WOODWARD

HighPROTEC

IEC 61850 | MICS

MRA4

Software-Version: 3.0.c

Model Implementation Conformance Statement (MICS)

UCA International Users Group Testing Sub Committee

English

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1. Introduction

This model implementation conformance statement is applicable to the device MRA4, Version 3.0.c (Firmware-Build 28189).

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:

L : System Logical Nodes
LLN0 (Logical Node device)
LPHD (Physical device)
P : Logical Nodes for protection functions
PDOP (Directional overpower)
PDUP (Directional underpower)
PFRC (Rate of change of frequency)
PHAR (Harmonic restraint)
PPAM (Phase angle or out-of-step protection)
PSOF (Switch Onto Fault)
PTOC (Time overcurrent)
PTOF (Overfrequency)
PTOV (Overvoltage)
PTTR (Thermal overload protection)
PTUF (Underfrequency)
PTUV (Undervoltage)
PUPF (Underpower factor)
R : Logical Nodes for protection related functions
RBRF (Breaker failure)
RDRE (Disturbance recorder function)

RREC (Autoreclosing)
RSYN (Synchronism-check or synchronising)
G : Logical Nodes for generic references
GAPC (Generic automatic process control)
GGIO (Generic process I/O)
M : Logical Nodes for metering and measurement
MMTR (Metering)
MMXU (Measurement)
MSTA (Metering Statistics)
X : Logical Nodes for switchgear
XCBR (Circuit Breaker)
XSWI (Circuit Switch)
C : Logical Nodes for control
CILO (Interlocking)
CSWI (Switch controller)
I : Logical Nodes for interfacing and archiving
IHMI (Human machine interface)
S : Logical Nodes for sensors and monitoring
SCBR (Circuit breaker monitoring)

2.2. Logical Node definitions

The following table use

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

LN Type	LN Class	Description
WW_CILO1	CILO	Interlocking
WW_CSWI1	CSWI	Switch controller
WW_GAPC1	GAPC	Generic automatic process control
WW_GGIO3	GGIO	Generic process I/O
WW_GGIO4	GGIO	Generic process I/O
WW_GGIO5	GGIO	Generic process I/O
WW_IHMI1	IHMI	Human machine interface
WW_LLN0CON	LLN0	Logical Node device
WW_LLN0MEA	LLN0	Logical Node device
WW_LLN0PRO	LLN0	Logical Node device
WW_LLN0REC	LLN0	Logical Node device
WW_LLN0SYS	LLN0	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_MMTR1	MMTR	Metering
WW_MMXU3	MMXU	Measurement
WW_MMXU6	MMXU	Measurement
WW_MMXU7	MMXU	Measurement

LN Type	LN Class	Description
WW_MSTA1	MSTA	Metering Statistics
WW_MSTA2	MSTA	Metering Statistics
WW_MSTA3	MSTA	Metering Statistics
WW_PDOP1	PDOP	Directional overpower
WW_PDUP1	PDUP	Directional underpower
WW_PFRC1	PFRC	Rate of change of frequency
WW_PFRC2	PFRC	Rate of change of frequency
WW_PHAR1	PHAR	Harmonic restraint
WW_PPAM1	PPAM	Phase angle or out-of-step protection
WW_PSOF1	PSOF	Switch Onto Fault
WW_PTOC1	PTOC	Time overcurrent
WW_PTOC3	PTOC	Time overcurrent
WW_PTOC4	PTOC	Time overcurrent
WW_PTOF1	PTOF	Overfrequency
WW_PTOV1	PTOV	Overvoltage
WW_PTOV2	PTOV	Overvoltage
WW_PTOV3	PTOV	Overvoltage
WW_PTTR3	PTTR	Thermal overload protection
WW_PTUF1	PTUF	Underfrequency
WW_PTUV1	PTUV	Undervoltage
WW_PTUV2	PTUV	Undervoltage
WW_PTUV3	PTUV	Undervoltage

LN Type	LN Class	Description
WW_PTUV4	PTUV	Undervoltage
WW_PTUV5	PTUV	Undervoltage
WW_PUPF1	PUPF	Underpower factor
WW_RBRF1	RBRF	Breaker failure
WW_RDRE1	RDRE	Disturbance recorder function
WW_RREC1	RREC	Autoreclosing
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	

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

2.2.5 WW_GGIO4

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

2.2.6 WW_GGIO5

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				
SPCSO1	WW_SPC2	Single point controllable status output	O	
SPCSO2	WW_SPC2	Single point controllable status output	O	
SPCSO3	WW_SPC2	Single point controllable status output	O	
SPCSO4	WW_SPC2	Single point controllable status output	O	
SPCSO5	WW_SPC2	Single point controllable status output	O	
SPCSO6	WW_SPC2	Single point controllable status output	O	
SPCSO7	WW_SPC2	Single point controllable status output	O	
SPCSO8	WW_SPC2	Single point controllable status output	O	
SPCSO9	WW_SPC2	Single point controllable status output	O	
SPCSO10	WW_SPC2	Single point controllable status output	O	
SPCSO11	WW_SPC2	Single point controllable status output	O	
SPCSO12	WW_SPC2	Single point controllable status output	O	
SPCSO13	WW_SPC2	Single point controllable status output	O	
SPCSO14	WW_SPC2	Single point controllable status output	O	
SPCSO15	WW_SPC2	Single point controllable status output	O	
SPCSO16	WW_SPC2	Single point controllable status output	O	
SPCSO17	WW_SPC2	Single point controllable status output	O	
SPCSO18	WW_SPC2	Single point controllable status output	O	
SPCSO19	WW_SPC2	Single point controllable status output	O	
SPCSO20	WW_SPC2	Single point controllable status output	O	
SPCSO21	WW_SPC2	Single point controllable status output	O	

SPCSO22	WW_SPC2	Single point controllable status output	O	
SPCSO23	WW_SPC2	Single point controllable status output	O	
SPCSO24	WW_SPC2	Single point controllable status output	O	
SPCSO25	WW_SPC2	Single point controllable status output	O	
SPCSO26	WW_SPC2	Single point controllable status output	O	
SPCSO27	WW_SPC2	Single point controllable status output	O	
SPCSO28	WW_SPC2	Single point controllable status output	O	
SPCSO29	WW_SPC2	Single point controllable status output	O	
SPCSO30	WW_SPC2	Single point controllable status output	O	
SPCSO31	WW_SPC2	Single point controllable status output	O	
SPCSO32	WW_SPC2	Single point controllable status output	O	

2.2.7 WW_IHMI1

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_LLN0CON

LLN0 class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LLN0	WW_LLN0CON	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_LLN0MEA

LLN0 class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LLN0	WW_LLN0MEA	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_LLN0PRO

LLN0 class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LLN0	WW_LLN0PRO	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

2.2.11 WW_LLN0REC

LLN0 class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LLN0	WW_LLN0REC	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_LLN0SYS

LLN0 class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LLN0	WW_LLN0SYS	Logical Node device		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL2	Name plate	M	

2.2.13 WW_LPHDCON

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

2.2.14 WW_LPHDMEA

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

2.2.15 WW_LPHDPRO

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

2.2.16 WW_LPHDREC

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

2.2.17 WW_LPHDSYS

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

2.2.18 WW_MMTR1

MSTA class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MMTR1	WW_MMTR1	Metering		
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				
TotVAh	WW_BCR1	Absolute Apparent Power Hours	O	
TotWh	WW_BCR1	Absolute Active Power Hours	O	
TotVArh	WW_BCR1	Absolute Reactive Power Hours	O	
SupWh	WW_BCR1	Consumed Active Energy	O	
SupVArh	WW_BCR1	Consumed Reactive Energy	O	
DmdWh	WW_BCR1	Fed Active Energy	O	
DmdVArh	WW_BCR1	Fed Reactive Energy	O	

2.2.19 WW_MMXU3

MMXU class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MMXU	WW_MMXU3	Measurement		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Measured values				
TotW	WW_MV1	Total Active Power (Total P)	O	
TotVAr	WW_MV1	Total Reactive Power (Total Q)	O	
TotVA	WW_MV1	Total Apparent Power (Total S)	O	
TotPF	WW_MV1	Total Power factor (Total PF)	O	

2.2.20 WW_MMXU6

MMXU class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MMXU	WW_MMXU5	Measurement		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	

Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Measured values				
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	

2.2.21 WW_MMXU7

MMXU class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MMXU	WW_MMXU5	Measurement		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Measured values				
A	WW_WYE2	Phase currents (IL1, IL2, IL3)	O	

2.2.22 WW_MSTA1

MSTA class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MSTA	WW_MSTA1	Metering Statistics		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Metered values				
AvAPhA	WW_MV1	Average current IL1	E	
AvAPhB	WW_MV1	Average current IL2	E	
AvAPhC	WW_MV1	Average current IL3	E	
MaxAPhA	WW_MV1	Maximum current IL1	E	
MaxAPhB	WW_MV1	Maximum current IL2	E	
MaxAPhC	WW_MV1	Maximum current IL3	E	
MinAPhA	WW_MV1	Minimum current IL1	E	
MinAPhB	WW_MV1	Minimum current IL2	E	
MinAPhC	WW_MV1	Minimum current IL3	E	

2.2.23 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	
MinVPhB	WW_MV1	Minimum voltage UL3	E	

2.2.24 WW_MSTA3

MSTA class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
MSTA	WW_MSTA3	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				
AvVA	WW_MV1	Average apparent power	O	
MaxVA	WW_MV1	Maximum apparent power	O	
MinVA	WW_MV1	Minimum apparent power	O	
Avw	WW_MV1	Average real power	O	
MaxW	WW_MV1	Maximum real power	O	
MinW	WW_MV1	Minimum real power	O	
AvVAr	WW_MV1	Average reactive power	O	
MaxVAr	WW_MV1	Maximum reactive power	O	

MinVAr	WW_MV1	Minimum reactive power	O	

2.2.25 WW_PDOP1

PDOP class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PDOP	WW_PDOP1	Directional overpower		
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	

2.2.26 WW_PDUP1

PDUP class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PDUP	WW_PDUP1	Directional underpower		
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	

2.2.27 WW_PFRC1

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

2.2.28 WW_PFRC2

PFRC class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PFRC	WW_PFRC2	Rate of change of frequency		
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	

2.2.29 WW_PHAR1

PHAR class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PHAR	WW_PHAR1	Harmonic restraint		
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	

2.2.30 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	

2.2.31 WW_PSOF1

PSOF class

Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
PSOF	WW_PSOF1	Protection Switch Onto fault		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL3	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	

This is new logical node.

2.2.32 WW_PTOC1

PTOC class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTOC	WW_PTOC1	Time overcurrent		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.33 WW_PTOC3

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

2.2.34 WW_PTOC4

PTOC class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**

PTOC	WW_PTOC4	Time overcurrent		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.35 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	

2.2.36 WW_PTOV1

PTOV class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTOV	WW_PTOV1	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	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.37 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	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.38 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	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.39 WW_PTTR3

PTTR class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTTR	WW_PTTR3	Thermal overload		
Data				
Common Logical Node Information				
Mod	WW_INC1	Mode	M	Status-only
Beh	WW_INS1	Behaviour	M	
Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Op	WW_ACT1	Operate	M	

2.2.40 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	

Health	WW_INS3	Health	M	
NamPlt	WW_LPL1	Name plate	M	
Status Information				
Str	WW_ACD1	Start	M	
Op	WW_ACT1	Operate	M	

2.2.41 WW_PTUV1

PTUV class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTUV	WW_PTUV1	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	

2.2.42 WW_PTUV2

PTUV class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTUV	WW_PTUV2	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	

2.2.43 WW_PTUV3

PTUV class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTUV	WW_PTUV3	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	

2.2.44 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	

2.2.45 WW_PTUV5

PTUV class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PTUV	WW_PTUV5	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	

2.2.46 WW_PUPF1

PUPF class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
PUPF	WW_PUPF1	Underpower factor		
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	

2.2.47 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	

2.2.48 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	
FltNum	WW_INS2	Fault Number	M	
GriFltNum	WW_INS2	Grid Fault Number	O	
RcdStr	WW_SPS1	Recording startet	O	

2.2.49 WW_RREC1

RREC class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
RREC	WW_RREC1	Autoreclosing		
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				
Op	WW_ACT1	Operate (used here to provide close to	M	

		XCBR)		
AutoRecSt	WW_INS4	Autoreclosing Status	M	

2.2.50 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	

2.2.51 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	

2.2.52 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
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	
Status Information				
CBOpCap	WW_INS5	Circuit breaker operating capability	M	
Controls				
Pos	WW_DPC1	Switch position	M	
BlkOpn	WW_SPC1	Block opening	M	
BlkCls	WW_SPC1	Block closing	M	

2.2.53 WW_XSWI1

XSWI class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
XSWI	WW_XSWI1	Circuit switch		
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	M	
OpCnt	WW_INS2	Operation counter	M	
Status Information				
SwTyp	WW_INS5	Switch type	M	
SwOpCap	WW_INS5	Switch operating capability	M	
Controls				
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_BCR1	BCR	Binary Counter Reading
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_INS4	INS	Integer Status
WW_INS5	INS	Integer Status
WW_LPL1	LPL	Logical node name plate
WW_LPL2	LPL	Logical node name plate
WW_LPL3	LPL	Logical node name plate
WW_MV1	MV	Measured Value
WW_Oper1	Oper	Start/Select operating
WW_origin1	origin	Originator
WW_SPC1	SPC	Controllable Single Point
WW_SPC2	SPC	Controllable Single Point
WW_SPS1	SPS	Single Point Status
WW_units1	units	Unit definition
WW_vector1	vector	Vector definition

CDC Type	CDC Class	Description
WW_WYE2	WYE	Phase to ground related measured values of a three phase system

3.1.1 WW_ACD1

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

3.1.2 WW_ACT1

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

3.1.3 WW_BCR1

ACT class						
Attribute Name	**Attribute Type**	**FC**	**TrgOp**	**Value/Value range**	**M/O/E**	**Remarks**
actVal	INT32	ST	dchg		M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
pulsQty	FLOAT32	CF			M	
units	Struct	CF			O	

3.1.4 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	

3.1.5 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					

3.1.6 WW_DPC1

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

3.1.7 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		

3.1.8 WW_DPL1

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

3.1.9 WW_INC1

INC class						
Attribute	**Attribute**	**FC**	**TrgOp**	**Value/Value range**	**M/O/E**	**Remarks**

Name	Type					
stVal	Enum	ST	dchg	Mode	M	
q	Quality	ST	qchg		M	
t	Timestamp	ST			M	
ctlModel	Enum	CF		ctlModel	M	

3.1.10 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	

3.1.11 WW_INS2

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

3.1.12 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	

3.1.13 WW_INS4

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

3.1.14 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	

3.1.15 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	

3.1.16 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				

3.1.17 WW_LPL3

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

3.1.18 WW_MV1

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

3.1.19 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	

3.1.20 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	

3.1.21 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	

3.1.22 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						
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 AutoRecSt

Ordinal	**Semantic**
1	Ready
2	InProgress
3	Successful

3.3.2 Beh

Ordinal	**Semantic**

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

3.3.3 CBOpCap

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

3.3.4 ctlModel

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

3.3.5 Dbpos

Ordinal	Semantic
1	intermediate
2	off
3	on
4	bad

3.3.6 dir

Ordinal	Semantic
1	unknown
2	forward
3	backward
4	both

3.3.7 Health

Ordinal	Semantic
1	Ok
2	Warning
3	Alarm

3.3.8 Mod

Ordinal	Semantic

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

3.3.9 multiplier

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

3.3.10 orCategory

Ordinal	Semantic
0	not-supported
1	bay-control
2	station-control
3	remote-control
4	automatic-bay
5	automatic-station
6	automatic-remote
7	maintenance
8	process

3.3.11 sboClass

Ordinal	Semantic
0	operate-once
1	operate-many

3.3.12 SIUnit

Ordinal	Semantic
1	none
2	m
3	kg
4	s
5	A
6	K
7	mol
8	cd
9	deg
10	rad
11	sr
21	Gy
22	q
23	ºC
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	m²
42	m³
43	m/s
44	m/s²
45	m³/s
46	m/m³
47	M
48	kg/m³
49	m²/s
50	W/m K
51	J/K
52	ppm
53	1/s
54	rad/s
61	VA
62	Watts
63	VAr
64	phi

65	cos(phi)
66	Vs
67	V²
68	As
69	A²
70	A²t
71	VAh
72	Wh
73	VArh
74	V/Hz

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_LLN0CON)		
	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)		

	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**
LLN0 (WW_LLN0REC)		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDREC)		
	PhyNam	
	PhyHealth	
	Proxy	
RDRE1 (WW_RDRE1)		
	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**
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

	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	

	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

	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	

	Ind20	
	Ind21	
	Ind22	
	Ind23	
	Ind24	
	Ind25	
	Ind26	
	Ind27	
	Ind28	
	Ind29	
	Ind30	
	Ind31	
	Ind32	
LLN0 (WW_LLN0SYS)		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDSYS)		
	PhyNam	
	PhyHealth	
	Proxy	

LDevice::MEAS

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

CMSTA1 (WW_MSTA1)		
	Mod	
	Beh	
	Health	
	NamPlt	
	AvAPhsA	CT . IL1 avg
	AvAPhsB	CT . IL2 avg
	AvAPhsC	CT . IL3 avg
	MaxAPhsA	CT . IL1 max
	MaxAPhsB	CT . IL2 max
	MaxAPhsC	CT . IL3 max
	MinAPhsA	CT . IL1 min
	MinAPhsB	CT . IL2 min
	MinAPhsC	CT . IL3 min
ECMMTR1 (WW_MMTR1)		
	Mod	
	Beh	
	Health	
	NamPlt	
	SupWh	PQSCr . Wp+
	DmdWh	PQSCr . Wp-
	SupVArh	PQSCr . Wq+
	DmdVArh	PQSCr . Wq-
	TotWh	PQSCr . Wp Net
	TotVArh	PQSCr . Wq Net
	TotVAh	PQSCr . Ws Net
LLN0 (WW_LLN0MEA)		
	Mod	
	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDMEA)		
	PhyNam	
	PhyHealth	
	Proxy	
PMMXU1 (WW_MMXU3)		
	Mod	

	Beh	
	Health	
	NamPlt	
	TotW	PQSCr . P RMS
	TotVAr	PQSCr . Q
	TotVA	PQSCr . S RMS
	TotPF	PQSCr . cos phi RMS
PMSTA1 (WW_MSTA3)		
	Mod	
	Beh	
	Health	
	NamPlt	
	AvVA	PQSCr . S avg
	MaxVA	PQSCr . S max
	MinVA	PQSCr . S min
	AvW	PQSCr . P avg
	MaxW	PQSCr . P max
	MinW	PQSCr . P min
	AvVAr	PQSCr . Q avg
	MaxVAr	PQSCr . Q max
	MinVAr	PQSCr . Q min
VMMXU1 (WW_MMXU6)		
	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
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
GFPTOC1 (WW_PTOC3)		
	Mod	IG[1] - 50N, 51N . active IG[1] - 50N, 51N . Blo TripCmd IG[1] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[1] - 50N, 51N . Alarm
	Op	IG[1] - 50N, 51N . Trip
GFPTOC2 (WW_PTOC3)		

	Mod	IG[2] - 50N, 51N . active IG[2] - 50N, 51N . Blo TripCmd IG[2] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[2] - 50N, 51N . Alarm
	Op	IG[2] - 50N, 51N . Trip
GFPTOC3 (WW_PTOC3)		
	Mod	IG[3] - 50N, 51N . active IG[3] - 50N, 51N . Blo TripCmd IG[3] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[3] - 50N, 51N . Alarm
	Op	IG[3] - 50N, 51N . Trip
GFPTOC4 (WW_PTOC3)		
	Mod	IG[4] - 50N, 51N . active IG[4] - 50N, 51N . Blo TripCmd IG[4] - 50N, 51N . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	IG[4] - 50N, 51N . Alarm
	Op	IG[4] - 50N, 51N . Trip
IHMI1 (WW_IHMI1)		
	Mod	
	Beh	
	Health	
	NamPlt	
INRPHAR1 (WW_PHAR1)		
	Mod	IH2 . active
	Beh	
	Health	
	NamPlt	
	Str	IH2 . 3-ph Blo
LLN0 (WW_LLN0PRO)		
	Mod	

	Beh	
	Health	
	NamPlt	
LPHD1 (WW_LPHDPRO)		
	PhyNam	
	PhyHealth	
	Proxy	
LSPFDPFRC1 (WW_PFRC2)		
	Mod	UFLS . active UFLS . ExBlo UFLS . Fuse Fail VT Blo
	Beh	
	Health	
	NamPlt	
	Str	UFLS . Alarm
	Op	UFLS . Trip
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
PDOP1* (WW_PDOP1)		
	Mod	P - 32R . active P - 32R . Blo TripCmd P - 32R . ExBlo TripCmd
	Beh	

	Health	
	NamPlt	
	Str	P - 32R . Alarm
	Op	P - 32R . Trip
PDOP2* (WW_PDOP1)		
	Mod	Q - 32 . active Q - 32 . Blo TripCmd Q - 32 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Q - 32 . Alarm
	Op	Q - 32 . Trip
PDOP3* (WW_PDOP1)		
	Mod	PQS[1] - 32, 37 . active PQS[1] - 32, 37 . Blo TripCmd PQS[1] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[1] - 32, 37 . Alarm
	Op	PQS[1] - 32, 37 . Trip
PDOP4* (WW_PDOP1)		
	Mod	PQS[2] - 32, 37 . active PQS[2] - 32, 37 . Blo TripCmd PQS[2] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[2] - 32, 37 . Alarm
	Op	PQS[2] - 32, 37 . Trip
PDOP5* (WW_PDOP1)		
	Mod	PQS[3] - 32, 37 . active PQS[3] - 32, 37 . Blo TripCmd PQS[3] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[3] - 32, 37 . Alarm

	Op	PQS[3] - 32, 37 . Trip
PDOP6* (WW_PDOP1)		
	Mod	PQS[4] - 32, 37 . active PQS[4] - 32, 37 . Blo TripCmd PQS[4] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[4] - 32, 37 . Alarm
	Op	PQS[4] - 32, 37 . Trip
PDOP7* (WW_PDOP1)		
	Mod	PQS[5] - 32, 37 . active PQS[5] - 32, 37 . Blo TripCmd PQS[5] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[5] - 32, 37 . Alarm
	Op	PQS[5] - 32, 37 . Trip
PDOP8* (WW_PDOP1)		
	Mod	PQS[6] - 32, 37 . active PQS[6] - 32, 37 . Blo TripCmd PQS[6] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[6] - 32, 37 . Alarm
	Op	PQS[6] - 32, 37 . Trip
PDUP1* (WW_PDUP1)		
	Mod	P - 32R . active P - 32R . Blo TripCmd P - 32R . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	P - 32R . Alarm
	Op	P - 32R . Trip
PDUP2* (WW_PDUP1)		

	Mod	Q - 32 . active Q - 32 . Blo TripCmd Q - 32 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	Q - 32 . Alarm
	Op	Q - 32 . Trip
PDUP3* (WW_PDUP1)		
	Mod	PQS[1] - 32, 37 . active PQS[1] - 32, 37 . Blo TripCmd PQS[1] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[1] - 32, 37 . Alarm
	Op	PQS[1] - 32, 37 . Trip
PDUP4* (WW_PDUP1)		
	Mod	PQS[2] - 32, 37 . active PQS[2] - 32, 37 . Blo TripCmd PQS[2] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[2] - 32, 37 . Alarm
	Op	PQS[2] - 32, 37 . Trip
PDUP5* (WW_PDUP1)		
	Mod	PQS[3] - 32, 37 . active PQS[3] - 32, 37 . Blo TripCmd PQS[3] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[3] - 32, 37 . Alarm
	Op	PQS[3] - 32, 37 . Trip
PDUP6* (WW_PDUP1)		
	Mod	PQS[4] - 32, 37 . active PQS[4] - 32, 37 . Blo TripCmd PQS[4] - 32, 37 . ExBlo TripCmd
	Beh	

	Health	
	NamPlt	
	Str	PQS[4] - 32, 37 . Alarm
	Op	PQS[4] - 32, 37 . Trip
PDUP7* (WW_PDUP1)		
	Mod	PQS[5] - 32, 37 . active PQS[5] - 32, 37 . Blo TripCmd PQS[5] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[5] - 32, 37 . Alarm
	Op	PQS[5] - 32, 37 . Trip
PDUP8* (WW_PDUP1)		
	Mod	PQS[6] - 32, 37 . active PQS[6] - 32, 37 . Blo TripCmd PQS[6] - 32, 37 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PQS[6] - 32, 37 . Alarm
	Op	PQS[6] - 32, 37 . 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)		
	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	
	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
	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)		
	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
PSOF1 (WW_PSOF1)		
	Mod	SOTF . active SOTF . ExBlo SOTF . Ex rev Interl
	Beh	
	Health	
	NamPlt	
	Str	SOTF . enabled
PTOC1 (WW_PTOC1)		
	Mod	I[1] - 50, 51 . active I[1] - 50, 51 . Blo TripCmd I[1] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[1] - 50, 51 . Alarm
	Op	I[1] - 50, 51 . Trip
PTOC2 (WW_PTOC1)		
	Mod	I[2] - 50, 51 . active I[2] - 50, 51 . Blo TripCmd I[2] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[2] - 50, 51 . Alarm
	Op	I[2] - 50, 51 . Trip
PTOC3 (WW_PTOC1)		
	Mod	I[3] - 50, 51 . active I[3] - 50, 51 . Blo TripCmd I[3] - 50, 51 . ExBlo TripCmd

	Beh	
	Health	
	NamPlt	
	Str	I[3] - 50, 51 . Alarm
	Op	I[3] - 50, 51 . Trip
PTOC4 (WW_PTOC1)		
	Mod	I[4] - 50, 51 . active I[4] - 50, 51 . Blo TripCmd I[4] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[4] - 50, 51 . Alarm
	Op	I[4] - 50, 51 . Trip
PTOC5 (WW_PTOC1)		
	Mod	I[5] - 50, 51 . active I[5] - 50, 51 . Blo TripCmd I[5] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[5] - 50, 51 . Alarm
	Op	I[5] - 50, 51 . Trip
PTOC6 (WW_PTOC1)		
	Mod	I[6] - 50, 51 . active I[6] - 50, 51 . Blo TripCmd I[6] - 50, 51 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I[6] - 50, 51 . Alarm
	Op	I[6] - 50, 51 . Trip
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	
	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
	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)		
	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	
	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
	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)		
	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
PUPF1 (WW_PUPF1)		
	Mod	PF[1] - 55 . active PF[1] - 55 . Blo TripCmd PF[1] - 55 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PF[1] - 55 . Alarm
	Op	PF[1] - 55 . Trip
PUPF2 (WW_PUPF1)		
	Mod	PF[2] - 55 . active PF[2] - 55 . Blo TripCmd PF[2] - 55 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	PF[2] - 55 . Alarm
	Op	PF[2] - 55 . Trip
QVPTUV1 (WW_PTUV5)		
	Mod	Q->&V< . active Q->&V< . ExBlo Q->&V< . Fuse Fail VT Blo
	Beh	
	Health	
	NamPlt	
	Str	Q->&V< . Alarm
	Op	Q->&V< . Decoupling Distributed Generator
RBRF1 (WW_RBRF1)		

	Mod	CBF - 50BF, 62BF . active CBF - 50BF, 62BF . ExBlo CBF - 50BF, 62BF . ExBlo
	Beh	
	Health	
	NamPlt	
	Str	CBF - 50BF, 62BF . running
	OpEx	CBF - 50BF, 62BF . Alarm
RREC1 (WW_RREC1)		
	Mod	AR - 79 . active AR - 79 . ExBlo AR - 79 . ExBlo
	Beh	
	Health	
	NamPlt	
	Op	AR - 79 . CB ON Cmd
	AutoRecSt	AR - 79 . ARRecCState
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
TRPTTR1 (WW_PTTR3)		
	Mod	ThR - 49 . active ThR - 49 . Blo TripCmd ThR - 49 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Op	ThR - 49 . Trip
ULPTOC1 (WW_PTOC4)		

	Mod	I2>[1] - 46 . active I2>[1] - 46 . Blo TripCmd I2>[1] - 46 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I2>[1] - 46 . Alarm
	Op	I2>[1] - 46 . Trip
ULPTOC2 (WW_PTOC4)		
	Mod	I2>[2] - 46 . active I2>[2] - 46 . Blo TripCmd I2>[2] - 46 . ExBlo TripCmd
	Beh	
	Health	
	NamPlt	
	Str	I2>[2] - 46 . Alarm
	Op	I2>[2] - 46 . Trip
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)		
	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	
	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
	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)		
	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
PDOP1	
P - 32R . Mode	P>
	Pr>
PDOP2	
Q - 32 . Mode	Q>
	Qr>
PDOP3	
PQS[1] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>

Module (- ANSI/IEEE Device Number) . Name	Value
PDOP4	
PQS[2] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>
PDOP5	
PQS[3] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>
PDOP6	
PQS[4] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>
PDOP7	
PQS[5] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>
PDOP8	
PQS[6] - 32, 37 . Mode	P>
	Pr>
	Q>
	Qr>
	S>
PDUP3	
PQS[1] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<

Module (- ANSI/IEEE Device Number) . Name	Value
PDUP4	
PQS[2] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<
PDUP5	
PQS[3] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<
PDUP6	
PQS[4] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<
PDUP7	
PQS[5] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<
PDUP8	
PQS[6] - 32, 37 . Mode	P<
	Pr<
	Q<
	Qr<
	S<
PFRC1	
df/dt - 81R . Mode	use
PFRC3	
f[1] - 81 . Mode	f< and df/dt
	f> and df/dt
	f< and DF/DT

Module (- ANSI/IEEE Device Number) . Name	Value
	f> and DF/DT
	df/dt
PFRC4	
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

Module (- ANSI/IEEE Device Number) . Name	Value
PPAM4	
f[2] - 81 . Mode	delta phi
PPAM5	
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<

Module (- ANSI/IEEE Device Number) . Name	Value
PTUF4	
f[2] - 81 . Mode	f<
PTUF5	
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>

Module (- ANSI/IEEE Device Number) . Name	Value
	V2>
VAPTOV6	
V012[6] - 47 . Mode	V1>
	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<