

Model Implementation Conformance Statement
for the IEC 61850 interface in SEL-751

May 26, 2011

UCA International Users Group
Testing Sub Committee

Template version 0.1

Date: April 24, 2008

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1. Introduction

This model implementation conformance statement is applicable for SEL-751 and SEL-751-0, with firmware R100:

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: "0751 004.ICD", version R100.

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
PFRC (Rate of change of frequency)
PHIZ (Ground detector)
PIOC (Instantaneous overcurrent)
POPF (Over power factor)
PTOC (Time overcurrent)
PTOF (Overfrequency)
PTOV (Overvoltage)
PTRC (Protection trip conditioning)
PTUV (Undervoltage)
R: Logical nodes for protection related functions
RBRF (Breaker failure)
G: Logical Nodes for generic references
GGIO (Generic process I/O)
M: Logical Nodes for metering and measurement
MDST (Demand metering statistics)
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)

Z: Logical Nodes for further power system equipment
ZBAT (Battery)

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 InNs attribute in the Name plate. The value of InNs 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
LNNName		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				
DmdA	WYE	Demand currents	E	
PkDmdA	WYE	Peak demand currents	E	
SupWh	MV	Real energy supply (default direction: energy flow towards busbar)	E	
SupVArh	MV	Reactive energy supply (default direction: energy flow towards	E	

		busbar)		
DmdWh	MV	Real energy demand (default direction: energy flow from busbar)	E	
DmdVARh	MV	Reactive energy demand (default direction: energy flow from busbar)	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	

3.2. 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	

3.2.2 GGIO Generic Process I/O

GGIO class				
Attribute Name	Attribute Type	Explanation	M/O/E	Remarks
Measured Values				
Ra	MV	Remote analog	E	