

### 2.2.5 WW\_GGIO4

<b>GGIO class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
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)	0	
Ind2	WW_SPS1	General indication (binary input)	0	
Ind3	WW_SPS1	General indication (binary input)	0	
Ind4	WW_SPS1	General indication (binary input)	0	
Ind5	WW_SPS1	General indication (binary input)	0	
Ind6	WW_SPS1	General indication (binary input)	0	
Ind7	WW_SPS1	General indication (binary input)	0	
Ind8	WW_SPS1	General indication (binary input)	0	
Ind9	WW_SPS1	General indication (binary input)	0	
Ind10	WW_SPS1	General indication (binary input)	0	
Ind11	WW_SPS1	General indication (binary input)	0	
Ind12	WW_SPS1	General indication (binary input)	0	
Ind13	WW_SPS1	General indication (binary input)	0	
Ind14	WW_SPS1	General indication (binary input)	0	
Ind15	WW_SPS1	General indication (binary input)	0	
Ind16	WW_SPS1	General indication (binary input)	0	
Ind17	WW_SPS1	General indication (binary input)	0	
Ind18	WW_SPS1	General indication (binary input)	0	
Ind19	WW_SPS1	General indication (binary input)	0	
Ind20	WW_SPS1	General indication (binary input)	0	
Ind21	WW_SPS1	General indication (binary input)	0	
Ind22	WW_SPS1	General indication (binary input)	0	
Ind23	WW_SPS1	General indication (binary input)	0	
Ind24	WW_SPS1	General indication (binary input)	0	

## Logical Nodes

Ind25	WW_SPS1	General indication (binary input)	0	
Ind26	WW_SPS1	General indication (binary input)	0	
Ind27	WW_SPS1	General indication (binary input)	0	
Ind28	WW_SPS1	General indication (binary input)	0	
Ind29	WW_SPS1	General indication (binary input)	0	
Ind30	WW_SPS1	General indication (binary input)	0	
Ind31	WW_SPS1	General indication (binary input)	0	
Ind32	WW_SPS1	General indication (binary input)	0	

### 2.2.6 WW\_GGIO5

<b>GGIO class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
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>				
SPCSO1	WW_SPC2	Single point controllable status output	0	
SPCSO2	WW_SPC2	Single point controllable status output	0	
SPCSO3	WW_SPC2	Single point controllable status output	0	
SPCSO4	WW_SPC2	Single point controllable status output	0	
SPCSO5	WW_SPC2	Single point controllable status output	0	
SPCSO6	WW_SPC2	Single point controllable status output	0	
SPCSO7	WW_SPC2	Single point controllable status output	0	
SPCSO8	WW_SPC2	Single point controllable status output	0	
SPCSO9	WW_SPC2	Single point controllable status output	0	
SPCSO10	WW_SPC2	Single point controllable status output	0	
SPCSO11	WW_SPC2	Single point controllable status output	0	
SPCSO12	WW_SPC2	Single point controllable status output	0	
SPCSO13	WW_SPC2	Single point controllable status output	0	
SPCSO14	WW_SPC2	Single point controllable status output	0	
SPCSO15	WW_SPC2	Single point controllable status output	0	
SPCSO16	WW_SPC2	Single point controllable status output	0	
SPCSO17	WW_SPC2	Single point controllable status output	0	
SPCSO18	WW_SPC2	Single point controllable status output	0	
SPCSO19	WW_SPC2	Single point controllable status output	0	
SPCSO20	WW_SPC2	Single point controllable status output	0	
SPCSO21	WW_SPC2	Single point controllable status output	0	
SPCSO22	WW_SPC2	Single point controllable status output	0	
SPCSO23	WW_SPC2	Single point controllable status output	0	
SPCSO24	WW_SPC2	Single point controllable status output	0	
SPCSO25	WW_SPC2	Single point controllable status output	0	
SPCSO26	WW_SPC2	Single point controllable status output	0	
SPCSO27	WW_SPC2	Single point controllable status output	0	
SPCSO28	WW_SPC2	Single point controllable status output	0	

## Logical Nodes

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

IHMI class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
IHMI	WW_IHMI1	Human machine interface		
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	

### 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		

## Logical Nodes

---

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	
NamPlt	WW_LPL2	Name plate	M	

### 2.2.12 WW\_LLNOSYS

LLNO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
LLNO	WW_LLNOSYS	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

## Logical Nodes

LPHD	WW_LPHDMEA	Physical device information		
<b>Data</b>				
<b>Common Logical Node Information</b>				
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

<b>LPHD class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
LPHD	WW_LPHDPRO	Physical device information		
<b>Data</b>				
<b>Common Logical Node Information</b>				
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	

### 2.2.16 WW\_LPHDREC

<b>LPHD class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
LPHD	WW_LPHDREC	Physical device information		
<b>Data</b>				
<b>Common Logical Node Information</b>				
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

<b>LPHD class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
LPHD	WW_LPHDSYS	Physical device information		
<b>Data</b>				
<b>Common Logical Node Information</b>				
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\_MMXU6

<b>MMXU class</b>				
<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
MMXU	WW_MMXU5	Measurement		
<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	
Measured values				
PPV	WW_DEL2	Phase to phase voltages (UL12, UL23, UL31)	O	
PhV	WW_WYE2	Phase to ground voltages (UL1, UL2, UL3)	O	
Hz	WW_MV1	Frequency	O	

### 2.2.19 WW\_MSTA2

MSTA class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
MSTA	WW_MSTA2	Metering Statistics		
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	
Metered values				
AvVPhAB	WW_MV1	Average voltage UL12	E	
AvVPhBC	WW_MV1	Average voltage UL23	E	
AvVPhCA	WW_MV1	Average voltage UL31	E	
MaxVPhAB	WW_MV1	Maximum voltage UL12	E	
MaxVPhBC	WW_MV1	Maximum voltage UL23	E	
MaxVPhCA	WW_MV1	Maximum voltage UL31	E	
MinVPhAB	WW_MV1	Minimum voltage UL12	E	
MinVPhBC	WW_MV1	Minimum voltage UL23	E	
MinVPhCA	WW_MV1	Minimum voltage UL31	E	
AvVPhA	WW_MV1	Average voltage UL1	E	
AvVPhB	WW_MV1	Average voltage UL2	E	
AvVPhC	WW_MV1	Average voltage UL3	E	
MaxVPhA	WW_MV1	Maximum voltage UL1	E	
MaxVPhB	WW_MV1	Maximum voltage UL2	E	
MaxVPhC	WW_MV1	Maximum voltage UL3	E	
MinVPhA	WW_MV1	Minimum voltage UL1	E	
MinVPhB	WW_MV1	Minimum voltage UL2	E	
MinVPhC	WW_MV1	Minimum voltage UL3	E	

### 2.2.20 WW\_PFRC1

PFRC class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PFRC	WW_PFRC1	Rate of change of frequency		



## Logical Nodes

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	

### 2.2.21 WW\_PPAM1

PPAM class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PPAM	WW_PPAM1	Phase angle measuring		
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	

### 2.2.22 WW\_PTOF1

PTOF class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOF	WW_PTOF1	Overfrequency		
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	

### 2.2.23 WW\_PTOV1

PTOV class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOV	WW_PTOV1	Overvoltage		
Data				
Common Logical Node Information				

## 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>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.24 WW\_PTOV2

PTOV class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOV	WW_PTOV2	Overvoltage		
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	
<b>Status Information</b>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.25 WW\_PTOV3

PTOV class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTOV	WW_PTOV3	Overvoltage		
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	
<b>Status Information</b>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.26 WW\_PTUF1

PTUF class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTUF	WW_PTUF1	Underfrequency		
Data				
Common Logical Node Information				
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>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.27 WW\_PTUV1

<b>PTUV class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTUV	WW_PTUV1	Undervoltage		
<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	
Op	WW_ACT1	Operate	M	

### 2.2.28 WW\_PTUV2

<b>PTUV class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTUV	WW_PTUV2	Undervoltage		
<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	
Op	WW_ACT1	Operate	M	

### 2.2.29 WW\_PTUV3

<b>PTUV class</b>				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTUV	WW_PTUV3	Undervoltage		
<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

Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

### 2.2.30 WW\_PTUV4

PTUV class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PTUV	WW_PTUV4	Undervoltage		
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	

### 2.2.31 WW\_RBRF1

RBRF class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
RBRF	WW_RBRF1	Breaker failure		
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	
OpEx	WW_ACT1	Breaker failure trip	M	

### 2.2.32 WW\_RDRE1

RDRE class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
RDRE	WW_RDRE1	Disturbance recorder function		
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				
RcdMade	WW_SPS1	Recording made	M	

## Logical Nodes

FltNum	WW_INS2	Fault Number	M	
GriFltNum	WW_INS2	Grid Fault Number	O	
RcdStr	WW_SPS1	Recording startet	O	

### 2.2.33 WW\_RSYN2

RSYN class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
RSYN	WW_RSYN2	Synchronism-check or synchronising		
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				
Rel	WW_SPS1	Release	M	
AngInd	WW_SPS1	Phase Angle difference to high	E	
HzInd	WW_SPS1	Frequency difference to high	E	
VInd	WW_SPS1	Voltage difference to high	E	
Measured Values				
DifAngClc	WW_MV1	Phase Angle difference value	E	
DifHzClc	WW_MV1	Frequency difference value	E	
DifVClc	WW_MV1	Voltage difference value	E	

### 2.2.34 WW\_SCBR1

RBRF class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
SCBR	WW_SCBR1	Circuit breaker monitoring		
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				
TrCctAlm	WW_ACD1	Alarm signal	E	

### 2.2.35 WW\_XCBR2

XCBR class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
XCBR	WW_XCBR2	Circuit Breaker		
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	
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	

### 2.2.36 WW\_XSWI1

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

CDC Type	CDC Class	Description
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_DEL2	DEL	Delta
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_INS5	INS	Integer Status
WW_LPL1	LPL	Logical node name plate
WW_LPL2	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

##### 3.1.1 WW\_ACD1

<b>ACD class</b>
------------------

## Common Data 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\_DEL2

DEL class						
Attribute Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
phsAB	WW_CMV2					
phsBC	WW_CMV2					
phsCA	WW_CMV2					

### 3.1.5 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	



## Common Data Class

### 3.1.6 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	
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		

### 3.1.7 WW\_DPL1

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

### 3.1.8 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	

### 3.1.9 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	

### 3.1.10 WW\_INS2

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

## Common Data Class

Name	Type					
stVal	INT32	ST	dchg		M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

### 3.1.11 WW\_INS3

INS 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	

### 3.1.12 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\_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	

## Common Data Class

units	Struct	CF		WW_units1	O	
db	INT32U	CF			O	
d	visString255	DC			O	
dataNs	visString255	DC			O	

### 3.1.16 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	

### 3.1.17 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	

### 3.1.18 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	

### 3.1.19 WW\_WYE2

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

## Common Data 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 Name	Attribute Type	FC	TrgOp	Value/Value range	M/O/E	Remarks
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 Beh

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

#### 3.3.2 CBOpCap

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

#### 3.3.3 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

#### 3.3.4 Dbpos

Ordinal	Semantic
1	intermediate
2	off
3	on
4	bad

#### 3.3.5 dir

Ordinal	Semantic
1	unknown
2	forward
3	backward
4	both

#### 3.3.6 Health

Ordinal	Semantic
1	Ok
2	Warning

## Common Data Class

---

3	Alarm
---	-------

### 3.3.7 Mod

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

### 3.3.8 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
9	G
12	T
15	P
18	E
21	Z
24	Y

### 3.3.9 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

## Common Data Class

---

### 3.3.10 sboClass

Ordinal	Semantic
0	operate-once
1	operate-many

### 3.3.11 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
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

## Common Data Class

---

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	Intertripping . active Intertripping . Blo TripCmd Intertripping . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Intertripping . Alarm
	Op	Intertripping . Trip
EPGAPC2 (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
EPGAPC3 (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
EPGAPC4 (WW_GAPC1 )		
	Mod	ExP[3] . active ExP[3] . Blo TripCmd ExP[3] . ExBlo TripCmd

## Appendix – Register Maps

	Beh	
	Health	
	NamPlt	
	Str	ExP[3] . Alarm
	Op	ExP[3] . Trip
EPGAPC5 (WW_GAPC1 )		
	Mod	ExP[4] . active ExP[4] . Blo TripCmd ExP[4] . ExBlo TripCmd
	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	

## Appendix – Register Maps

	Ind20	
	Ind21	
	Ind22	
	Ind23	
	Ind24	
	Ind25	
	Ind26	
	Ind27	
	Ind28	
	Ind29	
	Ind30	
	Ind31	
	Ind32	
LLNO (WW_LLNO SYS )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHD SYS )		
	PhyNam	
	PhyHealth	
	Proxy	

LDevice::MEAS

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
LLNO (WW_LLNO MEA )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHD MEA )		
	PhyNam	
	PhyHealth	
	Proxy	
VMMXU1 (WW_MMXU6 )		
	Mod	
	Beh	

## Appendix – Register Maps

	Health	
	NamPlt	
	PPV	VT . VL12 RMS VT . phi VL12 VT . VL23 RMS VT . phi VL23 VT . VL31 RMS VT . phi VL31
	PhV	VT . VL1 RMS VT . phi VL1 VT . VL2 RMS VT . phi VL2 VT . VL3 RMS VT . phi VL3 VT . VX meas RMS VT . phi VX meas VT . VG calc RMS VT . phi VG calc
	Hz	VT . f
VMSTA1 (WW_MSTA2 )		
	Mod	
	Beh	
	Health	
	NamPlt	
	MaxVPhsAB	VT . VL12 max
	MaxVPhsBC	VT . VL23 max
	MaxVPhsCA	VT . VL31 max
	MinVPhsAB	VT . VL12 min
	MinVPhsBC	VT . VL23 min
	MinVPhsCA	VT . VL31 min
	MaxVPhsA	VT . VL1 max
	MaxVPhsB	VT . VL2 max
	MaxVPhsC	VT . VL3 max
	MinVPhsA	VT . VL1 min
	MinVPhsB	VT . VL2 min
	MinVPhsC	VT . VL3 min

LDevice::PROT

Logical Node	Data Object	Module (- ANSI/IEEE Device Number ) . Name
IHMI1 (WW_IHMI1 )		
	Mod	
	Beh	



## Appendix – Register Maps

	Health	
	NamPlt	
LLN0 (WW_LLNOPRO )		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDPRO )		
	PhyNam	
	PhyHealth	
	Proxy	
LVRTPTUV1 (WW_PTUV4 )		
	Mod	LVRT[1] - 27 . active LVRT[1] - 27 . Blo TripCmd LVRT[1] - 27 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	LVRT[1] - 27 . Alarm
	Op	LVRT[1] - 27 . Trip
LVRTPTUV2 (WW_PTUV4 )		
	Mod	LVRT[2] - 27 . active LVRT[2] - 27 . Blo TripCmd LVRT[2] - 27 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	LVRT[2] - 27 . Alarm
	Op	LVRT[2] - 27 . Trip
PFRC1* (WW_PFRC1 )		
	Mod	df/dt - 81R . active df/dt - 81R . Blo TripCmd df/dt - 81R . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	df/dt - 81R . Alarm
	Op	df/dt - 81R . Trip
PFRC2* (WW_PFRC1 )		

## Appendix – Register Maps

	Mod	delta phi - 78V . active delta phi - 78V . Blo TripCmd delta phi - 78V . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	delta phi - 78V . Alarm
	Op	delta phi - 78V . Trip
PFRC3* (WW_PFRC1 )		
	Mod	f[1] - 81 . active f[1] - 81 . Blo TripCmd f[1] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[1] - 81 . Alarm
	Op	f[1] - 81 . Trip
PFRC4* (WW_PFRC1 )		
	Mod	f[2] - 81 . active f[2] - 81 . Blo TripCmd f[2] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[2] - 81 . Alarm
	Op	f[2] - 81 . Trip
PFRC5* (WW_PFRC1 )		
	Mod	f[3] - 81 . active f[3] - 81 . Blo TripCmd f[3] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[3] - 81 . Alarm
	Op	f[3] - 81 . Trip
PFRC6* (WW_PFRC1 )		
	Mod	f[4] - 81 . active f[4] - 81 . Blo TripCmd f[4] - 81 . ExBlo TripCmd
	Beh	

## Appendix – Register Maps

	Health	
	NamPlt	
	Str	f[4] - 81 . Alarm
	Op	f[4] - 81 . Trip
PFRC7* (WW_PFRC1 )		
	Mod	f[5] - 81 . active f[5] - 81 . Blo TripCmd f[5] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[5] - 81 . Alarm
	Op	f[5] - 81 . Trip
PFRC8* (WW_PFRC1 )		
	Mod	f[6] - 81 . active f[6] - 81 . Blo TripCmd f[6] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[6] - 81 . Alarm
	Op	f[6] - 81 . Trip
PPAM1* (WW_PPAM1 )		
	Mod	df/dt - 81R . active df/dt - 81R . Blo TripCmd df/dt - 81R . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	df/dt - 81R . Alarm
	Op	df/dt - 81R . Trip
PPAM2* (WW_PPAM1 )		
	Mod	delta phi - 78V . active delta phi - 78V . Blo TripCmd delta phi - 78V . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	delta phi - 78V . Alarm

## Appendix – Register Maps

	Op	delta phi - 78V . Trip
PPAM3* (WW_PPAM1 )		
	Mod	f[1] - 81 . active f[1] - 81 . Blo TripCmd f[1] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[1] - 81 . Alarm
	Op	f[1] - 81 . Trip
PPAM4* (WW_PPAM1 )		
	Mod	f[2] - 81 . active f[2] - 81 . Blo TripCmd f[2] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[2] - 81 . Alarm
	Op	f[2] - 81 . Trip
PPAM5* (WW_PPAM1 )		
	Mod	f[3] - 81 . active f[3] - 81 . Blo TripCmd f[3] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[3] - 81 . Alarm
	Op	f[3] - 81 . Trip
PPAM6* (WW_PPAM1 )		
	Mod	f[4] - 81 . active f[4] - 81 . Blo TripCmd f[4] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[4] - 81 . Alarm
	Op	f[4] - 81 . Trip
PPAM7* (WW_PPAM1 )		

## Appendix – Register Maps

	Mod	f[5] - 81 . active f[5] - 81 . Blo TripCmd f[5] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[5] - 81 . Alarm
	Op	f[5] - 81 . Trip
PPAM8* (WW_PPAM1 )		
	Mod	f[6] - 81 . active f[6] - 81 . Blo TripCmd f[6] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[6] - 81 . Alarm
	Op	f[6] - 81 . Trip
PTOF1* (WW_PTOF1 )		
	Mod	df/dt - 81R . active df/dt - 81R . Blo TripCmd df/dt - 81R . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	df/dt - 81R . Alarm
	Op	df/dt - 81R . Trip
PTOF2* (WW_PTOF1 )		
	Mod	delta phi - 78V . active delta phi - 78V . Blo TripCmd delta phi - 78V . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	delta phi - 78V . Alarm
	Op	delta phi - 78V . Trip
PTOF3* (WW_PTOF1 )		
	Mod	f[1] - 81 . active f[1] - 81 . Blo TripCmd f[1] - 81 . ExBlo TripCmd
	Beh	

## Appendix – Register Maps

	Health	
	NamPlt	
	Str	f[1] - 81 . Alarm
	Op	f[1] - 81 . Trip
PTOF4* (WW_PTOF1 )		
	Mod	f[2] - 81 . active f[2] - 81 . Blo TripCmd f[2] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[2] - 81 . Alarm
	Op	f[2] - 81 . Trip
PTOF5* (WW_PTOF1 )		
	Mod	f[3] - 81 . active f[3] - 81 . Blo TripCmd f[3] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[3] - 81 . Alarm
	Op	f[3] - 81 . Trip
PTOF6* (WW_PTOF1 )		
	Mod	f[4] - 81 . active f[4] - 81 . Blo TripCmd f[4] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[4] - 81 . Alarm
	Op	f[4] - 81 . Trip
PTOF7* (WW_PTOF1 )		
	Mod	f[5] - 81 . active f[5] - 81 . Blo TripCmd f[5] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[5] - 81 . Alarm

## Appendix – Register Maps

	Op	f[5] - 81 . Trip
PTOF8* (WW_PTOF1 )		
	Mod	f[6] - 81 . active f[6] - 81 . Blo TripCmd f[6] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[6] - 81 . Alarm
	Op	f[6] - 81 . Trip
PTOV1* (WW_PTOV2 )		
	Mod	V[1] - 27, 59 . active V[1] - 27, 59 . Blo TripCmd V[1] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[1] - 27, 59 . Alarm
	Op	V[1] - 27, 59 . Trip
PTOV2* (WW_PTOV2 )		
	Mod	V[2] - 27, 59 . active V[2] - 27, 59 . Blo TripCmd V[2] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[2] - 27, 59 . Alarm
	Op	V[2] - 27, 59 . Trip
PTOV3* (WW_PTOV2 )		
	Mod	V[3] - 27, 59 . active V[3] - 27, 59 . Blo TripCmd V[3] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[3] - 27, 59 . Alarm
	Op	V[3] - 27, 59 . Trip
PTOV4* (WW_PTOV2 )		

## Appendix – Register Maps

	Mod	V[4] - 27, 59 . active V[4] - 27, 59 . Blo TripCmd V[4] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[4] - 27, 59 . Alarm
	Op	V[4] - 27, 59 . Trip
PTOV5* (WW_PTOV2 )		
	Mod	V[5] - 27, 59 . active V[5] - 27, 59 . Blo TripCmd V[5] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[5] - 27, 59 . Alarm
	Op	V[5] - 27, 59 . Trip
PTOV6* (WW_PTOV2 )		
	Mod	V[6] - 27, 59 . active V[6] - 27, 59 . Blo TripCmd V[6] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[6] - 27, 59 . Alarm
	Op	V[6] - 27, 59 . Trip
PTUF1* (WW_PTUF1 )		
	Mod	df/dt - 81R . active df/dt - 81R . Blo TripCmd df/dt - 81R . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	df/dt - 81R . Alarm
	Op	df/dt - 81R . Trip
PTUF2* (WW_PTUF1 )		
	Mod	delta phi - 78V . active delta phi - 78V . Blo TripCmd delta phi - 78V . ExBlo TripCmd
	Beh	



## Appendix – Register Maps

	Health	
	NamPlt	
	Str	delta phi - 78V . Alarm
	Op	delta phi - 78V . Trip
PTUF3* (WW_PTUF1 )		
	Mod	f[1] - 81 . active f[1] - 81 . Blo TripCmd f[1] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[1] - 81 . Alarm
	Op	f[1] - 81 . Trip
PTUF4* (WW_PTUF1 )		
	Mod	f[2] - 81 . active f[2] - 81 . Blo TripCmd f[2] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[2] - 81 . Alarm
	Op	f[2] - 81 . Trip
PTUF5* (WW_PTUF1 )		
	Mod	f[3] - 81 . active f[3] - 81 . Blo TripCmd f[3] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[3] - 81 . Alarm
	Op	f[3] - 81 . Trip
PTUF6* (WW_PTUF1 )		
	Mod	f[4] - 81 . active f[4] - 81 . Blo TripCmd f[4] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[4] - 81 . Alarm

## Appendix – Register Maps

	Op	f[4] - 81 . Trip
PTUF7* (WW_PTUF1 )		
	Mod	f[5] - 81 . active f[5] - 81 . Blo TripCmd f[5] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[5] - 81 . Alarm
	Op	f[5] - 81 . Trip
PTUF8* (WW_PTUF1 )		
	Mod	f[6] - 81 . active f[6] - 81 . Blo TripCmd f[6] - 81 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	f[6] - 81 . Alarm
	Op	f[6] - 81 . Trip
PTUV1* (WW_PTUV2 )		
	Mod	V[1] - 27, 59 . active V[1] - 27, 59 . Blo TripCmd V[1] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[1] - 27, 59 . Alarm
	Op	V[1] - 27, 59 . Trip
PTUV2* (WW_PTUV2 )		
	Mod	V[2] - 27, 59 . active V[2] - 27, 59 . Blo TripCmd V[2] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[2] - 27, 59 . Alarm
	Op	V[2] - 27, 59 . Trip
PTUV3* (WW_PTUV2 )		

## Appendix – Register Maps

	Mod	V[3] - 27, 59 . active V[3] - 27, 59 . Blo TripCmd V[3] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[3] - 27, 59 . Alarm
	Op	V[3] - 27, 59 . Trip
PTUV4* (WW_PTUV2 )		
	Mod	V[4] - 27, 59 . active V[4] - 27, 59 . Blo TripCmd V[4] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[4] - 27, 59 . Alarm
	Op	V[4] - 27, 59 . Trip
PTUV5* (WW_PTUV2 )		
	Mod	V[5] - 27, 59 . active V[5] - 27, 59 . Blo TripCmd V[5] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[5] - 27, 59 . Alarm
	Op	V[5] - 27, 59 . Trip
PTUV6* (WW_PTUV2 )		
	Mod	V[6] - 27, 59 . active V[6] - 27, 59 . Blo TripCmd V[6] - 27, 59 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V[6] - 27, 59 . Alarm
	Op	V[6] - 27, 59 . Trip
RBRF1 (WW_RBRF1 )		
	Mod	CBF - 62BF . active CBF - 62BF . ExBlo CBF - 62BF . ExBlo
	Beh	

## Appendix – Register Maps

	Health	
	NamPlt	
	Str	CBF - 62BF . running
	OpEx	CBF - 62BF . Alarm
RSYN1 (WW_RSYN2 )		
	Mod	Sync - 25 . active Sync - 25 . ExBlo Sync - 25 . ExBlo
	Beh	
	Health	
	NamPlt	
	Rel	Sync - 25 . Ready to Close
	AngInd	Sync - 25 . AngleDiffTooHigh
	HzInd	Sync - 25 . SlipTooHigh
	VInd	Sync - 25 . VDiffTooHigh
	DifAngClc	Sync - 25 . Angle Diff
	DifHzClc	Sync - 25 . Slip Freq
	DifVClc	Sync - 25 . Volt Diff
VAPTOV1* (WW_PTOV3 )		
	Mod	V012[1] - 47 . active V012[1] - 47 . Blo TripCmd V012[1] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[1] - 47 . Alarm
	Op	V012[1] - 47 . Trip
VAPTOV2* (WW_PTOV3 )		
	Mod	V012[2] - 47 . active V012[2] - 47 . Blo TripCmd V012[2] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[2] - 47 . Alarm
	Op	V012[2] - 47 . Trip
VAPTOV3* (WW_PTOV3 )		

## Appendix – Register Maps

	Mod	V012[3] - 47 . active V012[3] - 47 . Blo TripCmd V012[3] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[3] - 47 . Alarm
	Op	V012[3] - 47 . Trip
VAPTOV4* (WW_PTOV3 )		
	Mod	V012[4] - 47 . active V012[4] - 47 . Blo TripCmd V012[4] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[4] - 47 . Alarm
	Op	V012[4] - 47 . Trip
VAPTOV5* (WW_PTOV3 )		
	Mod	V012[5] - 47 . active V012[5] - 47 . Blo TripCmd V012[5] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[5] - 47 . Alarm
	Op	V012[5] - 47 . Trip
VAPTOV6* (WW_PTOV3 )		
	Mod	V012[6] - 47 . active V012[6] - 47 . Blo TripCmd V012[6] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[6] - 47 . Alarm
	Op	V012[6] - 47 . Trip
VAPTUV1* (WW_PTUV3 )		
	Mod	V012[1] - 47 . active V012[1] - 47 . Blo TripCmd V012[1] - 47 . ExBlo TripCmd
	Beh	

## Appendix – Register Maps

	Health	
	NamPlt	
	Str	V012[1] - 47 . Alarm
	Op	V012[1] - 47 . Trip
VAPTUV2* (WW_PTUV3 )		
	Mod	V012[2] - 47 . active V012[2] - 47 . Blo TripCmd V012[2] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[2] - 47 . Alarm
	Op	V012[2] - 47 . Trip
VAPTUV3* (WW_PTUV3 )		
	Mod	V012[3] - 47 . active V012[3] - 47 . Blo TripCmd V012[3] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[3] - 47 . Alarm
	Op	V012[3] - 47 . Trip
VAPTUV4* (WW_PTUV3 )		
	Mod	V012[4] - 47 . active V012[4] - 47 . Blo TripCmd V012[4] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[4] - 47 . Alarm
	Op	V012[4] - 47 . Trip
VAPTUV5* (WW_PTUV3 )		
	Mod	V012[5] - 47 . active V012[5] - 47 . Blo TripCmd V012[5] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[5] - 47 . Alarm

## Appendix – Register Maps

	Op	V012[5] - 47 . Trip
VAPTUV6* (WW_PTUV3 )		
	Mod	V012[6] - 47 . active V012[6] - 47 . Blo TripCmd V012[6] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	V012[6] - 47 . Alarm
	Op	V012[6] - 47 . Trip
VSPTOV1* (WW_PTOV1 )		
	Mod	VG[1] - 27A, 59N,A . active VG[1] - 27A, 59N,A . Blo TripCmd VG[1] - 27A, 59N,A . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	VG[1] - 27A, 59N,A . Alarm
	Op	VG[1] - 27A, 59N,A . Trip
VSPTOV2* (WW_PTOV1 )		
	Mod	VG[2] - 27A, 59N,A . active VG[2] - 27A, 59N,A . Blo TripCmd VG[2] - 27A, 59N,A . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	VG[2] - 27A, 59N,A . Alarm
	Op	VG[2] - 27A, 59N,A . Trip
VSPTUV1* (WW_PTUV1 )		
	Mod	VG[1] - 27A, 59N,A . active VG[1] - 27A, 59N,A . Blo TripCmd VG[1] - 27A, 59N,A . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	VG[1] - 27A, 59N,A . Alarm
	Op	VG[1] - 27A, 59N,A . Trip
VSPTUV2* (WW_PTUV1 )		

## Appendix – Register Maps

	Mod	VG[2] - 27A, 59N,A . active VG[2] - 27A, 59N,A . Blo TripCmd VG[2] - 27A, 59N,A . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	VG[2] - 27A, 59N,A . Alarm
	Op	VG[2] - 27A, 59N,A . 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
	Controlled Make Break SG
XCBR1	
	Monitored Make Break SG
	Controlled Make Break SG
XSWI1	
	Monitored SG
	Controlled SG
PFRC1	
df/dt - 81R . Mode	use
PFRC3	
f[1] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PFRC4	



## Appendix – Register Maps

Module ( - ANSI/IEEE Device Number ) . Name	Value
f[2] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PFRC5	
f[3] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PFRC6	
f[4] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PFRC7	
f[5] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PFRC8	
f[6] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT
	f> and DF/DT
	df/dt
PPAM2	
delta phi - 78V . Mode	use
PPAM3	
f[1] - 81 . Mode	delta phi
PPAM4	
f[2] - 81 . Mode	delta phi
PPAM5	

## Appendix – Register Maps

Module ( - ANSI/IEEE Device Number ) . Name	Value
f[3] - 81 . Mode	delta phi
PPAM6	
f[4] - 81 . Mode	delta phi
PPAM7	
f[5] - 81 . Mode	delta phi
PPAM8	
f[6] - 81 . Mode	delta phi
PTOF3	
f[1] - 81 . Mode	f>
PTOF4	
f[2] - 81 . Mode	f>
PTOF5	
f[3] - 81 . Mode	f>
PTOF6	
f[4] - 81 . Mode	f>
PTOF7	
f[5] - 81 . Mode	f>
PTOF8	
f[6] - 81 . Mode	f>
PTOV1	
V[1] - 27, 59 . Mode	V>
PTOV2	
V[2] - 27, 59 . Mode	V>
PTOV3	
V[3] - 27, 59 . Mode	V>
PTOV4	
V[4] - 27, 59 . Mode	V>
PTOV5	
V[5] - 27, 59 . Mode	V>
PTOV6	
V[6] - 27, 59 . Mode	V>
PTUF3	
f[1] - 81 . Mode	f<
PTUF4	
f[2] - 81 . Mode	f<
PTUF5	

## Appendix – Register Maps

Module ( - ANSI/IEEE Device Number ) . Name	Value
f[3] - 81 . Mode	f<
PTUF6	
f[4] - 81 . Mode	f<
PTUF7	
f[5] - 81 . Mode	f<
PTUF8	
f[6] - 81 . Mode	f<
PTUV1	
V[1] - 27, 59 . Mode	V<
PTUV2	
V[2] - 27, 59 . Mode	V<
PTUV3	
V[3] - 27, 59 . Mode	V<
PTUV4	
V[4] - 27, 59 . Mode	V<
PTUV5	
V[5] - 27, 59 . Mode	V<
PTUV6	
V[6] - 27, 59 . Mode	V<
VAPTOV1	
V012[1] - 47 . Mode	V1>
	V2>
VAPTOV2	
V012[2] - 47 . Mode	V1>
	V2>
VAPTOV3	
V012[3] - 47 . Mode	V1>
	V2>
VAPTOV4	
V012[4] - 47 . Mode	V1>
	V2>
VAPTOV5	
V012[5] - 47 . Mode	V1>
	V2>
VAPTOV6	
V012[6] - 47 . Mode	V1>

## Appendix – Register Maps

---

Module ( - ANSI/IEEE Device Number ) . Name	Value
	V2>
VAPTUV1	
V012[1] - 47 . Mode	V1<
VAPTUV2	
V012[2] - 47 . Mode	V1<
VAPTUV3	
V012[3] - 47 . Mode	V1<
VAPTUV4	
V012[4] - 47 . Mode	V1<
VAPTUV5	
V012[5] - 47 . Mode	V1<
VAPTUV6	
V012[6] - 47 . Mode	V1<
VSPTOV1	
VG[1] - 27A, 59N,A . Mode	V>
VSPTOV2	
VG[2] - 27A, 59N,A . Mode	V>
VSPTUV1	
VG[1] - 27A, 59N,A . Mode	V<
VSPTUV2	
VG[2] - 27A, 59N,A . Mode	V<