

Model Implementation Conformance Statement
for the IEC 61850 interface in SEL-849

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1. Introduction

This model implementation conformance statement is applicable for SEL-849 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: "0849 005.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
PAFD (Arc-Flash detection)
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)
PTUC (Undercurrent)
PTUV (Undervoltage)
PZSU (Zero speed or underspeed)
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)
MHAI (Harmonics or interharmonics)
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 InNs attribute in the Name plate. The value of InNs is a reference to the MICS document.

3.1.1. PAFD Arc-Flash Detection

This LN shall be used to represent Arc-Flash Detection status.

PAFD 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				
Mod	INC	Mode	M	Status-only
Beh	INS	Behaviour	M	
Health	INS	Health	M	
NamPlt	LPL	Name plate	M	
Measured Values				
Str	ACD	Start	E	
Op	ACT	Operate	E	

3.1.2. 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				
Mod	INC	Mode	M	Status-only
Beh	INS	Behaviour	M	
Health	INS	Health	M	
NamPlt	LPL	Name plate	M	
Measured Values				
DmdA	WYE	Demand currents	E	
PkDmdA	WYE	Peak demand currents	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
LNNName		Shall be inherited from Logical-Node Class (see IEC 61850-7-2).		
Data				
Common Logical Node Information				
Mod	INC	Mode	M	Status-only
Beh	INS	Behaviour	M	
Health	INS	Health	M	
NamPlt	LPL	Name plate	M	
Measured Values				
StrTcu	MV	Stator % Thermal Capacity Used	E	

RtrTcu	MV	Rotor % Thermal Capacity Used	E	
Mload	MV	Motor Load, pu of FLA	E	
ThrmTp	MV	Thermal Trip in, seconds	E	
Trst	MV	Time to reset, seconds	E	
StrtAv	MV	Starts available	E	
Mrt	MV	Motor Running Time, hours	E	

3.1.4. MTHR Thermal Measurements

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				
Mod	INC	Mode	M	Status-only
Beh	INS	Behavior	M	
Health	INS	Health	M	
NamPlt	LPL	Name plate	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. GGIO Generic Process I/O

GGIO 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				
Mod	INC	Mode	M	Status-only
Beh	INS	Behaviour	M	
Health	INS	Health	M	
NamPlt	LPL	Name plate	M	
Measured Values				
AnIn	MV	Analog input	O	
Ra	MV	Remote analog	E	
Controls				
SPCSO	SPC	Single point controllable status output	O	
Status Information				
Ind	SPS	General indication (binary input)	O	