

Model Implementation Conformance Statement for the IEC 61850 Edition 2 server interface in MRZS-S

Version 1
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1. Introduction

This model implementation conformance statement is applicable for MRZS-S, with firmware : 16.13.1.1

2. Logical Nodes List

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

L: System Logical Nodes
LPHD (Physical device information)
LLNO (Logical node zero)
C: Logical Nodes for control
CSWI (Switch controller)
P: Logical Nodes for protection functions
PTOC (Time overcurrent)
PTOV (Overvoltage)
PTUV (Undervoltage)
R: Logical nodes for protection related functions
RADR (Disturbance recorder channel analogue)
RBDR (Disturbance recorder channel binary)
RBRF (Breaker failure)
RREC (Autoreclosing)
G: Logical Nodes for generic references
GGIO (Generic process I/O)
GAPC (Generic automatic process control)
M: Logical Nodes for metering and measurement
MMTR (Metering)
MMXU (Measurement)
MSQI (Sequence and imbalance)
S: Logical Nodes for
SARC (Monitoring and diagnostics for arcs)
X: Logical Nodes for switchgear
XCBR (Circuit breaker)

3. New Logical Nodes

The following table use

- M: Data object is mandatory in the IEC 61850-7-4 ED.2.
- O: Data object is optional in the IEC 61850-7-4 ED.2 and is used in the device.
- E: Data object is an extension to the IEC 61850-7-4 ED.2.

LLNO

LLNO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
LLNO		Logical node zero		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_1	Name plate	M	

GNRCSWI1 (Switch controller)

CSWI class				
Data object name	Common data class	Explanation	M/O/E	Remarks
CSWI		Switch controller		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
OpCls	ACT_1	Operation "Close switch"	O	
OpOpn	ACT_1	Operation "Open switch"	O	
Controls				
Pos	DPC_1	Switch, general	M	

CFGGIO1 (Communication function)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		Communication function		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	

Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Ind1 to Ind16	SPS_0	CF output	O	

MMSRECGGIO1, MMSRECGGIO2 (MMS blocks single point)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		MMS blocks		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Blk	SPS_0	Blocking signal	O	
Controls				
SPCSO1 to SPCSO8	SPC_0	Information inputs for receiving incoming MMS messages	O	

MMSRECGGIO3, MMSRECGGIO4 (MMS blocks double point)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		MMS blocks		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Blk	SPS_0	Blocking signal	O	
Controls				
DPCSO1, DPCSO3, DPCSO5,	DPC_0	Information inputs for receiving incoming MMS messages	O	

DPCSO7				
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GSBIGGIO1 ... GSBIGGIO16 (GOOSE blocks)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		GOOSE blocks		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Blk	SPS_0	Blocking signal	O	
Ind1 to Ind8	SPS_1	data inputs for GOOSE messages	O	

BIGGIO1 (Digital inputs)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		Digital inputs		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Ind1 to Ind16	SPS_0	General indication: Digital inputs DI1-DI16	O	

BOGGIO1 (Relay outputs)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		Relay outputs		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	

Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Ind1 to Ind16	SPS_0	General indication: Digital outputs DO1-DO16	O	

LEDGGIO1 (LED status)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		LED status		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Ind1 to Ind17	SPS_0	General indication: LEDs status from 1 to 15 and "Trip", "Start"	O	

DFGGIO1 (User defined function)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		User defined function		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Ind1 to Ind8	SPS_0	General indication: UD-Functions outputs status from 1 to 8	O	

DTGGIO1 (User defined trigger)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		User defined trigger		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
SPCS01 to SPCS04	SPC_2	General indication: UD-triggers inputs status from 1 to 4	O	

MFPGAPC1 ... MFPGAPC8 (Multi-function protection)

GAPC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GAPC		Multi-function protection		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	MFP starting element operation signal	O	
Op	ACT_1	MFP operation signal	O	
Blk	SPS_0	Dynamic blocking of function	O	

CMSQI1 (Sequence and imbalance)

MSQI class				
Data object name	Common data class	Explanation	M/O/E	Remarks
MSQI		Sequence and imbalance		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	

NamPlt	LPL_0	Name plate	M	
Measured values				
Seq_A	SEQ_0	sequence current	C	
Seq_V	SEQ_0	voltage sequence	C	

CMMXU2 (Measurement VT2)

MMXU class				
Data object name	Common data class	Explanation	M/O/E	Remarks
MMXU		Measurement VT2		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Measured values				
Hz	MV_0	Frequency	O	
PhV	WYE_0	Phase to ground voltages (VL1ER, ...)	O	
PPV	DEL_0	Phase to phase voltages(VL1, VL2, VL3)	O	

IPTOC1 (Inrush protection)

PTOC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTOC		Inrush protection		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	
Op	ACT_1	Operate	M	
Blk	SPS_0	Blocking for the signal presence time	O	

NSPTOC1 (Negative sequence overcurrent protection)

PTOC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTOC		Negative sequence overcurrent protection		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	
Op	ACT_1	Operate	M	
Blk	SPS_0	Blocking for the signal presence time	O	

GNRPTOV1, GNRPTOV2 (Overvoltage protection)

PTOV class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTOV		Overvoltage		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	
Op	ACT_1	Operate	O	
Blk	SPS_0	Blocking for the signal presence time	O	

GNRRADR1 (Disturbance recorder channel analogue)

RADR class				
Data object name	Common data class	Explanation	M/O/E	Remarks
RADR		Disturbance recorder channel analogue		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	

Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
ChTrg	SPS_0	Channel triggered	M	

GNRRBDR1 (Disturbance recorder channel binary)

RBDR class				
Data object name	Common data class	Explanation	M/O/E	Remarks
RBDR		Disturbance recorder channel binary		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
ChTrg	SPS_0	Channel triggered	M	

4. Extended Logical Nodes

LPHD1 (Physical device information)

LPHD class				
Data object name	Common data class	Explanation	M/O/E	Remarks
LPHD		Physical device information		
Data objects				
PhyNam	DPL_0	Physical device name plate	M	
Status Information				
PhyHealth	ENS_0	Physical device health	M	
Proxy	SPS_0	Indicates if this LN is a proxy	M	Defaulted to FALSE
Flt	SPS_2	General fault	E	
FltAlm	SPS_2	Emergency Fault	E	
ChgCfg	SPS_2	Settings change	E	
ExtProtOff	SPS_2	External protections disabling signal	E	
ErrEL	SPS_2	UD-Logic error	E	
RestrGrSG	SPS_2	The presence of the signal means that a setpoints group is not set via BI	E	
RemReady	SPS_2	Device remote control readiness signal (Rem Ctl Ena)	E	

ClrRemReady	SPS_2	Signal: reset the "Rem Ctl Ena" signal blocking set when the protections are triggered	E	
Controls				
ClrInd	SPC_1	LED Reset	E	
ClrRele	SPC_1	Relay reset	E	

DLGGIO1 (User defined logic)

GGIO class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GGIO		User defined logic		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
And1 to And8	SPS_2	General indication: Logic element "AND" status	E	
Or1 to Or8	SPS_2	General indication: Logic element "OR" status	E	
Not1 to Not16	SPS_2	General indication: Logic element "NOT" status	E	
Xor1 to Xor8	SPS_2	General indication: Logic element "XOR" status	E	

PHCHGAPC1 (Phasing check)

GAPC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GAPC		Phasing check		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Starting element operation signal	O	
Op	ACT_1	Operation signal	O	
PhUOp	ACT_0	Unacceptable channels voltage difference	E	
PhPhiOp	ACT_0	Unacceptable channels phase angles difference	E	
PhfOp	ACT_0	Unacceptable channels frequency difference	E	

IPSVTop1	ACT_0	Channel 1 incorrect phase rotation	E	
IPSVTop2	ACT_0	Channel 2 incorrect phase rotation	E	

ATSGAPC1, ATSGAPC2 (Automatic transfer switch)

GAPC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
GAPC		Automatic transfer switch		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Starting element operation signal	O	
Op	ACT_1	Operation signal	O	
Blk	SPS_0	ATS Block		
ExtOff	SPS_2	ATS Int Disable	E	
ExrelBlk	SPS_2	ATS Int Block Release	E	
StrUminLe	ACD_1	Vmin < Vx Start	E	
StrUminGr	ACD_1	Vmin > Vx Start	E	
StrUmaxGr	ACD_1	Vmax > Vx Start	E	
StrUmaxLe	ACD_1	Vmax < Vx Start	E	
StatBlkCH	SPS_2	ATS Static Block	E	
RelCB	SPS_2	ATS Ch Op Com	E	
StrCB	SPS_2	ATS Ch Cls Com	E	
ProVT	SPS_2	ATS Ch Ext Op	E	
StrCBon	SPS_2	ATS Ch Cls Com1	E	
UVT	SPS_2	Voltage VT1/VT2	E	
ATSchStr	SPS_2	ATS Ch Op Com2	E	

CMMXU1 (Measurement VT1)

MMXU class				
Data object name	Common data class	Explanation	M/O/E	Remarks
MMXU		Measurement VT1		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	

Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Measured values				
TotW	MV_0	Total active power (total P)	O	
TotVAr	MV_0	Total reactive power (total Q)	O	
TotVA	MV_0	Total apparent power (total S)	O	
TotPF	MV_0	Average power factor (total PF)	O	
Hz	MV_0	Frequency	O	
PhV	WYE_2	Phase to ground voltages (VL1ER, ...)	O	
A	WYE_2	Phase currents (IL1, IL2, IL3)	O	
PPV	DEL_0	Phase to phase voltages(VL1, VL2, VL3)	O	
Ah2	WYE_1	Phase currents (IL1, IL2, IL3) h2	E	

CMMTR1 (Metering)

MMTR class				
Data object name	Common data class	Explanation	M/O/E	Remarks
MMTR		Metering		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Measured values				
TotWhh	BCR_0	Net real energy Ea+	E	
TotWhl	BCR_0	Net real energy Ea-	E	
TotVArhA	BCR_0	Net reactive energy Eq1	E	
TotVArhB	BCR_0	Net reactive energy Eq2	E	
TotVArhC	BCR_0	Net reactive energy Eq3	E	
TotVArhD	BCR_0	Net reactive energy Eq4	E	

GNRPTOC1, GNRPTOC2, GNRPTOC3, GNRPTOC4 (Overcurrent protection)

PTOC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTOC		Overcurrent protection		
Data objects				

Common Logical Node Information				
Mod	ENC_0	Mode	M	Status-only
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	
Op	ACT_1	Operate	M	
Blk	SPS_0	OCP blocking for the signal presence time	O	
StrU	ACD_1	OCP starting element signal with voltage start	E	
StrF	ACD_1	Direct OCP starting element operation signal in the forward direction	E	
StrB	ACD_1	Direct OCP starting element operation signal in the backward direction	E	
SecF	SPS_2	One of the current vectors of direct OCP is in the "forward" sector	E	
SecB	SPS_2	One of the current vectors of direct OP is in the "backward" sector	E	
StrUu	ACD_1	OCP voltage starting element operation signal with voltage start	E	
BlkAcc	SPS_2	OCP acceleration blocking	E	used only for GNRPTOC2

GNRUPTOC1 (General signals for 4 stages of overcurrent protection)

PTOC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTOC		General signals for 4 stages of overcurrent protection		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	not defined
Op	ACT_1	Operate	M	not defined
BlkU	SPS_2	Signal of OCP direction blocking starting element according to voltage level	E	one signal for all OCP levels
CtrlU	ACT_0	Voltage circuit fault signal	E	one signal for all OCP levels

GNRPTUV1, GNRPTUV2 (Time undervoltage)

PTUV class				
Data object name	Common data class	Explanation	M/O/E	Remarks
PTUV		Time undervoltage		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	Start	M	
Op	ACT_1	Operate	M	
Blk	SPS_0	Blocking for the signal presence time	O	
StrIBlk	ACD_1	Current blocking starting element operation signal	E	
StrUBlk	ACD_1	Voltage blocking starting element operation signal	E	
Lnch	ACD_1	External start signal	E	

GNNRBRF1 (Circuit Breaker Failure Protection Device)

RBRF class				
Data object name	Common data class	Explanation	M/O/E	Remarks
RBRF		Circuit Breaker Failure Protection Device		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Str	ACD_0	CBFP starting element operation signal	O	
OpEx	ACT_1	Second CBFP stage operation signal	C	
OpIn	ACT_1	First CBFP stage operation signal	C	
Blk	SPS_0	CBFP blocking signal	O	
StrBI	ACD_1	Signal of CBFP diagram operation start via BI	E	

GNNRREC1 (Quadruple Auto Reclosing)

RBRF class				
Data object name	Common data class	Explanation	M/O/E	Remarks
RREC		Quadruple Auto Reclosing		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode AR1	M	
EnaAR1	ENC_1	AR1 on/off	E	
EnaAR2	ENC_1	AR2 on/off	E	
EnaAR3	ENC_1	AR3 on/off	E	
EnaAR4	ENC_1	AR4 on/off	E	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
AutoRecSt	ENS_2	Auto reclosing status	M	
OpCls	ACT_1	Signal: Enabled AR	M	
Blk	SPS_0	Dynamic blocking of function	O	
OpCyc1 to OpCyc4	INS_1	AR cycle operation signal	E	

AFDSARC1 (Arc fault detector)

SARC class				
Data object name	Common data class	Explanation	M/O/E	Remarks
SARC		Arc fault detector		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
FADet	SPS_0	Fault arc detected (signal: the presence of arc light is determined by a discrete signal from the BI)	M	
Blk	SPS_0	AFD stage static blocking signal	O	
FADetF1 ... FADetF3	SPS_2	Fault arc detected (fiber)	E	
FAStr	ACD_1	AFD stage starting element operation signal	E	
FAOp	ACT_0	AFD stage operation signal	E	

FAStrBI	ACD_1	AFD trigger signal from external arc protection sensor	E	
Controls				
FACntRs	INC_0	Fault arc counter	M	

GNRXCBR1 (Circuit breaker)

XCBR class				
Data object name	Common data class	Explanation	M/O/E	Remarks
XCBR		Circuit breaker		
Data objects				
Common Logical Node Information				
Mod	ENC_0	Mode	M	
ModCBres	ENC_1	CB resource	E	
Beh	ENS_1	Behaviour	M	
Health	ENS_0	Health	M	
NamPlt	LPL_0	Name plate	M	
Status Information				
Loc	SPS_0	Local control behavior	M	
OpCnt	INS_0	Operation counter	M	
OpCls	ACT_0	Trip device operation signal	E	
OpOpn	ACT_0	Switching device operation signal	E	
CBAct	SPS_2	Triggering signal of CB Monitoring block	E	
CBClCtrl	SPS_2	Close command circuit control	E	
CBOpnCtrl	SPS_2	Open command circuit control	E	
AExc	SPS_2	Maximum fault current exceedance of the circuit breaker disabling nominal current value signal	E	
CBCritRes	SPS_2	Circuit breaker critical resource	E	
CBResExh	SPS_2	Circuit breaker exceeded signal	E	
ProtCBoff	SPS_2	Ext CB Open Cmd	E	
Controls				
Pos	DPC_0	Switch position	M	
BlkOpn	SPC_2	Block opening	M	
BlkCls	SPC_2	Block closing	M	