



IEC 61850 Model Implementation Conformance Statement(MICS) for P&B SuperVision Series MotorVision MVD relays

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May 2009

Abbreviated Terms

- **ACSI** Abstract Communication Service Interface
- **ASN.1** Abstract Syntax Notation One
- **API** Application Program Interface
- **CDC** Common Data Class
- **CT** Current Transformer
- **IED** Intelligent Electronic Device
- **LD** Logical Device
- **LN** Logical Node
- **LLN0** Logical Node Zero
- **LPHD** Logical Node Physical Device
- **MMS** Manufacturing Message Specification
- **PHD** Physical Device
- **PICOM** Piece Of Communication
- **SCSM** Specific Communication Service Mapping
- **SoE** Sequence Of Events
- **UML** Unified Modelling Language
- **VMD** Virtual Manufacturing Device
- **VT** Voltage Transformer
- **XML** eXtended Markup Language

IEC 61850 MODEL IMPLEMENTATION CONFORMANCE STATEMENT (MICS)**1 Introduction**

This specification is the Model Implementation Conformance Statement (MICS) and presents the top-level IEC 61850 data model that has been implemented. The definitions of all used Logical Nodes and their associated Common Data Classes, components and associated enumerated values are also provided for completeness.

2 Objective

The objective of this MICS document is to provide comprehensive details of the standard data object model elements supported by the P&B SuperVision Series Motorvision MVD relay. The MICS is conformant to the devices associated ICD (Substation Configuration Language) file, according to part 6 of the IEC 61850 standards. The layout of the tables presented within this document are conformant to the part 7 series of the IEC 61850 standard specifications without showing the "Trigger Options" field and the "M/O" field.

3 Logical device(LD) definitions

The SuperVision Series Motorvision MVD relay implements an IEC 61850 server that can contain one or more Logical Devices. Each Logical Device contains a data model built from instances of specific Logical Nodes(LN) and must consist of at least an instance of the LPHD Logical Node (which is responsible for providing physical device information) and an instance of the LLN0 Logical Node (for addressing common issues across the Logical Device).

There is only one Logical Device included in the IEC 61850 data model for the P&B MotorVision MVD relays. All P&B SuperVision Series relays will name the supported Logical Devices consistently to ensure that data model variables with the same purpose will have the same name within each P&B SuperVision Series server.

3.1 IEC 61850 logical device data model

The IEC 61850 Logical Device top-level data model consists of instances of Logical Nodes. The data model name for a Logical Node instance is constructed from an optional prefix, the Logical Node name, and an instance ID (e.g. suffix). All of the data models are divided into such five groups as control type, measurement type, protection type, record type and system type, and presented in an alphabetically sorted order, rather than a logical order in each group.

LD	LN Instance	LN Type	Description
MotorVision MVD	(control type)		
*CTRL	CbcCSWI1	CSWI1	Contactor A Control
*CTRL	CbcCSWI2	CSWI1	Contactor B Control
*CTRL	CbmXCBR1	XCBR1	Contactor/breaker Monitoring
*CTRL	LLN0	LLN01	Control Logic Device Information
*CTRL	LPHD1	LPHD2	Physical Device Information
*CTRL	MtrCSTM1	CSTM1 (Private)	Motor Starter Control
*CTRL	SrfCSWI1	CSWI2	Serial Reset Fault
	(Measurement type)		
*MEAS	EngMMTR1	MMTR1	Energy Statistics
*MEAS	LLN0	LLN01	Measurement Logic Device Information
*MEAS	LPHD1	LPHD2	Physical Device Information
*MEAS	MixMMXN1	MMXN1	Non-phase related Analogue Measurements
*MEAS	RmsMMXU1	MMXU1	Analogue RMS Measurements
	(Protection type)		
*PROT	CbfRBRF1	RBRF1	Contactor Fault
*PROT	EftPTOC1	PTOC1	Earth Fault 1

*PROT	EftPTOC2	PTOC1	Earth Fault 2
*PROT	EmgPEST1	PEST1 <i>(Private)</i>	Emergency Stop
*PROT	ErrPITF1	PITF1 <i>(Private)</i>	Internal Failure
*PROT	ExtPEXF1	PEXF1 <i>(Private)</i>	External Fault 1
*PROT	ExtPEXF2	PEXF1 <i>(Private)</i>	External Fault 2
*PROT	ExtPEXF3	PEXF1 <i>(Private)</i>	External Fault 3
*PROT	ExtPEXF4	PEXF1 <i>(Private)</i>	External Fault 4
*PROT	ExtPEXF5	PEXF1 <i>(Private)</i>	External Fault 5
*PROT	ExtPEXF6	PEXF1 <i>(Private)</i>	External Fault 6
*PROT	ExtPEXF7	PEXF1 <i>(Private)</i>	External Fault 7
*PROT	ExtPEXF8	PEXF1 <i>(Private)</i>	External Fault 8
*PROT	ExtPEXF9	PEXF1 <i>(Private)</i>	External Fault 9
*PROT	ExtPEXF10	PEXF1 <i>(Private)</i>	External Fault 10
*PROT	LLN0	LLN01	Protection Logic Device Information
*PROT	LPHD1	LPHD2	Physical Device Information
*PROT	LdiPTOC1	PTOC1	Load Increase
*PROT	LktPTUV1	PTUV2	U/V Lockout
*PROT	MtrPMSS1	PMSS1	Max Start Time
*PROT	PhsPPRT1	PPRT1 <i>(Private)</i>	Phase Rotation
*PROT	PhsPSPH1	PSPH1 <i>(Private)</i>	Single Phasing
*PROT	PhsPTOC1	PTOC1	Over Current
*PROT	PhsPTOV1	PTOV1	Over Voltage
*PROT	PhsPTUC1	PTUC1	Under Current
*PROT	PhsPTUV1	PTUV1	Under Voltage
*PROT	PhsPUBL1	PUBL1 <i>(Private)</i>	Unbalance
*PROT	RtdPTTR1	PTTR3	Over Temperature 1
*PROT	RtdPTTR2	PTTR3	Over Temperature 2
*PROT	RtdPTTR3	PTTR3	Over Temperature 3
*PROT	RtdPTTR4	PTTR3	Over Temperature 4
*PROT	RtdPTTR5	PTTR3	Over Temperature 5
*PROT	RtdPTTR6	PTTR3	Over Temperature 6
*PROT	RtdPTTR7	PTTR3	Over Temperature 7
*PROT	RtdPTTR8	PTTR3	Over Temperature 8
*PROT	RtdPTTR9	PTTR3	Over Temperature 9
*PROT	RtdPTTR10	PTTR3	Over Temperature 10
*PROT	RtdPTTR11	PTTR3	Over Temperature 11
*PROT	RtdPTTR12	PTTR3	Over Temperature 12
*PROT	ShcPIOC1	PIOC1	Short Circuit
*PROT	SpnPbsp1	PBSP1 <i>(Private)</i>	Backspin
*PROT	SrlPSTO1	PSTO1 <i>(Private)</i>	Serial Timeout
*PROT	StrPMRI1	PMRI1	Too many starts
*PROT	SysPTOF1	PTOF1	Over Frequency
*PROT	SysPTUF1	PTUF1	Under Frequency
*PROT	ThmPTTR1	PTTR1	Thermal Model
*PROT	TmpPTTR1	PTTR2	Over Temperature
*PROT	TotPOPF1	POPF1	Over Power Factor
(Record Type)			
*RECD	DisRDRE1	RDRE1	Disturbance Recording
*RECD	LLN0	LLN01	Protection Logic Device Information
*RECD	LPHD1	LPHD2	Physical Device Information
(System Type)			
*SYST	AlmRFLT1	RFLT1 <i>(Private)</i>	Recent Alarms
*SYST	DinGGIO1	GGIO3	Digital Inputs
*SYST	EfcTCTR1	TCTR1	E/F Current Transformer

*SYST	LLN0	LLN01	Logical Device Information
*SYST	LPHD1	LPHD1	Physical Device Information
*SYST	MixGGIO1	GGIO1	Mixed Digital I/Os
*SYST	PhsTCTR1	TCTR1	Phase Current Transformer
*SYST	PhsTVTR1	TVTR1	Voltage Transformer
*SYST	RlyGGIO1	GGIO2	Relay Outputs
*SYST	TrpRFLT1	RFLT1 (<i>Private</i>)	Recent Trips

3.2 Logical node definitions

The definition tables for each of the Logical Nodes in the top-level data model are presented as below.

3.2.1 Logical Node: CSTM1

Description: Starter controller for motor

LN Class: CSTM1(*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Loc	SPS_1_StrInh	Local operation mode	Local mode status
StrMod	ISC_1_StrMod	Starter mode control(<i>private</i>)	Starter mode for motor
OpnSrc	ING_1_ClsOpnSrc	Open setup source (<i>private</i>)	Open source setting
ClsSrc	ING_1_ClsOpnSrc	Close setup source (<i>private</i>)	Close source setting
UvReStr	CURVE_1_DisEna	Enumerated type for "U/V restart" setting (<i>private</i>)	U/V restart
UvStrTmms	ING_1_ProtOpts	U/V restart time(<i>private</i>)	Setting
UvrsDITms	ING_1_ProtOpts	U/V restart delay(<i>private</i>)	Setting
UvStrSns	CURVE_1_UvStrSns	Enumerated type for "U/V restart sense" setting (<i>private</i>)	U/V restart sense
TrstTmms	ING_1_ProtOpts	Transition time(<i>private</i>)	Setting
MaxInStar	CURVE_1_NoYes	Enumerated type for "Stay max time in star" setting(<i>private</i>)	Stay max time in star
MxtInStar	ING_1_ProtOpts	Max time in star(<i>private</i>)	Setting
MinInStar	CURVE_1_NoYes	Enumerated type for "Stay min time in star" setting (<i>private</i>)	Stay min time in star
MntInStar	ING_1_ProtOpts	Min time in star(<i>private</i>)	Setting
LodFrcTrst	CURVE_1_DisEna	Enumerated type for "Load forced transit" setting (<i>private</i>)	Load forced transit
ShtCktTrst	CURVE_1_DisEna	Enumerated type for "Short circuit transition" setting (<i>private</i>)	Short circuit transition
TsfLok	CURVE_1_DisEna	Enumerated type for "Transfer lock" setting (<i>private</i>)	Transfer lock
TsfTms	ING_1_ProtOpts	Transfer time(<i>private</i>)	Setting
LhTsf	CURVE_1_DisEna	Enumerated type for "Low->High" setting (<i>private</i>)	Low->High
HITsf	CURVE_1_DisEna	Enumerated type for "High->Low" setting (<i>private</i>)	High->Low
LhTsfTms	ING_1_ProtOpts	L->H transfer(<i>private</i>)	Setting
HITsfTms	ING_1_ProtOpts	H->L transfer(<i>private</i>)	Setting
AcbTms	ING_1_ProtOpts	ACB pulse time(<i>private</i>)	Setting

3.2.2 Logical Node: CSWI1

Description: Switch controller for contactor/circuit-breaker

LN Class: CSWI

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Loc	SPS_1_StrInh	Local operation mode	Local mode status
Pos	DPC_1_Pos	Dual point switch control and status	Contactor/Circuit-Breaker control
OpOpn	ACT_1_OpOpn	Operation "Open Switch"	
OpCls	ACT_1_OpOpn	Operation "Close Switch"	

3.2.3 Logical Node: CSWI2**Description: Switch controller for serial reset fault****LN Class: CSWI**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Loc	SPS_1_StrInh	Local operation mode	Local mode status
Pos	DPC_1_Pos	Dual point switch control and status	for serial reset fault

3.2.4 Logical Node: GGIO1**Description: Generic Process I/O****LN Class: GGIO**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
AnIn	MV_1_AnIn	Analogue Input	
SPCSO	SPC_1_SPCSO	Single point controllable status output	Optional
DPCSO	DPC_1_DPCSO	Double point controllable status output	Optional
ISCSO	INC_2_ISCSO	Integer status controllable status output	Status of relay output 1-8
IntIn01	INS_3_IntIn	Integer status input	Status of Digital Input(1-8)
IntIn02	INS_3_IntIn	Integer status input	Status of Digital Input(9-16)
IntIn03	INS_3_IntIn	Integer status input	Status of Digital Input(17-24)
Alm	SPS_1_Alm	General single alarm	Optional
Ind	SPS_1_Alm	General single indication(binary input)	Optional
LgcSt	INS_3_LgcSt	Integer status (<i>private</i>)	Logical status
IntOut01	INS_1_IntOut	Integer status output (<i>private</i>)	Trip Status (bit 0 –bit 15)
IntOut02	INS_1_IntOut	Integer status output (<i>private</i>)	Trip Status (bit 16 –bit 31)

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IntOut03	INS_1_IntOut	Integer status output (<i>private</i>)	Trip Status (bit 32 –bit 47)
IntOut04	INS_1_IntOut	Integer status output (<i>private</i>)	Trip Status (bit 48 –bit 63)
IntOut05	INS_1_IntOut	Integer status output (<i>private</i>)	Alarm Status (bit 0 -bit 15)
IntOut06	INS_1_IntOut	Integer status output (<i>private</i>)	Alarm Status (bit 16-bit 31)
IntOut07	INS_1_IntOut	Integer status output (<i>private</i>)	Alarm Status (bit 32 -bit 47)
IntOut08	INS_1_IntOut	Integer status output (<i>private</i>)	Alarm Status (bit 48-bit 63)
IntOut09	INS_1_IntOut	Integer status output (<i>private</i>)	Inhibit Status (bit 0 -bit 15)
IntOut10	INS_1_IntOut	Integer status output (<i>private</i>)	Inhibit Status (bit 16 -bit 31)
IntOut11	INS_1_IntOut	Integer status output (<i>private</i>)	Inhibit Status (bit 32 -bit 47)
IntOut12	INS_1_IntOut	Integer status output (<i>private</i>)	Inhibit Status (bit 48 -bit 63)

3.2.5 Logical Node: GGIO2

Description: Generic Process I/O

LN Class: GGIO

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
DoSet2	CURVE_1_DoSet	Enumerated type for relay output setting (<i>private</i>)	Relay output 2 setting
DoSet3	CURVE_1_DoSet	Enumerated type for relay output setting (<i>private</i>)	Relay output 3 setting
DoSet4	CURVE_1_DoSet	Enumerated type for relay output setting (<i>private</i>)	Relay output 4 setting
Bout1	SPS_1_Binp	General single indication(binary output) (<i>private</i>)	Relay output 1 status
Bout2	SPS_1_Binp	General single indication(binary output) (<i>private</i>)	Relay output 2 status
Bout3	SPS_1_Binp	General single indication(binary output) (<i>private</i>)	Relay output 3 status
Bout4	SPS_1_Binp	General single indication(binary output) (<i>private</i>)	Relay output 4 status

3.2.6 Logical Node: GGIO3

Description: Generic Process I/O

LN Class: GGIO

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	

NamPlt	LPL_1_NamPlt	Name Plate	
DiSet01	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 1 Setting
DiSet02	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 2 Setting
DiSet03	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 3 Setting
DiSet04	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 4 Setting
DiSet05	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 5 Setting
DiSet06	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 6 Setting
DiSet07	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 7 Setting
DiSet08	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 8 Setting
DiSet09	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 9 Setting
DiSet10	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 10 Setting
DiSet11	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 11 Setting
DiSet12	CURVE_1_DiSet	Enumerated type for digital input setting (private)	Digital Input 12 Setting
Binp01	SPS_1_Binp	General single indication(binary input) (private)	Digital input 1 status
Binp02	SPS_1_Binp	General single indication(binary input) (private)	Digital input 2 status
Binp03	SPS_1_Binp	General single indication(binary input) (private)	Digital input 3 status
Binp04	SPS_1_Binp	General single indication(binary input) (private)	Digital input 4 status
Binp05	SPS_1_Binp	General single indication(binary input) (private)	Digital input 5 status
Binp06	SPS_1_Binp	General single indication(binary input) (private)	Digital input 6 status
Binp07	SPS_1_Binp	General single indication(binary input) (private)	Digital input 7 status
Binp08	SPS_1_Binp	General single indication(binary input) (private)	Digital input 8 status
Binp09	SPS_1_Binp	General single indication(binary input) (private)	Digital input 9 status
Binp10	SPS_1_Binp	General single indication(binary input) (private)	Digital input 10 status
Binp11	SPS_1_Binp	General single indication(binary input) (private)	Digital input 11 status
Binp12	SPS_1_Binp	General single indication(binary input) (private)	Digital input 12 status

3.2.7 Logical Node: LLN01**Description: Logical node 0 information****LN Class: LLN0**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_0_NamPlt	Name Plate	

3.2.8 Logical Node: LPHD1**Description:** Physical device information**LN Class:** LPHD

Attribute	Attribute Type	Explanation	Comment
PhyNam	DPL_1_PhyNam	Physical device name plate	
PhyHealth	INS_1_PhyHealth	Physical device health	
Proxy	SPS_1_Alm	Indicate if this LN is a proxy	
Loc	SPS_1_StrInh	Local operation mode	Local mode status
WrtPrt	SPC_1_WrtPrt	Dual point switch control and status (<i>private</i>)	Deactivate write protection
PasWrd	CURVE_1_DisEna	Enumerated type for user password activation (<i>private</i>)	Enable/disable User Password
PasStr	ING_1_PasStr	Text string setting	User password string
SysPas	CURVE_1_DisEna	Enumerated type for Engineer Password activation (<i>private</i>)	Enable/disable Engineer Password
ScnSav	CURVE_1_DisEna	Enumerated type for Screen Saver activation (<i>private</i>)	Enable/disable Screen Saver
ScnTms	ING_1_ScnTms	Screen saver timeout setting	Setting
InvLed	CURVE_1_NoYes	Enumerated type for Invert-LEDs activation (<i>private</i>)	Invert the LED colour or not
SwpLed	CURVE_1_NoYes	Enumerated type for Swap-LEDs activation (<i>private</i>)	Swap the LED position or not
RtnTmm	CURVE_1_RtnTmm	Enumerated type for "Default return time" setting (<i>private</i>)	Default return time
DinCfg	CURVE_1_DinCfg	Enumerated type for "Digital input config" setting (<i>private</i>)	Digital input config
StrBlk	CURVE_1_StrBlk	Enumerated type for "Start not mntned" setting (<i>private</i>)	Start not mntned
OttOpt	CURVE_1_OttOpt	Enumerated type for "O/T trip options" setting (<i>private</i>)	O/T trip options
PreAlm	CURVE_1_PreAlm	Enumerated type for "Pre Alarm" setting (<i>private</i>)	Pre Alarm
ShtlhbUnit	CURVE_1_ShtlhbUnit	Enumerated type for "Short/Inhibit Unit" setting (<i>private</i>)	Short/Inhibit Unit

3.2.9 Logical Node: LPHD2**Description:** Physical device information**LN Class:** LPHD

Attribute	Attribute Type	Explanation	Comment
PhyNam	DPL_1_PhyNam	Physical device name plate	
PhyHealth	INS_1_PhyHealth	Physical device health	
Proxy	SPS_1_Alm	Indicate if this LN is a proxy	

3.2.10 Logical Node: MMTR1**Description: Metering****LN Class: MMTR**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
TotVAh	BCR_1_TotVAh	Net apparent energy since last reset	Unit: VAh
TotWh	BCR_1_TotVAh	Net real energy since last reset	Unit: Wh
TotVArh	BCR_1_TotVAh	Net reactive energy since last reset	Unit: VArh
Loc	SPS_1_StrInh	Local operation mode	Local mode status
DmdWpk	BCR_1_DmdWpk	Real power peak demand (private)	Unit: watts
SmpPrd	ASG_1_SmpPrd	kW Sample Period (private)	Unit: Minutes
RstStats	SPC_1_RdFlgClr	Reset Stats (private)	CtlVal=1 -> reset

3.2.11 Logical Node: MMXN1**Description: Non-Phase-related measurements****LN Class: MMXN**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
RtdNum	INS_3_LgcSt	Total RTD channel number (private)	
ThmCap	INS_3_LgcSt	Thermal capacity (private)	Unit: %
LodPct	INS_3_LgcSt	Motor load (private)	Unit: %
TmsToTrp	INS_3_LgcSt	Time to trip (private)	Unit: s
TmsToStr	INS_3_LgcSt	Time to start (private)	Unit: s
ThmInhTms	INS_3_LgcSt	Thermal inhibit time (private)	Unit: s
Tmp	MV_1_Tmp	Temperature for RTD/PTC/NTC channel	
Tmp1	MV_1_Tmp	Temperature for RTD channel 1 (private)	
Tmp2	MV_1_Tmp	Temperature for RTD channel 2 (private)	
Tmp3	MV_1_Tmp	Temperature for RTD channel 3 (private)	
Tmp4	MV_1_Tmp	Temperature for RTD channel 4 (private)	
Tmp5	MV_1_Tmp	Temperature for RTD channel 5 (private)	
Tmp6	MV_1_Tmp	Temperature for RTD channel 6 (private)	
Tmp7	MV_1_Tmp	Temperature for RTD channel 7 (private)	
Tmp8	MV_1_Tmp	Temperature for RTD channel 8 (private)	
Tmp9	MV_1_Tmp	Temperature for RTD channel 9 (private)	
Tmp10	MV_1_Tmp	Temperature for RTD channel 10 (private)	
Tmp11	MV_1_Tmp	Temperature for RTD channel 11 (private)	
Tmp12	MV_1_Tmp	Temperature for RTD channel 12 (private)	

3.2.12 Logical Node: MMXU1**Description: Phase-related measurements****LN Class: MMXU**

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
TotW	MV_1_TotW	Total real power	Unit: watts
TotVAr	MV_1_TotW	Total reactive power	Unit: VAr
TotVA	MV_1_TotW	Total apparent power	Unit: VA (volt ampere)
TotPF	MV_1_TotW	Average power factor	
Hz	MV_1_TotW	System frequency	Unit: Hz
PhV	WYE_1_PhV	Phase to ground voltages	Unit: volt
A	WYE_2_A	Phase currents	Unit: ampere
W	WYE_1_PhV	Phase real power	Unit: watts
Vref	CMV_2_phsAB	Voltage Reference (<i>private</i>)	Unit:volt

3.2.13 Logical Node: PBSP1**Description:** Backspin protection**LN Class:** PBSP (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Inhibit Pickup
Op	ACT_1_OpOpn	Operate	Start inhibited
OpDITmms	ING_1_OpDITmms	Operate delay time	Back spin time
PrtOps	ING_1_ProtOps	Backspin Protection setting (<i>private</i>)	Protection function setting

3.2.14 Logical Node: PEST1**Description:** Emergency stop protection**LN Class:** PEST (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
PrtOps	ING_1_ProtOps	Emergency Stop Protection setting (<i>private</i>)	Protection function setting

3.2.15 Logical Node: PEXF1**Description:** External fault protection**LN Class:** PEXF (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
PlrtVal	CURVE_1_PlrtVal	Enumerated type for polarity setting (<i>private</i>)	Polarity setting
OpDITmms	ING_1_OpDITmms	Operate delay time	
PrtOps	ING_2_ProtOps	External Fault Protection setting (<i>private</i>)	Protection function setting

3.2.16 Logical Node: PIOC1**Description:** Short circuit protection**LN Class:** PIOC

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_3_StrVal	Start Value	Trip level
PrtOps	ING_1_ProtOps	Short Circuit Protection setting (<i>private</i>)	Protection function setting

3.2.17 Logical Node: PITF1**Description:** Internal Failure(error) protection**LN Class:** PITF (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
PrtOps	ING_1_ProtOps	Internal Failure Protection setting (<i>private</i>)	Protection function setting

3.2.18 Logical Node: PMRI1**Description:** Too many motor restart protection**LN Class:** PMRI

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	

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Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Op	ACT_1_OpOpn	Operate	Inhibit Pickup
StrInh	SPS_1_StrInh	Restart inhibited	
StrInhTmm	INS_1_StrInhTmm	Restart inhibit time	
MaxNumStr	ING_1_OpDITmms	Starts per period (<i>private</i>)	
MaxStrTmm	ING_1_OpDITmms	Start Period (<i>private</i>)	Unit: min
InhTmm	ING_1_OpDITmms	Start inhibit time (<i>private</i>)	Unit: min
StrInhTyp	CURVE_1_StrInhTyp	Enumerated type for "Start Inhibit Type" (<i>private</i>)	Start Inhibit Type
PrtOps	ING_1_ProtOps	Too Many Starts Protection setting (<i>private</i>)	Protection function setting

3.2.19 Logical Node: PMSS1

Description: Max Motor Start Time protection

LN Class: PMSS

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
SetTms	ING_1_OpDITmms	Operation delay time	Trip Time
PrtOps	ING_1_ProtOps	Max Motor Start Time Protection setting (<i>private</i>)	Protection function setting

3.2.20 Logical Node: POPF1

Description: Over power factor protection

LN Class: POPF

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_5_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOps	Over Power Factor Protection setting (<i>private</i>)	Protection function setting

3.2.21 Logical Node: PPRT1

Description: Phase rotation protection

LN Class: PPRT (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	

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NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
PhsDir	CURVE_1_PhsDir	Phase Direction(<i>private</i>)	
PrtOps	ING_1_ProtOps	Phase Rotation Protection setting (<i>private</i>)	Protection function setting

3.2.22 Logical Node: PSPH1

Description: Single phasing protection

LN Class: PSPH (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
PrtOps	ING_1_ProtOps	Single Phasing Protection setting (<i>private</i>)	Protection function setting

3.2.23 Logical Node: PSTO1

Description: Serial timeout protection

LN Class: PSTO (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
OpDITmms	ING_1_OpDITmms	Operate delay time	Trip Time
PrtOps	ING_1_ProtOps	Serial Timeout Protection setting(<i>private</i>)	Protection function setting

3.2.24 Logical Node: PTOC1

Description: Timed overcurrent protection

LN Class: PTOC

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
TmACrv	CURVE_1_TmACrv	Operating curve type	Characteristics
StrVal	ASG_2_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	For DEFT curve

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			type only
PrtOps	ING_1_ProtOps	Overcurrent Protection setting (<i>private</i>)	Protection function setting

3.2.25 Logical Node: PTOF1

Description: Over frequency protection

LN Class: PTOF

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_5_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOps	Over frequency Protection setting (<i>private</i>)	Protection function setting

3.2.26 Logical Node: PTOV1

Description: Over voltage protection

LN Class: PTOV

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_1_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOps	Over voltage Protection setting (<i>private</i>)	Protection function setting

3.2.27 Logical Node: PTTR1

Description: Thermal overload protection

LN Class: PTTR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
AlmThm	ACT_1_OpOpn	Thermal Alarm	Pre Alarm
StrVal	ASG_3_StrVal	Start Value	Trip level
ConsTms	ING_1_OpDITmms	Time constant of the thermal model	T6x
ConsTmsHS	ING_1_ProtOps	Time constant of the thermal model	High speed T6x

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ConsTmsLS	ING_1_ProtOpts	Time constant of the thermal model	Low speed T6x
HtCldRat	ING_1_ProtOpts	Hot Cold Ratio setting	Hot Cold Ratio
CldTmFact	ING_1_ProtOpts	Cool Time Factor setting	Cool Time Factor
CtOffFlc	CURVE_1_CtOffFlc	Enumerated type for "Cutoff multiple FLC" setting (private)	Cutoff multiple FLC
PrtOps	ING_1_ProtOpts	Thermal Overload Protection setting (private)	Protection function setting

3.2.28 Logical Node: PTTR2

Description: Over temperature protection

LN Class: PTTR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
AlmThm	ACT_1_OpOpn	Thermal Alarm	Alarm
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
StrVal	ASG_3_StrVal	Start Value	Trip level
RisTyp	CURVE_1_RisTyp	Enumerated type for "Resistance type" setting (private)	Resistance type
StrValRtd	ASG_4_StrVal	RTD trip level (private)	
AlmValRtd	ASG_4_StrVal	RTD alarm level (private)	
RtdCmp	ASG_4_StrVal	RTD compensation setting (private)	
StrValRis	ASG_4_StrVal	PTC/NTC trip level (private)	
AlmValRis	ASG_4_StrVal	PTC/NTC alarm level (private)	
PrtOps	ING_1_ProtOpts	Over Temperature Protection setting (private)	Protection function setting

3.2.29 Logical Node: PTTR3

Description: : RTD Related Over temperature protection

LN Class: PTTR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
AlmThm	ACT_1_OpOpn	Thermal Alarm	Alarm
StrVal	ASG_3_StrVal	Start Value	RTD trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOpts	Over Temperature Overload Protection setting (private)	Protection function setting

3.2.30 Logical Node: PTUC1

Description: Timed undercurrent protection

LN Class: PTUC

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_3_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
RsDITmms	ING_1_OpDITmms	Reset delay time	U/C Reset Delay
PrtOps	ING_1_ProtOps	Overcurrent Protection setting (<i>private</i>)	Protection function setting

3.2.31 Logical Node: PTUF1**Description:** Under frequency protection**LN Class:** PTUF

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_5_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOps	Under frequency Protection setting (<i>private</i>)	Protection function setting

3.2.32 Logical Node: PTUV1**Description:** U/V lockout protection**LN Class:** PTUV

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_1_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operation delay time	Trip time
PrtOps	ING_1_ProtOps	Under voltage Protection setting (<i>private</i>)	Protection function setting

3.2.33 Logical Node: PTUV2**Description:** Under voltage protection**LN Class:** PTUV

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	

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Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Inhibit Pickup
Op	ACT_1_OpOpn	Operate	Start Inhibited
StrVal	ASG_1_StrVal	Start Value	U/V lockout level
PrtOps	ING_1_ProtOps	Under voltage Protection setting (<i>private</i>)	Protection function setting

3.2.34 Logical Node: PUBL1

Description: Unbalance protection

LN Class: PUBL (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
Op	ACT_1_OpOpn	Operate	Trip
StrVal	ASG_1_StrVal	Start Value	Trip level
OpDITmms	ING_1_OpDITmms	Operate delay time	Trip Time
PrtOps	ING_1_ProtOps	Serial Timeout Protection setting(<i>private</i>)	Protection function setting

3.2.35 Logical Node: RBRF1

Description: Contactor/breaker failure protection and monitoring

LN Class: RBRF

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Str	ACD_1_Str	Start	Trip Pickup
OpIn	ACT_1_OpOpn	Operate, internal trip	Trip
FailTmms	ING_1_OpDITmms	Contactor/Breaker failure time delay	Setting
FailMod	CURVE_1_FailDmod	Enumerated type for "Failure Detect Mode" (<i>private</i>)	Failure Detection Mode
InhStrVal	ASG_1_SmpPrd	Contactor/Breaker failure time delay	
PrtOps	ING_1_ProtOps	Contactor/Breaker failure Protection setting (<i>private</i>)	Protection function setting

3.2.36 Logical Node: RDRE1

Description: Disturbance recorder function

LN Class: RDRE

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	

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NamPlt	LPL_1_NamPlt	Name Plate	
RcdMade	SPS_1_RcdMade	Recording made (RCD available)	
FltNum	INS_3_FltNum	Recorded File Name	
Loc	SPS_1_StrlNh	Local operation mode	Local mode status
FltNam	INS_3_FltNam	Recorded File Name(<i>private</i>)	
RdFlgClr	SPC_1_RdFlgClr	Clear the flag in order to read all disturbance traces again (<i>private</i>)	
TrgTyp	CURVE_1_TrkTyp	Enumerated type for Trigger Type (<i>private</i>)	3 choices
PreTpos	CURVE_1_PreTpos	Enumerated type for Trigger Position (<i>private</i>)	6 choices
RcdRes	CURVE_1_RcdRes	Enumerated type for Record Resolution (<i>private</i>)	2 choices
MaxTrace	ING_1_ProtOpts	Maximum recording traces (<i>private</i>)	Range: 1-8
DiChNum	ING_1_ProtOpts	Digital Input Channel Number (<i>private</i>)	Range: 1-12
DoChNum	ING_1_ProtOpts	Digital Output Channel Number (<i>private</i>)	Range: 1-4

3.2.37 Logical Node: RFLT1

Description: Last fault (trip or alarm) recorder function

LN Class: RFLT (*self-defined private class*)

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_2_NamPlt	Name Plate	
Loc	SPS_1_StrlNh	Local operation mode	Local mode status
FltPos	INC_1_FltPos	Recent Fault Sequence Number	
FltNo	INS_1_TrpCnt	Fault Number and activated Time-Date	
A	WYE_2_A	Pre fault current values	
PhV	WYE_1_PhV	Pre fault voltage values	
Vref	CMV_2_phsAB	Pre fault voltage reference values	
PF	MV_1_TotW	Pre fault power factor	
Hz	MV_1_TotW	Pre fault frequency	
ThmCap	MV_2_TotW	Pre fault thermal capacity	
Tmp	MV_1_TotW	Pre fault over temperature (RTD/PTC/NTC)	
Tmp1	MV_1_TotW	Pre fault over temperature 1(RTD)	
Tmp2	MV_1_TotW	Pre fault over temperature 2(RTD)	
Tmp3	MV_1_TotW	Pre fault over temperature 3(RTD)	
Tmp4	MV_1_TotW	Pre fault over temperature 4(RTD)	
Tmp5	MV_1_TotW	Pre fault over temperature 5(RTD)	
Tmp6	MV_1_TotW	Pre fault over temperature 6(RTD)	
Tmp7	MV_1_TotW	Pre fault over temperature 7(RTD)	
Tmp8	MV_1_TotW	Pre fault over temperature 8(RTD)	
Tmp9	MV_1_TotW	Pre fault over temperature 9(RTD)	
Tmp10	MV_1_TotW	Pre fault over temperature 10(RTD)	
Tmp11	MV_1_TotW	Pre fault over temperature 11(RTD)	
Tmp12	MV_1_TotW	Pre fault over temperature 12(RTD)	

3.2.38 Logical Node: TCTR1

Description: Current transformer (CT) settings

LN Class: TCTR

Attribute	Attribute Type	Explanation	Comment
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Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Amp	SAV_1_Amp	Current (sampled value)	
ARtg	ASG_1_ARtg	Rated current	CT primary setting
Flc	ASG_2_ARtg	Full load current(<i>private</i>)	
FlcLo	ASG_2_Artg	Full load current(<i>private</i>)	Low speed
FlcHi	ASG_2_Artg	Full load current(<i>private</i>)	High speed
Arc	ASG_2_Artg	Actual running current(<i>private</i>)	
ArcLo	ASG_2_Artg	Actual running current(<i>private</i>)	Low speed
ArchHi	ASG_2_ARtg	Actual running current(<i>private</i>)	High speed

3.2.39 Logical Node: TCTR2

Description: Current transformer (CT) settings

LN Class: TCTR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Amp	SAV_1_Amp	Current (sampled value)	
ARtg	ASG_1_ARtg	Rated current	CT primary setting

3.2.40 Logical Node: TVTR1

Description: Voltage transformer (VT) settings

LN Class: TVTR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	
NamPlt	LPL_1_NamPlt	Name Plate	
Vol	SAV_2_Amp	Voltage (sampled value)	
VRtg	ASG_1_Artg	Rated voltage	VT primary setting
VTsec	ASG_2_VTsec	VT secondary (<i>private</i>)	VT secondary setting
VtgVal	ASG_2_VTsec	Voltage (<i>private</i>)	In %(VT Primary)
VtgRef	CURVE_1_VoltRef	Enumerated type for "Voltage reference" selection (<i>private</i>)	Voltage reference

3.2.41 Logical Node: XCBR1

Description: Contactor/breaker function

LN Class: XCBR

Attribute	Attribute Type	Explanation	Comment
Mod	INC_1_Mod	Mod	
Beh	INS_1_Beh	Behavior	
Health	INS_1_Health	Health	

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NamPlt	LPL_1_NamPlt	Name Plate	
Loc	SPS_1_StrlNh	Local operation mode	Local mode status
OpCnt	INS_1_OpCnt	Operation counter	Number of opening, In Stats
Pos	DPC_1_DPCSO	Switch position	Contactor/Breaker position status
BlkOpn	SPC_1_BlkOpn	Block stopping	
BlkCls	SPC_1_BlkOpn	Block starting	
CBOpCap	INS_3_CBOpCap	Contactor/breaker operating capability	
TrpCnt	INS_1_TrpCnt	Number of trips (private)	In Stats
ClsCntA	INS_1_TrpCnt	Number of start A (private)	In Stats
ClsCntB	INS_1_TrpCnt	Number of start B (private)	In Stats
ClsFrm	INS_1_TrpCnt	Last Start Source (private)	In Stats
OpnFrm	INS_1_TrpCnt	Last Stop Source (private)	In Stats
ClsHrsThis	INS_1_TrpCnt	Hours of This Start(hrs) (private)	In Stats
ClsHrsTot	INS_1_TrpCnt	Total Hours Started(hrs) (private)	In Stats
StrDur	MV_1_StrDur	Last start duration (private)	In Stats
StrPki	CMV_2_phsAB	Last start peak I (private)	In stats
RstStats	SPC_1_RdFlgClr	Reset XCBR Stats (private)	In Stats

3.3 Typical Logical node attributes

The typical logical node attributes used in MotorVision MVD are presented in an alphabetically sorted order as below.

No.	Attribute Name	Description	Data Type
1	*CTRL/CbcCSWI1\$ST\$Loc\$stVal	Local operation mode	Bool
2	*CTRL/CbcCSWI1\$ST\$Pos\$stVal	Contactor A/breaker status	Bstring2
3	*CTRL/CbcCSWI1\$ST\$Pos\$t	The time & date when Contactor A/breaker changes status	Utctime
4	*CTRL/CbcCSWI1\$ST\$OpOpn\$general	Contactor A/breaker opened status	Bool
5	*CTRL/CbcCSWI1\$ST\$OpCls\$general	Contactor A/breaker closed status	Bool
6	*CTRL/CbcCSWI1\$CO\$Pos\$Oper\$ctlVal	Operate Contactor A/ breaker	Bool
7	*CTRL/CbcCSWI2\$ST\$Loc\$stVal	Local operation mode	Bool
8	*CTRL/CbcCSWI2\$ST\$Pos\$stVal	Contactor B/breaker status	Bstring2
9	*CTRL/CbcCSWI2\$ST\$Pos\$t	The time & date when Contactor B/breaker changes status	Utctime
10	*CTRL/CbcCSWI2\$ST\$OpOpn\$general	Contactor B/breaker opened status	Bool
11	*CTRL/CbcCSWI2\$ST\$OpCls\$general	Contactor B/breaker closed status	Bool
12	*CTRL/CbcCSWI2\$CO\$Pos\$Oper\$ctlVal	Operate Contactor B/ breaker	Bool
13	*CTRL/CbmXCBR1\$MX\$StrDur\$mag\$i	Last start time duration	Long
14	*CTRL/CbmXCBR1\$MX\$StrPki\$cVal\$mag\$i	Last start peak i	Long
15	*CTRL/CbmXCBR1\$ST\$Loc\$stVal	Local operation mode	Bool
16	*CTRL/CbmXCBR1\$ST\$OpCnt\$stVal	Number of stops	Long
17	*CTRL/CbmXCBR1\$ST\$Pos\$stVal	Contactor/breaker Status	Bstring2
18	*CTRL/CbmXCBR1\$ST\$BlkOpn\$stVal	Block opening	Bool
19	*CTRL/CbmXCBR1\$ST\$BlkCls\$stVal	Block closing	Bool
20	*CTRL/CbmXCBR1\$ST\$TrpCnt\$stVal	Number of trips	Long
21	*CTRL/CbmXCBR1\$ST\$ClsCntA\$stVal	Number of Start-A	Long
22	*CTRL/CbmXCBR1\$ST\$ClsCntB\$stVal	Number of Start-B	Long
23	*CTRL/CbmXCBR1\$ST\$ClsFrm\$stVal	Last Start Source	Long
24	*CTRL/CbmXCBR1\$ST\$OpnFrm\$stVal	Last Stop Source	Long
25	*CTRL/CbmXCBR1\$ST\$ClsHrsThis\$stVal	Hours This Start(hrs)	Long

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26	*CTRL/CbmXCBR1\$ST\$CIsHrsTot\$stVal	Total Hours Started(hrs)	Long
27	*CTRL/CbmXCBR1\$CO\$RstStats\$Oper\$ctlVal	Reset XCBR stats (control)	Bool
28	*CTRL/MtrCSTM1\$ST\$Loc\$stVal	Local operation mode	Bool
29	*CTRL/MtrCSTM1\$ST\$StrMod\$valWTr\$posVal	Starter mode/type	Long
30	*CTRL/MtrCSTM1\$CO\$StrMod\$Oper\$ctlVal	Starter Mode Control	Byte
31	*CTRL/MtrCSTM1\$SP\$OpnSrc\$setVal	Open setup source	Long
32	*CTRL/MtrCSTM1\$SP\$CIsSrc\$setVal	Close setup source	Long
33	*CTRL/MtrCSTM1\$SP\$UvReStr\$setCharact	U/V restart	
34	*CTRL/MtrCSTM1\$SP\$UvStrTmms\$setVal	U/V Restart Time	Long
35	*CTRL/MtrCSTM1\$SP\$UvrsDITms\$setVal	U/V Restart delay	Long
36	*CTRL/MtrCSTM1\$SP\$UvStrSns\$setCharact	U/V Restart Sense	Byte
37	*CTRL/MtrCSTM1\$SP\$TrstTmms\$setVal	Transition Time	Long
38	*CTRL/MtrCSTM1\$SP\$MaxInStar\$setCharact	Max Time In Star	Byte
39	*CTRL/MtrCSTM1\$SP\$MxtInStar\$setVal	Stay Max Time In Star	Long
40	*CTRL/MtrCSTM1\$SP\$MinInStar\$setCharact	Min Time In Star	Byte
41	*CTRL/MtrCSTM1\$SP\$MntInStar\$setVal	Stay Min Time In Star	Long
42	*CTRL/MtrCSTM1\$SP\$LodFrcTrst\$setCharact	Load Forces Transit	Byte
43	*CTRL/MtrCSTM1\$SP\$ShtCktTrst\$setCharact	SC Transition	Byte
44	*CTRL/MtrCSTM1\$SP\$TsfLok\$setCharact	Transfer Lock	Byte
45	*CTRL/MtrCSTM1\$SP\$TsfTms\$setVal	Transfer Time	Long
46	*CTRL/MtrCSTM1\$SP\$LhTsf\$setCharact	Low to High transfer	Byte
47	*CTRL/MtrCSTM1\$SP\$HITsf\$setCharact	Low to High transfer	Byte
48	*CTRL/MtrCSTM1\$SP\$LhTsfTms\$setVal	L->H Transfer time	Long
49	*CTRL/MtrCSTM1\$SP\$HITsfTms\$setVal	H->L Transfer time	Long
50	*CTRL/MtrCSTM1\$SP\$AcBtms\$setVal	ACB Time	Long
51	*CTRL/SrfCSWI1\$CO\$Pos\$Oper\$ctlVal	Serial rest fault command	Bool
52	*MEAS/EngMMTR1\$ST\$TotVAh\$actVal	Total apparent energy value	Long
53	*MEAS/EngMMTR1\$ST\$TotVAh\$t	Time stamp for total apparent energy	Utctime
54	*MEAS/EngMMTR1\$ST\$TotWh\$actVal	Total real energy value	Long
55	*MEAS/EngMMTR1\$ST\$TotWh\$t	Time stamp for total real energy	Utctime
56	*MEAS/EngMMTR1\$ST\$TotVarh\$actVal	Total reactive energy value	Long
57	*MEAS/EngMMTR1\$ST\$TotVarh\$t	Time stamp for total reactive energy value	Utctime
58	*MEAS/EngMMTR1\$ST\$Loc\$stVal	Local operation mode	Bool
59	*MEAS/EngMMTR1\$ST\$DmdWpk\$actVal	kW peak demand value	Long
60	*MEAS/EngMMTR1\$ST\$DmdWpk\$t	Time stamp for kW peak demand	Utctime
61	*MEAS/EngMMTR1\$CO\$RstStats\$Oper\$ctlVal	Reset Stats	Bool
62	*MEAS/EngMMTR1\$SP\$SmpPrd\$setMag\$i	kW sample period (in minutes)	Long
63	*MEAS/MixMMXN1\$MX\$Tmp\$mag\$i	Temperature 0	Long
64	*MEAS/MixMMXN1\$MX\$Tmp1\$mag\$i	Temperature 1(RTD)	Long
65	*MEAS/MixMMXN1\$MX\$Tmp2\$mag\$i	Temperature 2(RTD)	Long
66	*MEAS/MixMMXN1\$MX\$Tmp3\$mag\$i	Temperature 3(RTD)	Long
67	*MEAS/MixMMXN1\$MX\$Tmp4\$mag\$i	Temperature 4(RTD)	Long
68	*MEAS/MixMMXN1\$MX\$Tmp5\$mag\$i	Temperature 5(RTD)	Long
69	*MEAS/MixMMXN1\$MX\$Tmp6\$mag\$i	Temperature 6(RTD)	Long
70	*MEAS/MixMMXN1\$MX\$Tmp7\$mag\$i	Temperature 7(RTD)	Long
71	*MEAS/MixMMXN1\$MX\$Tmp8\$mag\$i	Temperature 8(RTD)	Long
72	*MEAS/MixMMXN1\$MX\$Tmp9\$mag\$i	Temperature 9(RTD)	Long
73	*MEAS/MixMMXN1\$MX\$Tmp10\$mag\$i	Temperature 10(RTD)	Long
74	*MEAS/MixMMXN1\$MX\$Tmp11\$mag\$i	Temperature 11(RTD)	Long
75	*MEAS/MixMMXN1\$MX\$Tmp12\$mag\$i	Temperature 12(RTD)	Long
76	*MEAS/MixMMXN1\$ST\$RtdNum\$stVal	Total RTD Channel Number	Long
77	*MEAS/MixMMXN1\$ST\$ThmCap\$stVal	Thermal Capacity	Long

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78	*MEAS/MixMMXN1\$ST\$LodPct\$stVal	Motor Load	Long
79	*MEAS/MixMMXN1\$ST\$TmsToTrp\$stVal	Time to trip	Long
80	*MEAS/MixMMXN1\$ST\$TmsToStr\$stVal	Time to start	Long
81	*MEAS/MixMMXN1\$ST\$ThmlnhTms\$stVal	Thermal Inhibit Time	Long
82	*MEAS/RmsMMXU1\$MX\$TotW\$mag\$	Total real power	Long
83	*MEAS/RmsMMXU1\$MX\$TotVAr\$mag\$	Total reactive power	Long
84	*MEAS/RmsMMXU1\$MX\$TotVA\$mag\$	Total apparent power	Long
85	*MEAS/RmsMMXU1\$MX\$TotPF\$mag\$	Total Power Factor	Long
86	*MEAS/RmsMMXU1\$MX\$Hz\$mag\$	System Frequency	Long
87	*MEAS/RmsMMXU1\$MX\$PhV\$phsA\$cVal\$mag\$	Voltage V1 (red phase)	Long
88	*MEAS/RmsMMXU1\$MX\$PhV\$phsB\$cVal\$mag\$	Voltage V2 (yellow phase)	Long
89	*MEAS/RmsMMXU1\$MX\$PhV\$phsC\$cVal\$mag\$	Voltage V3 (blue phase)	Long
90	*MEAS/RmsMMXU1\$MX\$A\$phsA\$cVal\$mag\$	Current I1 (red phase)	Long
91	*MEAS/RmsMMXU1\$MX\$A\$phsB\$cVal\$mag\$	Current I2 (yellow phase)	Long
92	*MEAS/RmsMMXU1\$MX\$A\$phsC\$cVal\$mag\$	Current I3 (blue phase)	Long
93	*MEAS/RmsMMXU1\$MX\$A\$res\$cVal\$mag\$	E/F current I0	Long
94	*MEAS/RmsMMXU1\$MX\$A\$avl\$cVal\$mag\$	Average RMS Phase Current	Long
95	*MEAS/RmsMMXU1\$MX\$W\$phsA\$cVal\$mag\$	Real power 1 (red phase)	Long
96	*MEAS/RmsMMXU1\$MX\$W\$phsB\$cVal\$mag\$	Real power 2 (yellow phase)	Long
97	*MEAS/RmsMMXU1\$MX\$W\$phsC\$cVal\$mag\$	Real power 3 (blue phase)	Long
98	*MEAS/RmsMMXU1\$MX\$Vref\$cVal\$mag\$	Voltage Reference	Long
99	*MEAS/CbfRBRF1\$ST\$Str\$general	Contactor failure trip pickup	Bool
100	*MEAS/CbfRBRF1\$ST\$OpIn\$general	Contactor failure trip status	Bool
101	*MEAS/CbfRBRF1\$SP\$FailTmms\$setVal	Contactor failure time delay	Long
102	*MEAS/CbfRBRF1\$SP\$FailDmod\$setCharact	Contactor Failure Detection Mode	Byte
103	*MEAS/CbfRBRF1\$SP\$PrtOps\$setVal	Contactor failure protection setting	Long
104	*PROT/EftPTOC1\$ST\$Str\$general	E/F trip pickup	Bool
105	*PROT/EftPTOC1\$ST\$Op\$general	E/F trip status	Bool
106	*PROT/EftPTOC1\$SP\$StrVal\$setMag\$	E/F trip level	Long
107	*PROT/EftPTOC1\$SP\$OpDITmms\$setVal	E/F Trip time delay for definite time-curve	Long
108	*PROT/EftPTOC1\$SP\$PrtOps\$setVal	E/F protection setting	Long
109	*PROT/EmgPEST1\$ST\$Str\$general	Emergency trip pickup	Long
110	*PROT/EmgPEST1\$ST\$Op\$general	Emergency trip status	Long
111	*PROT/EmgPEST1\$SP\$PrtOps\$setVal	Emergency protection setting	Long
112	*PROT/ErrPITF1\$ST\$Str\$general	Internal failure trip pickup	Bool
113	*PROT/ErrPITF1\$ST\$Op\$general	Internal failure trip status	Bool
114	*PROT/ErrPITF1\$SP\$PrtOps\$setVal	Internal failure protection setting	Long
115	*PROT/ExtPEXF1\$ST\$Str\$general	External fault 1 trip pickup	Bool
116	*PROT/ExtPEXF1\$ST\$Op\$general	External fault 1 trip status	Bool
117	*PROT/ExtPEXF1\$SP\$PlrtVal\$setCharact	External fault 1 polarity	Byte
118	*PROT/ExtPEXF1\$SP\$OpDITmms\$setVal	External fault 1 trip time delay	Long
119	*PROT/ExtPEXF1\$SP\$PrtOps\$setVal	External fault 1 protection setting	Long
120	*PROT/ExtPEXF1\$SP\$PrtOps\$setNam	External fault 1 custom-name	Vstring64
121	*PROT/ExtPEXF2\$ST\$Str\$general	External fault 2 trip pickup	Bool
122	*PROT/ExtPEXF2\$ST\$Op\$general	External fault 2 trip status	Bool
123	*PROT/ExtPEXF2\$SP\$PlrtVal\$setCharact	External fault 2 polarity	Byte
124	*PROT/ExtPEXF2\$SP\$OpDITmms\$setVal	External fault 2 trip time delay	Long
125	*PROT/ExtPEXF2\$SP\$PrtOps\$setVal	External fault 2 protection setting	Long
126	*PROT/ExtPEXF2\$SP\$PrtOps\$setNam	External fault 2 custom-name	Vstring64
127	*PROT/ExtPEXF3\$ST\$Str\$general	External fault 3 trip pickup	Bool
128	*PROT/ExtPEXF3\$ST\$Op\$general	External fault 3 trip status	Bool
129	*PROT/ExtPEXF3\$SP\$PlrtVal\$setCharact	External fault 3 polarity	Byte

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130	*PROT/ExtPEXF3\$SP\$OpDITmms\$setVal	External fault 3 trip time delay	Long
131	*PROT/ExtPEXF3\$SP\$PrtOps\$setVal	External fault 3 protection setting	Long
132	*PROT/ExtPEXF3\$SP\$PrtOps\$setNam	External fault 3 custom-name	Vstring64
133	*PROT/ExtPEXF4\$ST\$Str\$general	External fault 4 trip pickup	Bool
134	*PROT/ExtPEXF4\$ST\$Op\$general	External fault 4 trip status	Bool
135	*PROT/ExtPEXF4\$SP\$PrtVal\$setCharact	External fault 4 polarity	Byte
136	*PROT/ExtPEXF4\$SP\$OpDITmms\$setVal	External fault 4 trip time delay	Long
137	*PROT/ExtPEXF4\$SP\$PrtOps\$setVal	External fault 4 protection setting	Long
138	*PROT/ExtPEXF4\$SP\$PrtOps\$setNam	External fault 4 custom-name	Vstring64
139	*PROT/ExtPEXF5\$ST\$Str\$general	External fault 5 trip pickup	Bool
140	*PROT/ExtPEXF5\$ST\$Op\$general	External fault 5 trip status	Bool
141	*PROT/ExtPEXF5\$SP\$PrtVal\$setCharact	External fault 5 polarity	Byte
142	*PROT/ExtPEXF5\$SP\$OpDITmms\$setVal	External fault 5 trip time delay	Long
143	*PROT/ExtPEXF5\$SP\$PrtOps\$setVal	External fault 5 protection setting	Long
144	*PROT/ExtPEXF5\$SP\$PrtOps\$setNam	External fault 5 custom-name	Vstring64
145	*PROT/ExtPEXF6\$ST\$Str\$general	External fault 6 trip pickup	Bool
146	*PROT/ExtPEXF6\$ST\$Op\$general	External fault 6 trip status	Bool
147	*PROT/ExtPEXF6\$SP\$PrtVal\$setCharact	External fault 6 polarity	Byte
148	*PROT/ExtPEXF6\$SP\$OpDITmms\$setVal	External fault 6 trip time delay	Long
149	*PROT/ExtPEXF6\$SP\$PrtOps\$setVal	External fault 6 protection setting	Long
150	*PROT/ExtPEXF6\$SP\$PrtOps\$setNam	External fault 6 custom-name	Vstring64
151	*PROT/ExtPEXF7\$ST\$Str\$general	External fault 7 trip pickup	Bool
152	*PROT/ExtPEXF7\$ST\$Op\$general	External fault 7 trip status	Bool
153	*PROT/ExtPEXF7\$SP\$PrtVal\$setCharact	External fault 7 polarity	Byte
154	*PROT/ExtPEXF7\$SP\$OpDITmms\$setVal	External fault 7 trip time delay	Long
155	*PROT/ExtPEXF7\$SP\$PrtOps\$setVal	External fault 7 protection setting	Long
156	*PROT/ExtPEXF7\$SP\$PrtOps\$setNam	External fault 7 custom-name	Vstring64
157	*PROT/ExtPEXF8\$ST\$Str\$general	External fault 8 trip pickup	Bool
158	*PROT/ExtPEXF8\$ST\$Op\$general	External fault 8 trip status	Bool
159	*PROT/ExtPEXF8\$SP\$PrtVal\$setCharact	External fault 8 polarity	Byte
160	*PROT/ExtPEXF8\$SP\$OpDITmms\$setVal	External fault 8 trip time delay	Long
161	*PROT/ExtPEXF8\$SP\$PrtOps\$setVal	External fault 8 protection setting	Long
162	*PROT/ExtPEXF8\$SP\$PrtOps\$setNam	External fault 8 custom-name	Vstring64
163	*PROT/ExtPEXF9\$ST\$Str\$general	External fault 9 trip pickup	Bool
164	*PROT/ExtPEXF9\$ST\$Op\$general	External fault 9 trip status	Bool
165	*PROT/ExtPEXF9\$SP\$PrtVal\$setCharact	External fault 9 polarity	Byte
166	*PROT/ExtPEXF9\$SP\$OpDITmms\$setVal	External fault 9 trip time delay	Long
167	*PROT/ExtPEXF9\$SP\$PrtOps\$setVal	External fault 9 protection setting	Long
168	*PROT/ExtPEXF9\$SP\$PrtOps\$setNam	External fault 9 custom-name	Vstring64
169	*PROT/ExtPEXF10\$ST\$Str\$general	External fault 10 trip pickup	Bool
170	*PROT/ExtPEXF10\$ST\$Op\$general	External fault 10 trip status	Bool
171	*PROT/ExtPEXF10\$SP\$PrtVal\$setCharact	External fault 10 polarity	Byte
172	*PROT/ExtPEXF10\$SP\$OpDITmms\$setVal	External fault 10 trip time delay	Long
173	*PROT/ExtPEXF10\$SP\$PrtOps\$setVal	External fault 10 protection setting	Long
174	*PROT/ExtPEXF10\$SP\$PrtOps\$setNam	External fault 10 custom-name	Vstring64
175	*PROT/LdiPTOC1\$ST\$Str\$general	Load-increase trip pickup	Bool
176	*PROT/LdiPTOC1\$ST\$Op\$general	Load-increase trip status	Bool
177	*PROT/LdiPTOC1\$SP\$StrVal\$setMag\$si	Load-increase trip level	Long
178	*PROT/LdiPTOC1\$SP\$OpDITmms\$setVal	Load-increase trip time delay	Long
179	*PROT/LdiPTOC1\$SP\$PrtOps\$setVal	Load-increase protection setting	Long
180	*PROT/LktPTUV1\$ST\$Str\$general	U/V lockout inhibit pickup	Bool
181	*PROT/LktPTUV1\$ST\$Op\$general	U/V lockout inhibit status	Bool

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182	*PROT/LktPTUV1\$SP\$StrVal\$setMag\$i	U/V lockout level	Long
183	*PROT/LktPTUV1\$SP\$PrtOps\$setVal	U/V lockout protection setting	Long
184	*PROT/MtrPMSS1\$ST\$Str\$general	Max start time trip pickup	Bool
185	*PROT/MtrPMSS1\$ST\$Op\$general	Max start time trip status	Bool
186	*PROT/MtrPMSS1\$SP\$SetTms\$setVal	Max start time trip level	Long
187	*PROT/MtrPMSS1\$SP\$PrtOps\$setVal	Max start time protection setting	Long
188	*PROT/PhsPPRT1\$ST\$Str\$general	Phase Rotation trip pickup	Bool
189	*PROT/PhsPPRT1\$ST\$Op\$general	Phase Rotation trip status	Bool
190	*PROT/PhsPPRT1\$SP\$PhsDir\$setCharact	Phase Direction	Byte
191	*PROT/PhsPPRT1\$SP\$PrtOps\$setVal	Phase Rotation protection setting	Long
192	*PROT/PhsPSPH1\$ST\$Str\$general	Single Phasing trip pickup	Bool
193	*PROT/PhsPSPH1\$ST\$Op\$general	Single Phasing trip status	Bool
194	*PROT/PhsPSPH1\$SP\$PrtOps\$setVal	Single Phasing protection setting	Long
195	*PROT/PhsPTOC1\$ST\$Str\$general	Overcurrent trip pickup	Bool
196	*PROT/PhsPTOC1\$ST\$Op\$general	Overcurrent trip status	Bool
197	*PROT/PhsPTOC1\$SP\$StrVal\$setMag\$i	Overcurrent trip level	Long
198	*PROT/PhsPTOC1\$SP\$OpDITmms\$setVal	Overcurrent trip time delay	Long
199	*PROT/PhsPTOC1\$SP\$PrtOps\$setVal	Overcurrent protection setting	Long
200	*PROT/PhsPTOV1\$ST\$Str\$general	Over voltage trip pickup	Bool
201	*PROT/PhsPTOV1\$ST\$Op\$general	Over voltage trip status	Bool
202	*PROT/PhsPTOV1\$SP\$StrVal\$setMag\$i	Over voltage trip level	Long
203	*PROT/PhsPTOV1\$SP\$OpDITmms\$setVal	Over voltage trip time delay	Long
204	*PROT/PhsPTOV1\$SP\$PrtOps\$setVal	Over voltage protection setting	Long
205	*PROT/PhsPTUC1\$ST\$Str\$general	Undercurrent trip pickup	Bool
206	*PROT/PhsPTUC1\$ST\$Op\$general	Undercurrent trip status	Bool
207	*PROT/PhsPTUC1\$SP\$StrVal\$setMag\$i	Undercurrent trip level	Long
208	*PROT/PhsPTUC1\$SP\$OpDITmms\$setVal	Undercurrent trip time delay	Long
209	*PROT/PhsPTUC1\$SP\$RsrDITmms\$setVal	U/C Reset Time Delay	Long
210	*PROT/PhsPTUC1\$SP\$PrtOps\$setVal	Undercurrent protection setting	Long
211	*PROT/PhsPTUV1\$ST\$Str\$general	Under voltage trip pickup	Bool
212	*PROT/PhsPTUV1\$ST\$Op\$general	Under voltage trip status	Bool
213	*PROT/PhsPTUV1\$SP\$StrVal\$setMag\$i	Under voltage trip level	Long
214	*PROT/PhsPTUV1\$SP\$OpDITmms\$setVal	Under voltage trip time delay	Long
215	*PROT/PhsPTUV1\$SP\$PrtOps\$setVal	Under voltage protection setting	Long
216	*PROT/PhsPUBL1\$ST\$Str\$general	Unbalance trip pickup	Bool
217	*PROT/PhsPUBL1\$ST\$Op\$general	Unbalance trip status	Bool
218	*PROT/PhsPUBL1\$SP\$StrVal\$setMag\$i	Unbalance trip level	Long
219	*PROT/PhsPUBL1\$SP\$OpDITmms\$setVal	Unbalance trip time delay	Long
220	*PROT/PhsPUBL1\$SP\$PrtOps\$setVal	Unbalance protection setting	Long
221	*PROT/RtdPTTR1\$ST\$Str\$general	Over Temperature 1 trip pickup	Bool
222	*PROT/RtdPTTR1\$ST\$Op\$general	Over Temperature 1 trip status	Bool
223	*PROT/RtdPTTR1\$SP\$StrVal\$setMag\$i	Over Temperature 1 trip value	Long
224	*PROT/RtdPTTR1\$SP\$OpDITmms\$setVal	Over Temperature 1 trip time delay	Long
225	*PROT/RtdPTTR1\$SP\$PrtOps\$setVal	Over Temperature 1 protection setting	Long
226	*PROT/RtdPTTR1\$SP\$PrtOps\$setNam	Over Temperature 1 custom-name	Vstring64
227	*PROT/RtdPTTR2\$ST\$Str\$general	Over Temperature 2 trip pickup	Bool
228	*PROT/RtdPTTR2\$ST\$Op\$general	Over Temperature 2 trip status	Bool
229	*PROT/RtdPTTR2\$SP\$StrVal\$setMag\$i	Over Temperature 2 trip value	Long
230	*PROT/RtdPTTR2\$SP\$OpDITmms\$setVal	Over Temperature 2 trip time delay	Long
231	*PROT/RtdPTTR2\$SP\$PrtOps\$setVal	Over Temperature 2 protection setting	Long
232	*PROT/RtdPTTR2\$SP\$PrtOps\$setNam	Over Temperature 2 custom-name	Vstring64
233	*PROT/RtdPTTR3\$ST\$Str\$general	Over Temperature 3 trip pickup	Bool

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234	*PROT/RtdPTTR3\$ST\$Op\$general	Over Temperature 3 trip status	Bool
235	*PROT/RtdPTTR3\$SP\$StrVal\$setMag\$i	Over Temperature 3 trip value	Long
236	*PROT/RtdPTTR3\$SP\$OpDITmms\$setVal	Over Temperature 3 trip time delay	Long
237	*PROT/RtdPTTR3\$SP\$PrtOps\$setVal	Over Temperature 3 protection setting	Long
238	*PROT/RtdPTTR3\$SP\$PrtOps\$setNam	Over Temperature 3 custom-name	Vstring64
239	*PROT/RtdPTTR4\$ST\$Str\$general	Over Temperature 4 trip pickup	Bool
240	*PROT/RtdPTTR4\$ST\$Op\$general	Over Temperature 4 trip status	Bool
241	*PROT/RtdPTTR4\$SP\$StrVal\$setMag\$i	Over Temperature 4 trip value	Long
242	*PROT/RtdPTTR4\$SP\$OpDITmms\$setVal	Over Temperature 4 trip time delay	Long
243	*PROT/RtdPTTR4\$SP\$PrtOps\$setVal	Over Temperature 4 protection setting	Long
244	*PROT/RtdPTTR4\$SP\$PrtOps\$setNam	Over Temperature 4 custom-name	Vstring64
245	*PROT/RtdPTTR5\$ST\$Str\$general	Over Temperature 5 trip pickup	Bool
246	*PROT/RtdPTTR5\$ST\$Op\$general	Over Temperature 5 trip status	Bool
247	*PROT/RtdPTTR5\$SP\$StrVal\$setMag\$i	Over Temperature 5 trip value	Long
248	*PROT/RtdPTTR5\$SP\$OpDITmms\$setVal	Over Temperature 5 trip time delay	Long
249	*PROT/RtdPTTR5\$SP\$PrtOps\$setVal	Over Temperature 5 protection setting	Long
250	*PROT/RtdPTTR5\$SP\$PrtOps\$setNam	Over Temperature 5 custom-name	Vstring64
251	*PROT/RtdPTTR6\$ST\$Str\$general	Over Temperature 6 trip pickup	Bool
252	*PROT/RtdPTTR6\$ST\$Op\$general	Over Temperature 6 trip status	Bool
253	*PROT/RtdPTTR6\$SP\$StrVal\$setMag\$i	Over Temperature 6 trip value	Long
254	*PROT/RtdPTTR6\$SP\$OpDITmms\$setVal	Over Temperature 6 trip time delay	Long
255	*PROT/RtdPTTR6\$SP\$PrtOps\$setVal	Over Temperature 6 protection setting	Long
256	*PROT/RtdPTTR6\$SP\$PrtOps\$setNam	Over Temperature 6 custom-name	Vstring64
257	*PROT/RtdPTTR7\$ST\$Str\$general	Over Temperature 7 trip pickup	Bool
258	*PROT/RtdPTTR7\$ST\$Op\$general	Over Temperature 7 trip status	Bool
259	*PROT/RtdPTTR7\$SP\$StrVal\$setMag\$i	Over Temperature 7 trip value	Long
260	*PROT/RtdPTTR7\$SP\$OpDITmms\$setVal	Over Temperature 7 trip time delay	Long
261	*PROT/RtdPTTR7\$SP\$PrtOps\$setVal	Over Temperature 7 protection setting	Long
262	*PROT/RtdPTTR7\$SP\$PrtOps\$setNam	Over Temperature 7 custom-name	Vstring64
263	*PROT/RtdPTTR8\$ST\$Str\$general	Over Temperature 8 trip pickup	Bool
264	*PROT/RtdPTTR8\$ST\$Op\$general	Over Temperature 8 trip status	Bool
265	*PROT/RtdPTTR8\$SP\$StrVal\$setMag\$i	Over Temperature 8 trip value	Long
266	*PROT/RtdPTTR8\$SP\$OpDITmms\$setVal	Over Temperature 8 trip time delay	Long
267	*PROT/RtdPTTR8\$SP\$PrtOps\$setVal	Over Temperature 8 protection setting	Long
268	*PROT/RtdPTTR8\$SP\$PrtOps\$setNam	Over Temperature 8 custom-name	Vstring64
269	*PROT/RtdPTTR9\$ST\$Str\$general	Over Temperature 9 trip pickup	Bool
270	*PROT/RtdPTTR9\$ST\$Op\$general	Over Temperature 9 trip status	Bool
271	*PROT/RtdPTTR9\$SP\$StrVal\$setMag\$i	Over Temperature 9 trip value	Long
272	*PROT/RtdPTTR9\$SP\$OpDITmms\$setVal	Over Temperature 9 trip time delay	Long
273	*PROT/RtdPTTR9\$SP\$PrtOps\$setVal	Over Temperature 9 protection setting	Long
274	*PROT/RtdPTTR9\$SP\$PrtOps\$setNam	Over Temperature 9 custom-name	Vstring64
275	*PROT/RtdPTTR10\$ST\$Str\$general	Over Temperature 10 trip pickup	Bool
276	*PROT/RtdPTTR10\$ST\$Op\$general	Over Temperature 10 trip status	Bool
277	*PROT/RtdPTTR10\$SP\$StrVal\$setMag\$i	Over Temperature 10 trip value	Long
278	*PROT/RtdPTTR10\$SP\$OpDITmms\$setVal	Over Temperature 10 trip time delay	Long
279	*PROT/RtdPTTR10\$SP\$PrtOps\$setVal	Over Temperature 10 protection setting	Long
280	*PROT/RtdPTTR10\$SP\$PrtOps\$setNam	Over Temperature 10 custom-name	Vstring64
281	*PROT/RtdPTTR11\$ST\$Str\$general	Over Temperature 11 trip pickup	Bool
282	*PROT/RtdPTTR11\$ST\$Op\$general	Over Temperature 11 trip status	Bool
283	*PROT/RtdPTTR11\$SP\$StrVal\$setMag\$i	Over Temperature 11 trip value	Long
284	*PROT/RtdPTTR11\$SP\$OpDITmms\$setVal	Over Temperature 11 trip time delay	Long
285	*PROT/RtdPTTR11\$SP\$PrtOps\$setVal	Over Temperature 11 protection setting	Long

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286	*PROT/RtdPTTR11\$SP\$PrtOps\$setNam	Over Temperature 11 custom-name	Vstring64
287	*PROT/RtdPTTR12\$ST\$Str\$general	Over Temperature 12 trip pickup	Bool
288	*PROT/RtdPTTR12\$ST\$Op\$general	Over Temperature 12 trip status	Bool
289	*PROT/RtdPTTR12\$SP\$StrVal\$setMag\$i	Over Temperature 12 trip value	Long
290	*PROT/RtdPTTR12\$SP\$OpDITmms\$setVal	Over Temperature 12 trip time delay	Long
291	*PROT/RtdPTTR12\$SP\$PrtOps\$setVal	Over Temperature 12 protection setting	Long
292	*PROT/RtdPTTR12\$SP\$PrtOps\$setNam	Over Temperature 12 custom-name	Vstring64
293	*PROT/ShcPIOC1\$ST\$Str\$general	Short Circuit trip pickup	Bool
294	*PROT/ShcPIOC1\$ST\$Op\$general	Short Circuit trip status	Bool
295	*PROT/ShcPIOC1\$SP\$StrVal\$setMag\$i	Short Circuit trip value	Long
296	*PROT/ShcPIOC1\$SP\$PrtOps\$setVal	Short Circuit protection setting	Long
297	*PROT/SpnPBSP1\$ST\$Str\$general	Backspin inhibit pickup	Bool
298	*PROT/SpnPBSP1\$ST\$Op\$general	Backspin inhibited status	Bool
299	*PROT/SpnPBSP1\$SP\$OpDITmms\$setVal	Backspin trip time delay	Long
300	*PROT/SpnPBSP1\$SP\$PrtOps\$setVal	Backspin protection setting	Long
301	*PROT/SrlPSTO1\$ST\$Str\$general	Serial timeout trip pickup	Bool
302	*PROT/SrlPSTO1\$ST\$Op\$general	Serial timeout trip status	Bool
303	*PROT/SrlPSTO1\$SP\$OpDITmms\$setVal	Serial timeout delay	Long
304	*PROT/SrlPSTO1\$SP\$PrtOps\$setVal	Serial timeout protection setting	Long
305	*PROT/StrPMRI1\$ST\$Op\$general	Too many starts inhibited status	Bool
306	*PROT/StrPMRI1\$ST\$StrInh\$stVal	Too many starts inhibit pickup	Bool
307	*PROT/StrPMRI1\$SP\$MaxNumStr\$setVal	Starts per period	Long
308	*PROT/StrPMRI1\$SP\$MaxStrTmm\$setVal	Start Period	Long
309	*PROT/StrPMRI1\$SP\$InhTmm\$setVal	Start inhibit time	Long
310	*PROT/StrPMRI1\$SP\$StrInhTyp\$setCharact	Start Inhibit Type	Byte
311	*PROT/StrPMRI1\$SP\$PrtOps\$setVal	Too many starts protection setting	Long
312	*PROT/SysPTOF1\$ST\$Str\$general	Over frequency trip pickup	Bool
313	*PROT/SysPTOF1\$ST\$Op\$general	Over frequency trip status	Bool
314	*PROT/SysPTOF1\$SP\$StrVal\$setMag\$i	Over frequency trip level	Long
315	*PROT/SysPTOF1\$SP\$OpDITmms\$setVal	Over frequency trip time delay	Long
316	*PROT/SysPTOF1\$SP\$PrtOps\$setVal	Over frequency protection setting	Long
317	*PROT/SysPTUF1\$ST\$Str\$general	Under frequency trip pickup	Bool
318	*PROT/SysPTUF1\$ST\$Op\$general	Under frequency trip status	Bool
319	*PROT/SysPTUF1\$SP\$StrVal\$setMag\$i	Under frequency trip level	Long
320	*PROT/SysPTUF1\$SP\$OpDITmms\$setVal	Under frequency trip time delay	Long
321	*PROT/SysPTUF1\$SP\$PrtOps\$setVal	Under frequency protection setting	Long
322	*PROT/ThmPTTR1\$ST\$Str\$general	Thermal overload trip pickup	Bool
323	*PROT/ThmPTTR1\$ST\$Op\$general	Thermal overload trip status	Bool
324	*PROT/ThmPTTR1\$ST\$AlmThm\$general	Thermal overload alarm status	Bool
325	*PROT/ThmPTTR1\$SP\$ConsTms\$setVal	T6x	Long
326	*PROT/ThmPTTR1\$SP\$ConsTmsHS\$setVal	High speed T6x	Long
327	*PROT/ThmPTTR1\$SP\$ConsTmsLS\$setVal	Low speed T6x	Long
328	*PROT/ThmPTTR1\$SP\$HtCldRat\$setVal	Hot cold ratio	Long
329	*PROT/ThmPTTR1\$SP\$CldTmFact\$setVal	Cool time factor	Long
330	*PROT/ThmPTTR1\$SP\$CtOffFlc\$setCharact	Cutoff Multiple FLC	Byte
331	*PROT/ThmPTTR1\$SP\$PrtOps\$setVal	Thermal overload protection setting	Long
332	*PROT/TotPOPF1\$ST\$Str\$general	Over power factor trip pickup	Bool
333	*PROT/TotPOPF1\$ST\$Op\$general	Over power factor trip status	Bool
334	*PROT/TotPOPF1\$SP\$StrVal\$setMag\$i	Over power factor trip level	Long
335	*PROT/TotPOPF1\$SP\$OpDITmms\$setVal	Over power factor trip time delay	Long
336	*PROT/TotPOPF1\$SP\$PrtOps\$setVal	Over power factor protection setting	Long
337	*RECD/DisRDRE1\$ST\$RcdMade\$stVal	RCD available	Bool

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338	*RECD/DisRDRE1\$ST\$FltNum\$rcdNam	RCD comtrade name	Vstring255
339	*RECD/DisRDRE1\$CO\$RdFlgClr\$Oper\$ctlVal	Clear the RCD flag in order to read the comtrade files again	Bool
340	*RECD/DisRDRE1\$SP\$TrgTyp\$setCharact	Trigger type	Byte
341	*RECD/DisRDRE1\$SP\$PreTpos\$setCharact	Trigger position	Byte
342	*RECD/DisRDRE1\$SP\$RcdRes\$setCharact	Record resolution	Byte
343	*RECD/DisRDRE1\$SP\$MaxTrace\$setVal	Max record traces	Long
344	*RECD/DisRDRE1\$SP\$DiChNum\$setVal	Digital input channel number	Long
345	*RECD/DisRDRE1\$SP\$DoChNum\$setVal	Digital output channel number	Long
346	*SYST/AlmRFLT1\$MX\$A\$phsA\$cVal\$mag\$i	Recent pre alarm I1 (red phase)	Long
347	*SYST/AlmRFLT1\$MX\$A\$phsB\$cVal\$mag\$i	Recent pre alarm I2 (yellow phase)	Long
348	*SYST/AlmRFLT1\$MX\$A\$phsC\$cVal\$mag\$i	Recent pre alarm I3 (blue phase)	Long
349	*SYST/AlmRFLT1\$MX\$A\$res\$cVal\$mag\$i	Recent pre alarm I0 (e/f)	Long
350	*SYST/AlmRFLT1\$MX\$PhV\$phsA\$cVal\$mag\$i	Recent pre alarm V1 (red phase)	Long
351	*SYST/AlmRFLT1\$MX\$PhV\$phsB\$cVal\$mag\$i	Recent pre alarm V2 (yellow phase)	Long
352	*SYST/AlmRFLT1\$MX\$PhV\$phsC\$cVal\$mag\$i	Recent pre alarm V3 (blue phase)	Long
353	*SYST/AlmRFLT1\$MX\$Vref\$cVal\$mag\$i	Recent pre alarm Vref (voltage reference)	Long
354	*SYST/AlmRFLT1\$MX\$PF\$mag\$i	Recent pre alarm PF	Long
355	*SYST/AlmRFLT1\$MX\$Hz\$mag\$i	Recent pre alarm frequency	Long
356	*SYST/AlmRFLT1\$MX\$ThmCap\$mag\$i	Recent pre alarm thermal capacity	Long
357	*SYST/AlmRFLT1\$MX\$Tmp\$mag\$i	Recent pre alarm temperature 0	Long
358	*SYST/AlmRFLT1\$MX\$Tmp1\$mag\$i	Recent pre alarm temperature 1	Long
359	*SYST/AlmRFLT1\$MX\$Tmp2\$mag\$i	Recent pre alarm temperature 2	Long
360	*SYST/AlmRFLT1\$MX\$Tmp3\$mag\$i	Recent pre alarm temperature 3	Long
361	*SYST/AlmRFLT1\$MX\$Tmp4\$mag\$i	Recent pre alarm temperature 4	Long
362	*SYST/AlmRFLT1\$MX\$Tmp5\$mag\$i	Recent pre alarm temperature 5	Long
363	*SYST/AlmRFLT1\$MX\$Tmp6\$mag\$i	Recent pre alarm temperature 6	Long
364	*SYST/AlmRFLT1\$MX\$Tmp7\$mag\$i	Recent pre alarm temperature 7	Long
365	*SYST/AlmRFLT1\$MX\$Tmp8\$mag\$i	Recent pre alarm temperature 8	Long
366	*SYST/AlmRFLT1\$MX\$Tmp9\$mag\$i	Recent pre alarm temperature 9	Long
367	*SYST/AlmRFLT1\$MX\$Tmp10\$mag\$i	Recent pre alarm temperature 10	Long
368	*SYST/AlmRFLT1\$MX\$Tmp11\$mag\$i	Recent pre alarm temperature 11	Long
369	*SYST/AlmRFLT1\$MX\$Tmp12\$mag\$i	Recent pre alarm temperature 12	Long
370	*SYST/AlmRFLT1\$ST\$Loc\$stVal	Local operation mode	Bool
371	*SYST/AlmRFLT1\$ST\$FltPos\$stVal	Recent alarm sequence number	Byte
372	*SYST/AlmRFLT1\$ST\$FltNo\$stVal	Recent alarm number	Long
373	*SYST/AlmRFLT1\$ST\$FltNo\$t	Recent alarm time & date	Utctime
374	*SYST/AlmRFLT1\$CO\$FltPos\$Oper\$ctlVal	Set the Recent alarm sequence number	Byte
375	*SYST/DinGGIO1\$ST\$Binp01\$stVal	Digital input 1 status	Bool
376	*SYST/DinGGIO1\$ST\$Binp02\$stVal	Digital input 2 status	Bool
377	*SYST/DinGGIO1\$ST\$Binp03\$stVal	Digital input 3 status	Bool
378	*SYST/DinGGIO1\$ST\$Binp04\$stVal	Digital input 4 status	Bool
379	*SYST/DinGGIO1\$ST\$Binp05\$stVal	Digital input 5 status	Bool
380	*SYST/DinGGIO1\$ST\$Binp06\$stVal	Digital input 6 status	Bool
381	*SYST/DinGGIO1\$ST\$Binp07\$stVal	Digital input 7 status	Bool
382	*SYST/DinGGIO1\$ST\$Binp08\$stVal	Digital input 8 status	Bool
383	*SYST/DinGGIO1\$ST\$Binp09\$stVal	Digital input 9 status	Bool
384	*SYST/DinGGIO1\$ST\$Binp10\$stVal	Digital input 10 status	Bool
385	*SYST/DinGGIO1\$ST\$Binp11\$stVal	Digital input 11 status	Bool
386	*SYST/DinGGIO1\$ST\$Binp12\$stVal	Digital input 12 status	Bool
387	*SYST/DinGGIO1\$SP\$DiSet01\$setCharact	Digital input 1 setting	Byte
388	*SYST/DinGGIO1\$SP\$DiSet02\$setCharact	Digital input 2 setting	Byte
389	*SYST/DinGGIO1\$SP\$DiSet03\$setCharact	Digital input 3 setting	Byte

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390	*SYST/DinGGIO1\$SP\$DiSet04\$setCharact	Digital input 4 setting	Byte
391	*SYST/DinGGIO1\$SP\$DiSet05\$setCharact	Digital input 5 setting	Byte
392	*SYST/DinGGIO1\$SP\$DiSet06\$setCharact	Digital input 6 setting	Byte
393	*SYST/DinGGIO1\$SP\$DiSet07\$setCharact	Digital input 7 setting	Byte
394	*SYST/DinGGIO1\$SP\$DiSet08\$setCharact	Digital input 8 setting	Byte
395	*SYST/DinGGIO1\$SP\$DiSet09\$setCharact	Digital input 9 setting	Byte
396	*SYST/DinGGIO1\$SP\$DiSet10\$setCharact	Digital input 10 setting	Byte
397	*SYST/DinGGIO1\$SP\$DiSet11\$setCharact	Digital input 11 setting	Byte
398	*SYST/DinGGIO1\$SP\$DiSet12\$setCharact	Digital input 12 setting	Byte
399	*SYST/EfcTCTR1\$SP\$ARtg\$setMag\$i	EFCT Primary	Long
400	*SYST/LLN0\$GO\$ItlBasicGOOSE\$GoEna	Enable/disable GOOSE	Bool
401	*SYST/LPHD1\$ST\$PhyHealth\$stVal	Relay device status	
402	*SYST/LPHD1\$ST\$Loc\$stVal	Local operation mode	Bool
403	*SYST/LPHD1\$CO\$WrtPrt\$Oper\$ctlVal	Activate setting-write protection	Bool
404	*SYST/LPHD1\$DC\$PhyNam\$hwRev	Hardware type: Motorvision MVD	Vstring255
405	*SYST/LPHD1\$DC\$PhyNam\$swRev	Software version	Vstring255
406	*SYST/LPHD1\$DC\$PhyNam\$serNum	Relay serial number	Vstring255
407	*SYST/LPHD1\$DC\$PhyNam\$model	Relay Type: Motorvision MVD	Vstring255
408	*SYST/LPHD1\$SP\$PasWrd\$setCharact	Enable/disable user password	Byte
409	*SYST/LPHD1\$SP\$PasStr\$setNam	User password text string	Vstring64
410	*SYST/LPHD1\$SP\$SysPas\$setCharact	Enable/disable engineer password	Byte
411	*SYST/LPHD1\$SP\$ScnSav\$setCharact	Enable/disable sreen saver	Byte
412	*SYST/LPHD1\$SP\$ScnTms\$setVal	Screen saver timeout setting	Long
413	*SYST/LPHD1\$SP\$InvLed\$setCharact	Invert LED color setting	Byte
414	*SYST/LPHD1\$SP\$SwpLed\$setCharact	Swap LED position setting	Byte
415	*SYST/LPHD1\$SP\$RtnTmm\$setCharact	Default Return Time	Byte
416	*SYST/LPHD1\$SP\$DinCfg\$setCharact	Digital Input Configuration	Byte
417	*SYST/LPHD1\$SP\$StrBlk\$setCharact	Block Remote Starts	Byte
418	*SYST/LPHD1\$SP\$OttOpt\$setCharact	O-T Trip Options	Byte
419	*SYST/LPHD1\$SP\$PreAlm\$setCharact	Pre Alarm	Byte
420	*SYST/LPHD1\$SP\$ShtlhbUnit\$setCharact	Short/Inhibit Unit	Byte
421	*SYST/MixGGIO1\$ST\$ISCSO\$stVal	Relay output 1-4 status	Byte
422	*SYST/MixGGIO1\$ST\$IntIn01\$stVal	Digital input 1-8 status	Byte
423	*SYST/MixGGIO1\$ST\$IntIn02\$stVal	Digital input 9-12 status	Byte
424	*SYST/MixGGIO1\$ST\$LgcSt\$stVal	Logical status	Byte
425	*SYST/MixGGIO1\$ST\$IntOut01\$stVal	Trip status (bit 0-15)	Long
426	*SYST/MixGGIO1\$ST\$IntOut02\$stVal	Trip status (bit 16-31)	Long
427	*SYST/MixGGIO1\$ST\$IntOut03\$stVal	Trip status (bit 32-47)	Long
428	*SYST/MixGGIO1\$ST\$IntOut04\$stVal	Trip status (bit 48-63)	Long
429	*SYST/MixGGIO1\$ST\$IntOut05\$stVal	Alarm status (bit 0-15)	Long
430	*SYST/MixGGIO1\$ST\$IntOut06\$stVal	Alarm status (bit 16-31)	Long
431	*SYST/MixGGIO1\$ST\$IntOut07\$stVal	Alarm status (bit 32-47)	Long
432	*SYST/MixGGIO1\$ST\$IntOut08\$stVal	Alarm status (bit 48-63)	Long
433	*SYST/MixGGIO1\$ST\$IntOut09\$stVal	Inhibit status (bit 0-15)	Long
434	*SYST/MixGGIO1\$ST\$IntOut10\$stVal	Inhibit status (bit 16-31)	Long
435	*SYST/MixGGIO1\$ST\$IntOut11\$stVal	Inhibit status (bit 32-47)	Long
436	*SYST/MixGGIO1\$ST\$IntOut12\$stVal	Inhibit status (bit 48-63)	Long
437	*SYST/PhsTCTR1\$SP\$ARtg\$setMag\$i	CT primary	Long
438	*SYST/PhsTCTR1\$SP\$Flc\$setMag\$i	Full load current(FLC)	Long
439	*SYST/PhsTCTR1\$SP\$FlcLo\$setMag\$i	Low speed FLC	Long
440	*SYST/PhsTCTR1\$SP\$FlcHi\$setMag\$i	High speed FLC	Long
441	*SYST/PhsTCTR1\$SP\$Arc\$setMag\$i	Actual running current(ARC)	Long

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442	*SYST/PhsTCTR1\$SP\$ArcLo\$setMag\$i	Low speed ARC	Long
443	*SYST/PhsTCTR1\$SP\$ArcHi\$setMag\$i	High speed ARC	Long
444	*SYST/PhsTVTR1\$SP\$VRtg\$setMag\$i	VT primary	Long
445	*SYST/PhsTVTR1\$SP\$VTsec\$setMag\$i	VT secondary	Long
446	*SYST/PhsTVTR1\$SP\$VtgVal\$setMag\$i	Voltage	Long
447	*SYST/PhsTVTR1\$SP\$VtgRef\$setCharact	Voltage ref.	Byte
448	*SYST/RlyGGIO1\$ST\$Bout1\$stVal	Relay output 1 status	Bool
449	*SYST/RlyGGIO1\$ST\$Bout2\$stVal	Relay output 2 status	Bool
450	*SYST/RlyGGIO1\$ST\$Bout3\$stVal	Relay output 3 status	Bool
451	*SYST/RlyGGIO1\$ST\$Bout4\$stVal	Relay output 4 status	Bool
452	*SYST/RlyGGIO1\$SP\$DoSet2\$setCharact	Relay output 2 setting	Byte
453	*SYST/RlyGGIO1\$SP\$DoSet3\$setCharact	Relay output 3 setting	Byte
454	*SYST/RlyGGIO1\$SP\$DoSet4\$setCharact	Relay output 4 setting	Byte
455	*SYST/TrpRFLT1\$MX\$A\$phsA\$cVal\$mag\$i	Recent pre trip I1(red phase)	Long
456	*SYST/TrpRFLT1\$MX\$A\$phsB\$cVal\$mag\$i	Recent pre trip I2(yellow phase)	Long
457	*SYST/TrpRFLT1\$MX\$A\$phsC\$cVal\$mag\$i	Recent pre trip I3(blue phase)	Long
458	*SYST/TrpRFLT1\$MX\$A\$res\$cVal\$mag\$i	Recent pre trip I0 (e/f)	Long
459	*SYST/TrpRFLT1\$MX\$PhV\$phsA\$cVal\$mag\$i	Recent pre trip V1 (red phase)	Long
460	*SYST/TrpRFLT1\$MX\$PhV\$phsB\$cVal\$mag\$i	Recent pre trip V2 (yellow phase)	Long
461	*SYST/TrpRFLT1\$MX\$PhV\$phsC\$cVal\$mag\$i	Recent pre trip V3 (blue phase)	Long
462	*SYST/TrpRFLT1\$MX\$Vref\$cVal\$mag\$i	Recent pre trip Vref(voltage reference)	Long
463	*SYST/TrpRFLT1\$MX\$PF\$mag\$i	Recent pre trip PF	Long
464	*SYST/TrpRFLT1\$MX\$Hz\$mag\$i	Recent pre trip frequency	Long
465	*SYST/TrpRFLT1\$MX\$ThmCap\$mag\$i	Recent pre trip thermal capacity	Long
466	*SYST/TrpRFLT1\$MX\$Tmp\$mag\$i	Recent pre trip temperature 0	Long
467	*SYST/TrpRFLT1\$MX\$Tmp1\$mag\$i	Recent pre trip temperature 1	Long
468	*SYST/TrpRFLT1\$MX\$Tmp2\$mag\$i	Recent pre trip temperature 2	Long
469	*SYST/TrpRFLT1\$MX\$Tmp3\$mag\$i	Recent pre trip temperature 3	Long
470	*SYST/TrpRFLT1\$MX\$Tmp4\$mag\$i	Recent pre trip temperature 4	Long
471	*SYST/TrpRFLT1\$MX\$Tmp5\$mag\$i	Recent pre trip temperature 5	Long
472	*SYST/TrpRFLT1\$MX\$Tmp6\$mag\$i	Recent pre trip temperature 6	Long
473	*SYST/TrpRFLT1\$MX\$Tmp7\$mag\$i	Recent pre trip temperature 7	Long
474	*SYST/TrpRFLT1\$MX\$Tmp8\$mag\$i	Recent pre trip temperature 8	Long
475	*SYST/TrpRFLT1\$MX\$Tmp9\$mag\$i	Recent pre trip temperature 9	Long
476	*SYST/TrpRFLT1\$MX\$Tmp10\$mag\$i	Recent pre trip temperature 10	Long
477	*SYST/TrpRFLT1\$MX\$Tmp11\$mag\$i	Recent pre trip temperature 11	Long
478	*SYST/TrpRFLT1\$MX\$Tmp12\$mag\$i	Recent pre trip temperature 12	Long
479	*SYST/TrpRFLT1\$ST\$Loc\$stVal	Local operation mode	Bool
480	*SYST/TrpRFLT1\$ST\$FltPos\$stVal	Recent trip sequence number	Byte
481	*SYST/TrpRFLT1\$ST\$FltNo\$stVal	Recent trip number	Long
482	*SYST/TrpRFLT1\$ST\$FltNo\$t	Recent trip time & date	Utctime
483	*SYST/TrpRFLT1\$CO\$FltPos\$Oper\$ctlVal	Set the Recent trip sequence number	Byte

Note:

1) All analogue values or parameter values are stored in integer format (i.e. floating point format “\$f” is not used).

Their actual value = ((\$i) value)*(\$scaleFactor)+(\$offset).

2) The write-protection must be deactivated first by manipulating the “WrtPrt” control of the logic node “LPHD1” before any operation of writing to a desired logic attribute is executed. The write-protection is activated when the system powers up and the de-activation status automatically becomes invalid in 5 minutes after the deactivation operation is successfully carried out. In order to de-activate the write-protection, the value of “1” has to be successfully written to the logic attribute “LHPD1\$CO\$WrtPrt\$Oper\$ctlVal” and the correct order of manipulating a control model has to be followed as well.

3.4 MMS data-type conversions

The following table shows the relationships between the Part 7 and Part 8-1 data types. The definitions presented above use MMS (Part 8-1) data types.

Part 7 Data Type	MMS Data Type (Part 8-1)	Part 7 Description
BOOLEAN	Bool	Logical TRUE/FALSE value
BVstring13	BVstring13	Variable bit string (up to 13 bits)
CODED_ENUM	Byte	Coded enumeration
CODED_ENUM2	Byte	Coded enumeration (2)
EntryTime	Btime6	8.1 Section 8.1.3.7
ENUMERATED8	Byte	8 bit enumerated value
ENUMERATED16	Short	16 bit enumerated value
FLOAT32	Float	32 bit floating point value
FLOAT64	Double	64 bit floating point value
INT8	Byte	8 bit signed integer value
INT8U	Ubyte	8 bit unsigned integer value
INT16	Short	16 bit signed integer value
INT16U	Ushort	16 bit unsigned integer value
INT24U	Ulong	24 bit unsigned integer value
INT32	Long	32 bit signed integer value
INT32U	Ulong	32 bit unsigned integer value
INT128	Long	128 bit signed integer value
OCTET_STRING6	Ostring6	6 character string (8 bits per character)
OCTET_STRING8	Ostring8	8 character string (8 bits per character)
OCTET_STRING64	Ostring64	64 character string (8 bits per character)
Quality	BVstring13	IEC 61850 Quality
RTYP_BOOL	Bool	Reporting type - BOOLEAN
RTYP_BSTR6	Bstring6	Reporting type - 6 bit string
RTYP_BSTR8	Bstring8	Reporting type - 8 bit string
RTYP_BSTR9	Bstring9	Reporting type - 9 bit string
RTYP_BTIME6	Btime6	Reporting type - 6 byte timestamp
RTYP_BVSTR6	BVstring6	Reporting type - Variable bit string (up to 6 bits)
RTYP_BVSTR8	BVstring8	Reporting type - Variable bit string (up to 8 bits)
RTYP_BVSTR10	BVstring10	Reporting type - Variable bit string (up to 10 bits)
RTYP_INT16U	Ushort	Reporting type - 16 bit unsigned integer value
RTYP_INT32U	Ulong	Reporting type - 32 bit unsigned integer value
RTYP_INT8U	Ubyte	Reporting type - 8 bit unsigned integer value
RTYP_OSTR8	Ostring8	Reporting type - 8 character string (8 bits per character)
RTYP_VSTR32	Vstring32	Reporting type - 32 character string
RTYP_VSTR65	Vstring65	Reporting type - 65 character string
TimeStamp	Utime	IEC 61850 Time stamp
UNICODE_STRING255	UTF8Vstring255	255 character string (16 bits per unicode character)
UTC_TM	Utime	UTC Timestamp
VISIBLE_STRING64	Vstring64	64 character string
VISIBLE_STRING65	Vstring65	65 character string
VISIBLE_STRING97	Vstring97	97 character string
VISIBLE_STRING255	Vstring255	255 character string