Model Implementation Conformance Statement
for the IEC 61850 interface in SEL-710

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1. Introduction

This model implementation conformance statement is applicable for SEL-710 and SEL-710-0, with firmware R406:

This MICS document specifies the modelling extensions compared to IEC 61850 edition 1. For the exact details on the standardized model please compare the ICD substation configuration file: “0710 004.ICD”, version R300.

Clause 2 contains the list of implemented logical nodes.
Clause 3 describes the new and extended logical nodes.

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)
LLN0 (Logical node zero)
P: Logical Nodes for protection functions
PDIF (Differential)
PDOP (Directional overpower)
PDUP (Directional underpower)
PIOC (Instantaneous overcurrent)
PMRI (Motor restart inhibition)
PMSS (Motor starting time supervision)
POPF (Over power factor)
PTOC (Time overcurrent)
PTOF (Overfrequency)
PTOV (Overvoltage)
PTRC (Protection trip conditioning)
PTTR (Thermal overload)
PTUV (Undervoltage)
PZSU (Zero speed or underspeed)
G: Logical Nodes for generic references
GGIO (Generic process I/O)
M: Logical Nodes for metering and measurement
MDST (Demand metering statistics)
MMOT (Motor Measurement Data)
MMXU (Measurement)
MSQI (Sequence and imbalance)
MSTA (Metering statistics)
MTHR (Thermal measurements)

C: Logical Nodes for control
CSWI (Switch controller)
X: Logical Nodes for switchgear
XCBR (Circuit breaker)

3. Logical Node Extensions

The following table use

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

3.1. New Logical Nodes

New logical nodes have the lnNs attribute in the Name plate. The value of lnNs is a reference to the MICS document.

3.1.1 MDST Demand Metering Statistics

This LN shall be used for calculation of demand currents and energy in a three-phase system. This shall not be used for billing purposes.

MDST class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LNName		Shall be inherited from Logical-Node Class (see IEC 61850-7-2).		
Data				
Common Logical Node Information				
		LN shall inherit all Mandatory Data from Common Logical Node Class.	M	
Measured Values				
PosVArh	WYE	Reactive energy demand (energy flow out of bus)	E	
DmdWh	WYE	Real energy demand (energy flow out of bus)	E	
NegVArh	MV	Reactive energy supply (energy flow into bus)	E	

3.1.2 MTHR Thermal Metering

This LN shall be used to acquire values from RTDs and to calculate thermal capacity. This is mainly used for Thermal Monitoring.

MTHR class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LNName		Shall be inherited from Logical-Node Class (see IEC 61850-7-2).		
Data				
Common Logical Node Information				
		LN shall inherit all Mandatory Data from Common Logical Node Class.	M	
EEHealth	INS	External equipment health (RTD Communications Status)	E	
Measured Values				
MaxWdgTmp	MV	Maximum winding temperature	E	
MaxBrgTmp	MV	Maximum bearing temperature	E	
MaxAmbTmp	MV	Maximum ambient temperature	E	
MaxOthTmp	MV	Maximum other temperature	E	
Tmp	MV	Temperature	E	

3.1.3 MMOT Motor Measurement Data

This LN shall be used for the motor measurement data.

MMOT class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
LNName		Shall be inherited from Logical-Node Class (see IEC 61850-7-2).		
Data				
Common Logical Node Information				
		LN shall inherit all Mandatory Data from Common Logical Node Class.	M	
Measured Values				
StrTcu	MV	Stator % thermal capacity used	E	
RtrTcu	MV	Rotor % thermal capacity used	E	
RtdTcu	MV	RTD % thermal capacity used	E	
Mload	MV	Motor load in pu of FLA	E	
ThrmTp	MV	Thermal trip in seconds	E	
Trst	MV	Time to reset in minutes	E	
StrtAv	MV	Starts available	E	
Slip	MV	Slip in %	E	
Mrt	MV	Motor running time in hours	E	

3.2. Extended Logical Nodes

The following logical nodes have been extended with extra data. All extra data has been highlighted in the tables and marked as “E” (Extended), these data contains the “dataNs” attribute.

3.2.1 MSTA Metering Statistics

MSTA class				
Attribute Name	**Attribute Type**	**Explanation**	**M/O/E**	**Remarks**
Measured Values				
MaxA	WYE	Maximum phase currents	E	
MinA	WYE	Minimum phase currents	E	
MaxPhV	WYE	Maximum phase-to-ground voltages	E	
MinPhV	WYE	Minimum phase-to-ground voltages	E	
MaxP2PV	DEL	Maximum phase-to-phase voltages	E	
MinP2PV	DEL	Minimum phase-to-phase voltages	E	