

# IEC 61850 – MICS

High **PROTEC** | PROTECTION TECHNOLOGY  
MADE SIMPLE

MRU4 |

Model Implementation Conformance Statement (MICS)

UCA International Users Group Testing Sub Committee

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# 1 Introduction

This model implementation conformance statement is applicable to the MRU4 version 3.7.

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>
<b>LLNO</b> (Logical Node device)
<b>LPHD</b> (Physical device)
<b>P: Logical Nodes for protection functions</b>
<b>PFRC</b> (Rate of change of frequency)
<b>PPAM</b> (Phase angle or out-of-step protection)
<b>PTOF</b> (Overfrequency)
<b>PTOV</b> (Overvoltage)
<b>PTUF</b> (Underfrequency)
<b>PTUV</b> (Undervoltage)
<b>R: Logical Nodes for protection related functions</b>
<b>RBRF</b> (Breaker failure)
<b>RDRE</b> (Disturbance recorder function)
<b>RSYN</b> (Synchronism-check or synchronising)
<b>G: Logical Nodes for generic references</b>
<b>GAPC</b> (Generic automatic process control)
<b>GGIO</b> (Generic process I/O)
<b>M: Logical Nodes for metering and measurement</b>
<b>MMXU</b> (Measurement)
<b>MSTA</b> (Metering Statistics)
<b>X: Logical Nodes for switchgear</b>
<b>XCBR</b> (Circuit Breaker)
<b>XSWI</b> (Circuit Switch)
<b>C: Logical Nodes for control</b>
<b>CILO</b> (Interlocking)
<b>CSWI</b> (Switch controller)
<b>I: Logical Nodes for interfacing and archiving</b>
<b>IHMI</b> (Human machine interface)

## 2 Logical Nodes

### 2.1 Logical Nodes List

#### **S: Logical Nodes for sensors and monitoring**

**SCBR** (Circuit breaker monitoring)



## 2.2 Logical Node Definitions

Abbreviations used in the following table:

- **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_GGIO10	GGIO	Generic process I/O
WW_GGIO11	GGIO	Generic process I/O
WW_GGIO14	GGIO	Generic process I/O
WW_GGIO4	GGIO	Generic process I/O
WW_IHMI1	IHMI	Human machine interface
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
WW_RBRF1	RBRF	Breaker failure

## 2 Logical Nodes

### 2.2 Logical Node Definitions

<b>LN Type</b>	<b>LN Class</b>	<b>Description</b>
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

## 2.3 WW\_CILO1

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

## 2.4 WW\_CSWI1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>CSWI class</b>				
CSWI	WW_CSWI1	Switch Controller		
<b>Data</b>				
<i>Common Logical Node Information</i>				
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	
<i>Controls</i>				
Pos	WW_DPC2	Switch position	M	

## 2.5 WW\_GAPC1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>GAPC class</b>				
GAPC	WW_GAPC1	Generic automatic process control		

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>Data</b>				
<i>Common Logical Node Information</i>				
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	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.6 WW\_GGIO4

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>GGIO class</b>				
GGIO	WW_GGIO4	Generic process I/O		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
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	

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
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	

## 2.7 WW\_GGIO10

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>GGIO class</b>				
GGIO	WW_GGI10	Generic process I/O		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Ind1	WW_SPS1	General indication (binary input)	O	
Ind2	WW_SPS1	General indication (binary input)	O	

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
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	
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	

## 2.8 WW\_GGIO11

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

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
GGIO	WW_GGI11	Generic process I/O		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
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	

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
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	

## 2.9 WW\_GGIO14

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>GGIO class</b>				
GGIO	WW_GGI14	Generic process I/O		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
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	



Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
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	

## 2.10 WW\_IHMI1

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

## 2.11 WW\_LLNOCON

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>LLNO class</b>				
LLNO	WW_LLNOCON	Logical Node device		
<b>Data</b>				
<i>Common Logical Node Information</i>				

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

## 2.12 WW\_LLNOMEA

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

## 2.13 WW\_LLNOPRO

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

## 2.14 WW\_LLNOREC

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

## 2.15 WW\_LLNO5SYS

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>LLNO class</b>				
LLNO	WW_LLNO5SYS	Logical Node device		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

## 2.16 WW\_LPHDCON

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

## 2.17 WW\_LPHDMEA

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

## 2.18 WW\_LPHDPRO

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

## 2.19 WW\_LPHDREC

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

## 2.20 WW\_LPHDSYS

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

## 2.21 WW\_MMXU6

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>MMXU class</b>				
MMXU	WW_MMXU6	Measurement		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Measured values</i>				
PPV	WW_DEL2	Phase to phase voltages (VL12, VL23, VL31)	O	
PhV	WW_WYE2	Phase to ground voltages (VL1, VL2, VL3)	O	
Hz	WW_MV1	Frequency	O	

## 2.22 WW\_MSTA2

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>MSTA class</b>				
MSTA	WW_MSTA2	Metering Statistics		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Metered values</i>				
AvVPhAB	WW_MV1	Average voltage VL12	E	
AvVPhBC	WW_MV1	Average voltage VL23	E	
AvVPhCA	WW_MV1	Average voltage VL31	E	
MaxVPhAB	WW_MV1	Maximum voltage VL12	E	
MaxVPhBC	WW_MV1	Maximum voltage VL23	E	
MaxVPhCA	WW_MV1	Maximum voltage VL31	E	
MinVPhAB	WW_MV1	Minimum voltage VL12	E	
MinVPhBC	WW_MV1	Minimum voltage VL23	E	
MinVPhCA	WW_MV1	Minimum voltage VL31	E	
AvVPhA	WW_MV1	Average voltage VL1	E	
AvVPhB	WW_MV1	Average voltage VL2	E	
AvVPhC	WW_MV1	Average voltage VL3	E	
MaxVPhA	WW_MV1	Maximum voltage VL1	E	
MaxVPhB	WW_MV1	Maximum voltage VL2	E	
MaxVPhC	WW_MV1	Maximum voltage VL3	E	
MinVPhA	WW_MV1	Minimum voltage VL1	E	
MinVPhB	WW_MV1	Minimum voltage VL2	E	
MinVPhC	WW_MV1	Minimum voltage VL3	E	

## 2.23 WW\_PFC1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PFRC class</b>				
PFRC	WW_PFC1	Rate of change of frequency		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.24 WW\_PPAM1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PPAM class</b>				
PPAM	WW_PPAM1	Phase angle measuring		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.25 WW\_PTOF1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTOF class</b>				
PTOF	WW_PTOF1	Overfrequency		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.26 WW\_PTOV1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTOV class</b>				
PTOV	WW_PTOV1	Overvoltage		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.27 WW\_PTOV2

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTOV class</b>				
PTOV	WW_PTOV2	Overvoltage		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.28 WW\_PTOV3

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTOV class</b>				
PTOV	WW_PTOV3	Overvoltage		



Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.29 WW\_PTUF1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTUF class</b>				
PTUF	WW_PTUF1	Underfrequency		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.30 WW\_PTUV1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTUV class</b>				
PTUV	WW_PTUV1	Undervoltage		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.31 WW\_PTUV2

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTUV class</b>				
PTUV	WW_PTUV2	Undervoltage		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

## 2.32 WW\_PTUV3

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>PTUV class</b>				
PTUV	WW_PTUV3	Undervoltage		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
Str	WW_ACD1	Start	M	

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Op	WW_ACT1	Operate	M	

## 2.33 WW\_RBRF1

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

## 2.34 WW\_RDRE1

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

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
RcdStr	WW_SPS1	Recording started	O	

## 2.35 WW\_RSYN2

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>RSYN class</b>				
RSYN	WW_RSYN2	Synchronism-check or synchronising		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
<i>Status Information</i>				
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	
<i>Measured Values</i>				
DifAngClc	WW_MV1	Phase Angle difference value	E	
DifHzClc	WW_MV1	Frequency difference value	E	
DifVClc	WW_MV1	Voltage difference value	E	

## 2.36 WW\_SCBR1

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

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<i>Status Information</i>				
TrCctAlm	WW_ACD1	Alarm signal	E	

## 2.37 WW\_XCBR2

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>XCBR class</b>				
XCBR	WW_XCBR2	Circuit Breaker		
<b>Data</b>				
<i>Common Logical Node Information</i>				
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	
<i>Status Information</i>				
CBOpCap	WW_INS5	Circuit breaker operating capability	M	
<i>Controls</i>				
Pos	WW_DPC1	Switch position	M	
BlkOpn	WW_SPC1	Block opening	M	
BlkCls	WW_SPC1	Block closing	M	

## 2.38 WW\_XSWI1

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
<b>XSWI class</b>				
XSWI	WW_XSWI1	Circuit switch		
<b>Data</b>				
<i>Common Logical Node Information</i>				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	

2 Logical Nodes  
2.38 WW\_XSWI1

<b>Attribute Name</b>	<b>Attribute Type</b>	<b>Explanation</b>	<b>M/O/E</b>	<b>Remarks</b>
Loc	WW_SPS1	Local operation	M	
OpCnt	WW_INS2	Operation counter	M	
<i>Status Information</i>				
SwTyp	WW_INS5	Switch type	M	
SwOpCap	WW_INS5	Switch operating capability	M	
<i>Controls</i>				
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 Classes 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**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>ACD class</b>						
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**

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

**3.1.3 WW\_CMV2**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>CMV class</b>						
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**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>DEL class</b>						
phsAB	WW_CMV2					



Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
phsBC	WW_CMV2					
phsCA	WW_CMV2					

### 3.1.5 WW\_DPC1

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

### 3.1.6 WW\_DPC2

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>DPC class</b>						
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**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>DPL class</b>						
vendor	VisString255	DC			M	

**3.1.8 WW\_INC1**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>INC class</b>						
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**

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

**3.1.10 WW\_INS2**

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

**3.1.11 WW\_INS3**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>INS class</b>						
stVal	Enum	ST	dchg	AutoRecSt	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	

**3.1.12 WW\_INS5**

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

**3.1.13 WW\_LPL1**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>LPL class</b>						
vendor	visString255	DC			M	
swRev	visString255	DC			M	
d	visString255	DC			M	

**3.1.14 WW\_LPL2**

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

### 3.1.15 WW\_MV1

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>MV class</b>						
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	

### 3.1.16 WW\_SPC1

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

### 3.1.17 WW\_SPC2

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>SPC class</b>						
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**

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

**3.1.19 WW\_WYE2**

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>WYE class</b>						
phsAB	WW_CMV2					
phsBC	WW_CMV2					
phsCA	WW_CMV2					
neut	WW_CMV2					

## 3.2 Common Data Attributes Type Definitions

### 3.2.1 WW\_analogValue1

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>analogValue class</b>						
f	FLOAT32	MX			M	

### 3.2.2 WW\_Cancel1

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>Cancel class</b>						
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

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>Oper class</b>						
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

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>origin class</b>						
orCat	Enum	ST		orCategory	M	

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
orIdent	Octet64	ST			M	

### 3.2.5 WW\_units1

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>unit class</b>						
SIUnit	Enum			SIUnit	M	
multiplier	Enum			multiplier	O	

### 3.2.6 WW\_vector1

Attribute Name	Attribute Type	FC	TrgOp	Value / Value Range	M/O/E	Remarks
<b>vector class</b>						
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



Ordinal	Semantic
5	sbo-with-enhanced-security

### 3.3.5 Dbpos

Ordinal	Semantic
1	intermediate
2	off
3	on
4	bad

### 3.3.6 ACDDir

Ordinal	Semantic
0	unknown
1	forward
2	backward
3	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

Ordinal	Semantic
5	off

### 3.3.9 MotorCycle

Ordinal	Semantic
0	Trip/Off
1	Stop
2	Start
3	Run

### 3.3.10 multiplier

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

Ordinal	Semantic
21	Z
24	Y

### 3.3.11 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

### 3.3.12 sboClass

Ordinal	Semantic
0	operate-once
1	operate-many

### 3.3.13 SIUnit

Ordinal	Semantic
1	none
2	m
3	kg
4	s
5	A
6	K
7	mol
8	cd

Ordinal	Semantic
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

Ordinal	Semantic
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

### 4.1 Register Maps

Legend: \* The Logical Node is dependent on the settings in the “Device planning”. (See [↪ “4.2 Device Planning Dependencies”](#)).

#### ***LDevice::CTRL***

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>CILO1* (WW_CILO1)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	EnaOpn	SG[1] . Interl OFF
	EnaCls	SG[1] . Interl ON

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>CSWI1* (WW_CSWI1)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	Loc	
	Pos	SG[1] . Pos

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LLN0 (WW_LLNOCON)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LPHD1 (WW_LPHDCON)</b>		
	PhyNam	
	PhyHealth	
	Proxy	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>TCSSCBR1 (WW_SCBR1)</b>		
	Mod	TCS - 74TC . active
	Beh	
	Health	
	NamPlt	
	TrCctAlm	TCS - 74TC . Alarm

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>XCBR1* (WW_XCBR2)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	Loc	
	OpCnt	
	Pos	SG[1] . Pos
	BlkOpn	
	BlkCls	
	CBOpCap	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>XSWI1* (WW_XSWI1)</b>		
	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
<b>LLN0 (WW_LLNOREC)</b>		
	Mod	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LLNO (WW_LLNOREC)</b>		
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LPHD1 (WW_LPHDREC)</b>		
	PhyNam	
	PhyHealth	
	Proxy	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>RDRE1 (WW_RDRE1)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	RcdMade	Disturb rec . recording
	FltNum	
	GriFltNum	
	RcdStr	Disturb rec . recording

***LDevice::EXT***

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>COUFGGIO1 (WW_GGIO4)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	Ind1	IEC 61850 . COUTGGIO1.Ind1.stVal-I
	Ind2	IEC 61850 . COUTGGIO1.Ind2.stVal-I
	Ind3	IEC 61850 . COUTGGIO1.Ind3.stVal-I
	Ind4	IEC 61850 . COUTGGIO1.Ind4.stVal-I
	Ind5	IEC 61850 . COUTGGIO1.Ind5.stVal-I
	Ind6	IEC 61850 . COUTGGIO1.Ind6.stVal-I
	Ind7	IEC 61850 . COUTGGIO1.Ind7.stVal-I
	Ind8	IEC 61850 . COUTGGIO1.Ind8.stVal-I
	Ind9	IEC 61850 . COUTGGIO1.Ind9.stVal-I



Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>COUTGGIO1 (WW_GGIO4)</b>		
	Ind10	IEC 61850 . COUTGGIO1.Ind10.stVal-I
	Ind11	IEC 61850 . COUTGGIO1.Ind11.stVal-I
	Ind12	IEC 61850 . COUTGGIO1.Ind12.stVal-I
	Ind13	IEC 61850 . COUTGGIO1.Ind13.stVal-I
	Ind14	IEC 61850 . COUTGGIO1.Ind14.stVal-I
	Ind15	IEC 61850 . COUTGGIO1.Ind15.stVal-I
	Ind16	IEC 61850 . COUTGGIO1.Ind16.stVal-I
	Ind17	IEC 61850 . COUTGGIO1.Ind17.stVal-I
	Ind18	IEC 61850 . COUTGGIO1.Ind18.stVal-I
	Ind19	IEC 61850 . COUTGGIO1.Ind19.stVal-I
	Ind20	IEC 61850 . COUTGGIO1.Ind20.stVal-I
	Ind21	IEC 61850 . COUTGGIO1.Ind21.stVal-I
	Ind22	IEC 61850 . COUTGGIO1.Ind22.stVal-I
	Ind23	IEC 61850 . COUTGGIO1.Ind23.stVal-I
	Ind24	IEC 61850 . COUTGGIO1.Ind24.stVal-I
	Ind25	IEC 61850 . COUTGGIO1.Ind25.stVal-I
	Ind26	IEC 61850 . COUTGGIO1.Ind26.stVal-I
	Ind27	IEC 61850 . COUTGGIO1.Ind27.stVal-I
	Ind28	IEC 61850 . COUTGGIO1.Ind28.stVal-I
	Ind29	IEC 61850 . COUTGGIO1.Ind29.stVal-I
	Ind30	IEC 61850 . COUTGGIO1.Ind30.stVal-I
	Ind31	IEC 61850 . COUTGGIO1.Ind31.stVal-I
	Ind32	IEC 61850 . COUTGGIO1.Ind32.stVal-I

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>COUTGGIO2 (WW_GGIO4)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	Ind1	IEC 61850 . COUTGGIO2.Ind1.stVal-I
	Ind2	IEC 61850 . COUTGGIO2.Ind2.stVal-I
	Ind3	IEC 61850 . COUTGGIO2.Ind3.stVal-I
	Ind4	IEC 61850 . COUTGGIO2.Ind4.stVal-I
	Ind5	IEC 61850 . COUTGGIO2.Ind5.stVal-I
	Ind6	IEC 61850 . COUTGGIO2.Ind6.stVal-I
	Ind7	IEC 61850 . COUTGGIO2.Ind7.stVal-I

4 Appendix  
4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>COUTGGIO2 (WW_GGIO4)</b>		
	Ind8	IEC 61850 . COUTGGIO2.Ind8.stVal-I
	Ind9	IEC 61850 . COUTGGIO2.Ind9.stVal-I
	Ind10	IEC 61850 . COUTGGIO2.Ind10.stVal-I
	Ind11	IEC 61850 . COUTGGIO2.Ind11.stVal-I
	Ind12	IEC 61850 . COUTGGIO2.Ind12.stVal-I
	Ind13	IEC 61850 . COUTGGIO2.Ind13.stVal-I
	Ind14	IEC 61850 . COUTGGIO2.Ind14.stVal-I
	Ind15	IEC 61850 . COUTGGIO2.Ind15.stVal-I
	Ind16	IEC 61850 . COUTGGIO2.Ind16.stVal-I
	Ind17	IEC 61850 . COUTGGIO2.Ind17.stVal-I
	Ind18	IEC 61850 . COUTGGIO2.Ind18.stVal-I
	Ind19	IEC 61850 . COUTGGIO2.Ind19.stVal-I
	Ind20	IEC 61850 . COUTGGIO2.Ind20.stVal-I
	Ind21	IEC 61850 . COUTGGIO2.Ind21.stVal-I
	Ind22	IEC 61850 . COUTGGIO2.Ind22.stVal-I
	Ind23	IEC 61850 . COUTGGIO2.Ind23.stVal-I
	Ind24	IEC 61850 . COUTGGIO2.Ind24.stVal-I
	Ind25	IEC 61850 . COUTGGIO2.Ind25.stVal-I
	Ind26	IEC 61850 . COUTGGIO2.Ind26.stVal-I
	Ind27	IEC 61850 . COUTGGIO2.Ind27.stVal-I
	Ind28	IEC 61850 . COUTGGIO2.Ind28.stVal-I
	Ind29	IEC 61850 . COUTGGIO2.Ind29.stVal-I
	Ind30	IEC 61850 . COUTGGIO2.Ind30.stVal-I
	Ind31	IEC 61850 . COUTGGIO2.Ind31.stVal-I
	Ind32	IEC 61850 . COUTGGIO2.Ind32.stVal-I

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>CTLGGIO1 (WW_GGIO14)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	SPCSO1	
	SPCSO2	
	SPCSO3	
	SPCSO4	
	SPCSO5	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>CTLGGIO1 (WW_GGIO14)</b>		
	SPCSO6	
	SPCSO7	
	SPCSO8	
	SPCSO9	
	SPCSO10	
	SPCSO11	
	SPCSO12	
	SPCSO13	
	SPCSO14	
	SPCSO15	
	SPCSO16	
	SPCSO17	
	SPCSO18	
	SPCSO19	
	SPCSO20	
	SPCSO21	
	SPCSO22	
	SPCSO23	
	SPCSO24	
	SPCSO25	
	SPCSO26	
	SPCSO27	
	SPCSO28	
	SPCSO29	
	SPCSO30	
	SPCSO31	
	SPCSO32	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>EPGAPC1 (WW_GAPC1)</b>		
	Mod	Intertripping . active Intertripping . Blo TripCmd Intertripping . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Intertripping . Alarm
	Op	Intertripping . Trip

4 Appendix  
4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>EPGAPC2 (WW_GAPC1)</b>		
	Mod	Exp[1] . active Exp[1] . Blo TripCmd Exp[1] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Exp[1] . Alarm
	Op	Exp[1] . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>EPGAPC3 (WW_GAPC1)</b>		
	Mod	Exp[2] . active Exp[2] . Blo TripCmd Exp[2] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Exp[2] . Alarm
	Op	Exp[2] . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>EPGAPC4 (WW_GAPC1)</b>		
	Mod	Exp[3] . active Exp[3] . Blo TripCmd Exp[3] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Exp[3] . Alarm
	Op	Exp[3] . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>EPGAPC5 (WW_GAPC1)</b>		
	Mod	Exp[4] . active Exp[4] . Blo TripCmd Exp[4] . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Exp[4] . Alarm
	Op	Exp[4] . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>GOSINGGIO1 (WW_GGIO11)</b>		
	Mod	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>GOSINGGIO1 (WW_GGIO11)</b>		
	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	
	Ind28	
	Ind29	
	Ind30	
	Ind31	
	Ind32	

4 Appendix  
 4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>GOSINGGIO2 (WW_GGIO10)</b>		
	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	
	Ind28	
	Ind29	
	Ind30	
	Ind31	
	Ind32	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LLN0 (WW_LLNO5SYS)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LPHD1 (WW_LPHDSYS)</b>		
	PhyNam	
	PhyHealth	
	Proxy	

***LDevice::MEAS***

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LLN0 (WW_LLNOMEA)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LPHD1 (WW_LPHDMEA)</b>		
	PhyNam	
	PhyHealth	
	Proxy	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VMMXU1 (WW_MMXU6)</b>		
	Mod	
	Beh	
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VMSTA1 (WW_MSTA2)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	
	AvVPhsAB	VT . VL12 avg
	AvVPhsBC	VT . VL23 avg
	AvVPhsCA	VT . VL31 avg
	MaxVPhsAB	VT . VL12 max
	MaxVPhsBC	VT . VL23 max
	MaxVPhsCA	VT . VL31 max
	MinVPhsAB	VT . VL12 min
	MinVPhsBC	VT . VL23 min
	MinVPhsCA	VT . VL31 min
	AvVPhsA	VT . VL1 avg
	AvVPhsB	VT . VL2 avg
	AvVPhsC	VT . VL3 avg
	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
<b>IHMI1 (WW_IHMI1)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LLN0 (WW_LLNOPRO)</b>		
	Mod	
	Beh	
	Health	
	NamPlt	



Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>LPHD1 (WW_LPHDPRO)</b>		
	PhyNam	
	PhyHealth	
	Proxy	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC1* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC2* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC3* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC4* (WW_PFRC1)</b>		
	Mod	f[2] - 81 . active f[2] - 81 . Blo TripCmd f[2] - 81 . ExBlo TripCmd
	Beh	

4 Appendix  
4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC4* (WW_PFRC1)</b>		
	Health	
	NamPlt	
	Str	f[2] - 81 . Alarm
	Op	f[2] - 81 . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC5* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC6* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC7* (WW_PFRC1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC8* (WW_PFRC1)</b>		
	Mod	f[6] - 81 . active f[6] - 81 . Blo TripCmd f[6] - 81 . ExBlo TripCmd

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PFRC8* (WW_PFRC1)</b>		
	Beh	
	Health	
	NamPlt	
	Str	f[6] - 81 . Alarm
	Op	f[6] - 81 . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM1* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM2* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM3* (WW_PPAM1)</b>		
	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

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4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM4* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM5* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM6* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM7* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PPAM8* (WW_PPAM1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF1* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF2* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF3* (WW_PTOF1)</b>		
	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

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 4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF4* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF5* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF6* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF7* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOF8* (WW_PTOF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV1* (WW_PTOV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV2* (WW_PTOV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV3* (WW_PTOV2)</b>		
	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

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 4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV4* (WW_PTOV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV5* (WW_PTOV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTOV6* (WW_PTOV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF1* (WW_PTUF1)</b>		
	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



Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF2* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF3* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF4* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF5* (WW_PTUF1)</b>		
	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

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 4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF6* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF7* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUF8* (WW_PTUF1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV1* (WW_PTUV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV2* (WW_PTUV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV3* (WW_PTUV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV4* (WW_PTUV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV5* (WW_PTUV2)</b>		
	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

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4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>PTUV6* (WW_PTUV2)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>RBRF1 (WW_RBRF1)</b>		
	Mod	CBF - 62BF . active CBF - 62BF . ExBlo CBF - 62BF . ExBlo
	Beh	
	Health	
	NamPlt	
	Str	CBF - 62BF . running
	OpEx	CBF - 62BF . Alarm

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>RSYN1 (WW_RSYN2)</b>		
	Mod	Sync - 25 . active Sync - 25 . ExBlo Sync - 25 . ExBlo
	Beh	
	Health	
	NamPlt	
	Rel	Sync - 25 . Ready to Close
	AngInd	Sync - 25 . AngleDiffTooHigh
	HlzInd	Sync - 25 . SlipTooHigh
	VInd	Sync - 25 . VDiffTooHigh
	DifAngClc	Sync - 25 . Angle Diff
	DifHzClc	Sync - 25 . Slip Freq
	DifVClc	Sync - 25 . Volt Diff

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV1* (WW_PTOV3)</b>		
	Mod	V012[1] - 47 . active V012[1] - 47 . Blo TripCmd V012[1] - 47 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV1* (WW_PTOV3)</b>		
	Str	V012[1] - 47 . Alarm
	Op	V012[1] - 47 . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV2* (WW_PTOV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV3* (WW_PTOV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV4* (WW_PTOV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV5* (WW_PTOV3)</b>		
	Mod	V012[5] - 47 . active V012[5] - 47 . Blo TripCmd V012[5] - 47 . ExBlo TripCmd
	Beh	
	Health	

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4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV5* (WW_PTOV3)</b>		
	NamPlt	
	Str	V012[5] - 47 . Alarm
	Op	V012[5] - 47 . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTOV6* (WW_PTOV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV1* (WW_PTUV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV2* (WW_PTUV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV3* (WW_PTUV3)</b>		
	Mod	V012[3] - 47 . active V012[3] - 47 . Blo TripCmd V012[3] - 47 . ExBlo TripCmd
	Beh	

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV3* (WW_PTUV3)</b>		
	Health	
	NamPlt	
	Str	V012[3] - 47 . Alarm
	Op	V012[3] - 47 . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV4* (WW_PTUV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV5* (WW_PTUV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VAPTUV6* (WW_PTUV3)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VSPTOV1* (WW_PTOV1)</b>		
	Mod	VG[1] - 27A, 59N,A . active VG[1] - 27A, 59N,A . Blo TripCmd VG[1] - 27A, 59N,A . ExBlo TripCmd

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 4.1 Register Maps

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VSPTOV1* (WW_PTOV1)</b>		
	Beh	
	Health	
	NamPlt	
	Str	VG[1] - 27A, 59N,A . Alarm
	Op	VG[1] - 27A, 59N,A . Trip

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VSPTOV2* (WW_PTOV1)</b>		
	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	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VSPTUV1* (WW_PTUV1)</b>		
	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

Logical Node	Data Object	Module ( - ANSI/IEEE Device Number ) . Name
<b>VSPTUV2* (WW_PTUV1)</b>		
	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



## 4.2 Device Planning Dependencies

The availability of Logical Node instances in the generated ICD file depends on the settings in the “Device planning” menu.

The following list gives an overview about those settings for every module that have an effect on the availability of a Logical Node.

Module ( - ANSI/IEEE Device Number ) . Name	Value
<b>CILO1</b>	
SG[1] . SwitchgearType	Controlled SG
SG[1] . SwitchgearType	Controlled Make Break SG
<b>CSWI1</b>	
SG[1] . SwitchgearType	Controlled SG
SG[1] . SwitchgearType	Controlled Make Break SG
<b>XCBR1</b>	
SG[1] . SwitchgearType	Monitored Make Break SG
SG[1] . SwitchgearType	Controlled Make Break SG
<b>XSWI1</b>	
SG[1] . SwitchgearType	Monitored SG
SG[1] . SwitchgearType	Controlled SG
<b>PFRC1</b>	
df/dt - 81R . Mode	use
<b>PFRC3</b>	
f[1] - 81 . Mode	f< and df/dt
f[1] - 81 . Mode	f> and df/dt
f[1] - 81 . Mode	f< and DF/DT
f[1] - 81 . Mode	f> and DF/DT
f[1] - 81 . Mode	df/dt
<b>PFRC4</b>	
f[2] - 81 . Mode	f< and df/dt
f[2] - 81 . Mode	f> and df/dt
f[2] - 81 . Mode	f< and DF/DT
f[2] - 81 . Mode	f> and DF/DT
f[2] - 81 . Mode	df/dt
<b>PFRC5</b>	
f[3] - 81 . Mode	f< and df/dt
f[3] - 81 . Mode	f> and df/dt
f[3] - 81 . Mode	f< and DF/DT
f[3] - 81 . Mode	f> and DF/DT

Module ( - ANSI/IEEE Device Number ) . Name	Value
f[3] - 81 . Mode	df/dt
<b>PFRC6</b>	
f[4] - 81 . Mode	f< and df/dt
f[4] - 81 . Mode	f> and df/dt
f[4] - 81 . Mode	f< and DF/DT
f[4] - 81 . Mode	f> and DF/DT
f[4] - 81 . Mode	df/dt
<b>PFRC7</b>	
f[5] - 81 . Mode	f< and df/dt
f[5] - 81 . Mode	f> and df/dt
f[5] - 81 . Mode	f< and DF/DT
f[5] - 81 . Mode	f> and DF/DT
f[5] - 81 . Mode	df/dt
<b>PFRC8</b>	
f[6] - 81 . Mode	f< and df/dt
f[6] - 81 . Mode	f> and df/dt
f[6] - 81 . Mode	f< and DF/DT
f[6] - 81 . Mode	f> and DF/DT
f[6] - 81 . Mode	df/dt
<b>PPAM2</b>	
delta phi - 78V . Mode	use
<b>PPAM3</b>	
f[1] - 81 . Mode	delta phi
<b>PPAM4</b>	
f[2] - 81 . Mode	delta phi
<b>PPAM5</b>	
f[3] - 81 . Mode	delta phi
<b>PPAM6</b>	
f[4] - 81 . Mode	delta phi
<b>PPAM7</b>	
f[5] - 81 . Mode	delta phi
<b>PPAM8</b>	
f[6] - 81 . Mode	delta phi
<b>PTOF3</b>	
f[1] - 81 . Mode	f>
<b>PTOF4</b>	
f[2] - 81 . Mode	f>

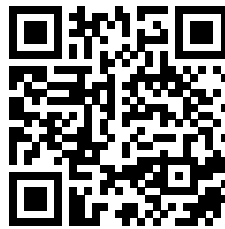
Module ( - ANSI/IEEE Device Number ) . Name	Value
<b>PTOF5</b>	
f[3] - 81 . Mode	f>
<b>PTOF6</b>	
f[4] - 81 . Mode	f>
<b>PTOF7</b>	
f[5] - 81 . Mode	f>
<b>PTOF8</b>	
f[6] - 81 . Mode	f>
<b>PTOV1</b>	
V[1] - 27, 59 . Mode	V>
<b>PTOV2</b>	
V[2] - 27, 59 . Mode	V>
<b>PTOV3</b>	
V[3] - 27, 59 . Mode	V>
<b>PTOV4</b>	
V[4] - 27, 59 . Mode	V>
<b>PTOV5</b>	
V[5] - 27, 59 . Mode	V>
<b>PTOV6</b>	
V[6] - 27, 59 . Mode	V>
<b>PTUF3</b>	
f[1] - 81 . Mode	f<
<b>PTUF4</b>	
f[2] - 81 . Mode	f<
<b>PTUF5</b>	
f[3] - 81 . Mode	f<
<b>PTUF6</b>	
f[4] - 81 . Mode	f<
<b>PTUF7</b>	
f[5] - 81 . Mode	f<
<b>PTUF8</b>	
f[6] - 81 . Mode	f<
<b>PTUV1</b>	
V[1] - 27, 59 . Mode	V<
<b>PTUV2</b>	
V[2] - 27, 59 . Mode	V<
<b>PTUV3</b>	

Module ( - ANSI/IEEE Device Number ) . Name	Value
V[3] - 27, 59 . Mode	V<
<b>PTUV4</b>	
V[4] - 27, 59 . Mode	V<
<b>PTUV5</b>	
V[5] - 27, 59 . Mode	V<
<b>PTUV6</b>	
V[6] - 27, 59 . Mode	V<
<b>VAPTOV1</b>	
V012[1] - 47 . Mode	V1>
V012[1] - 47 . Mode	V2>
<b>VAPTOV2</b>	
V012[2] - 47 . Mode	V1>
V012[2] - 47 . Mode	V2>
<b>VAPTOV3</b>	
V012[3] - 47 . Mode	V1>
V012[3] - 47 . Mode	V2>
<b>VAPTOV4</b>	
V012[4] - 47 . Mode	V1>
V012[4] - 47 . Mode	V2>
<b>VAPTOV5</b>	
V012[5] - 47 . Mode	V1>
V012[5] - 47 . Mode	V2>
<b>VAPTOV6</b>	
V012[6] - 47 . Mode	V1>
V012[6] - 47 . Mode	V2>
<b>VAPTUV1</b>	
V012[1] - 47 . Mode	V1<
<b>VAPTUV2</b>	
V012[2] - 47 . Mode	V1<
<b>VAPTUV3</b>	
V012[3] - 47 . Mode	V1<
<b>VAPTUV4</b>	
V012[4] - 47 . Mode	V1<
<b>VAPTUV5</b>	
V012[5] - 47 . Mode	V1<
<b>VAPTUV6</b>	
V012[6] - 47 . Mode	V1<

Module ( - ANSI/IEEE Device Number ) . Name	Value
<b>VSPTOV1</b>	
VG[1] - 27A, 59N,A . Mode	V>
<b>VSPTOV2</b>	
VG[2] - 27A, 59N,A . Mode	V>
<b>VSPTUV1</b>	
VG[1] - 27A, 59N,A . Mode	V<
<b>VSPTUV2</b>	
VG[2] - 27A, 59N,A . Mode	V<

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