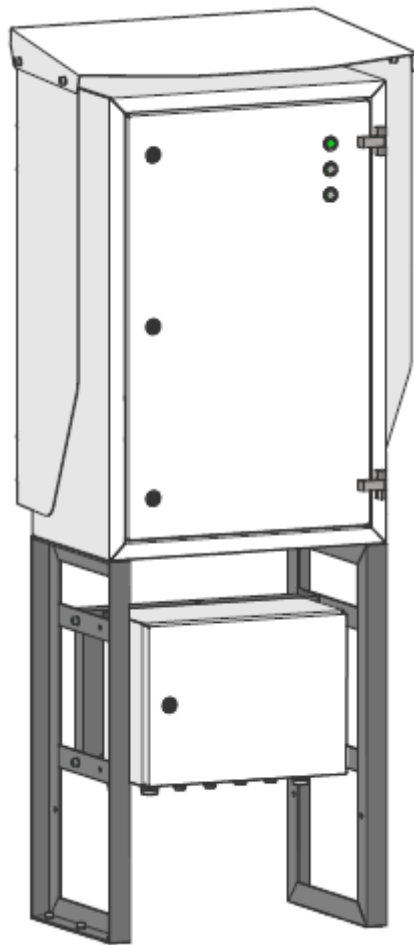


Model Implementation Conformance Statement  
for the IEC 61850 interface in

**Vaisala Optimus™ OPT100 DGA Monitor for  
Transformers**

2020-10-29, configRev 1.3



UCA International Users Group  
Testing Sub Committee

MICS template extracted from Server Test Procedures for Edition 2  
TPCL 1.2.4



# MICS Template for Server Ed2

## Introduction

This model implementation conformance statement is applicable for Vaisal Optimus OPT100 DGA Monitor for Transformers, with configRev 1.3:

This MICS document specifies the modelling extensions compared to IEC 61850 Edition 2. For the exact details on the standardized model please compare the ICD substation configuration file: OPT100.icd, configRev 1.3.

## Logical Nodes List

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

<b>L: System Logical Nodes</b>
<b>LPHD</b> (Physical device information)
<b>LLNO</b> (Logical node zero)
<b>S: Logical Nodes for Sensors and Monitoring</b>
<b>SIML</b> (Insulation medium supervision [liquid])

## Logical Node Extensions

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.

## 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).

NOTE: If the extended data object is already used in other logic nodes in IEC 61850-7-4 Ed.2, dataNs is not mandatory, but it’s still recommended.

## SIML Insulation medium supervision (liquid)

SIML class				
Data object name	Common data class	Explanation	M/O/E	Remarks
SIML1		Insulation medium supervision (liquid)		
Data objects				
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				
CH4ppm	MV	Measurement of CH4 in ppm	O	
C2H2ppm	MV	Measurement of C2H2 in ppm	O	
C2H4ppm	MV	Measurement of C2H4 in ppm	O	
C2H6ppm	MV	Measurement of C2H6 in ppm	O	
COppm	MV	Measurement of CO in ppm	O	
CO2ppm	MV	Measurement of CO2 in ppm	O	
CmbuGas	MV	Measurement of total dissolved combustible gases (TDCG) in ppm	O	
H2ppm	MV	Measurement of H2 in ppm	O	
H2Oppm	MV	Measurement of moisture in insulating liquid in ppm	E	
H2OTmp	MV	Temperature of insulating liquid at point of H2O measurement (in °C)	O	
H2O	MV	Relative saturation of moisture in insulating liquid (in %)	O	
TGP	MV	Total Gas Pressure (in hPa)	E	
CH4AvDay	MV	24 hours average of CH4 in ppm	E	
C2H2AvDay	MV	24 hours average of C2H2 in ppm	E	
C2H4AvDay	MV	24 hours average of C2H4 in ppm	E	
C2H6AvDay	MV	24 hours average of C2H6 in ppm	E	

COAvDay	MV	24 hours average of CO in ppm	E	
CO2AvDay	MV	24 hours average of CO2 in ppm	E	
TDCGAvDay	MV	24 hours average of TDCG in ppm	E	
H2AvDay	MV	24 hours average of H2 in ppm	E	
H2OAvDay	MV	24 hours average of moisture in oil in ppm	E	
TGPAvDay	MV	24 hours average of Total Gas Pressure in hPa	E	
CH4ROC	MV	24 hours rate of change of CH4 in ppm	E	
C2H2ROC	MV	24 hours rate of change of C2H2 in ppm	E	
C2H4ROC	MV	24 hours rate of change of C2H4 in ppm	E	
C2H6ROC	MV	24 hours rate of change of C2H6 in ppm	E	
COROC	MV	24 hours rate of change of CO in ppm	E	
CO2ROC	MV	24 hours rate of change of CO2 in ppm	E	
TDCGROC	MV	24 hours rate of change of TDCG in ppm	E	
H2ROC	MV	24 hours rate of change of H2 in ppm	E	
CH4ROCWeek	MV	7 days rate of change of CH4 in ppm	E	
C2H2ROCWeek	MV	7 days rate of change of C2H2 in ppm	E	
C2H4ROCWeek	MV	7 days rate of change of C2H4 in ppm	E	
C2H6ROCWeek	MV	7 days rate of change of C2H6 in ppm	E	
COROCWeek	MV	7 days rate of change of CO in ppm	E	
CO2ROCWeek	MV	7 days rate of change of CO2 in ppm	E	

TDCGROCWeek	MV	7 days rate of change of TDCG in ppm	E	
H2ROCWeek	MV	7 days rate of change of H2 in ppm	E	
CH4ROCMonth	MV	30 days rate of change of CH4 in ppm	E	
C2H2ROCMonth	MV	30 days rate of change of C2H2 in ppm	E	
C2H4ROCMonth	MV	30 days rate of change of C2H4 in ppm	E	
C2H6ROCMonth	MV	30 days rate of change of C2H6 in ppm	E	
COROCMonth	MV	30 days rate of change of CO in ppm	E	
CO2ROCMonth	MV	30 days rate of change of CO2 in ppm	E	
TDCGROCMonth	MV	30 days rate of change of TDCG in ppm	E	
H2ROCMonth	MV	30 days rate of change of H2 in ppm	E	
CH4ToH2	MV	Ratio of CH4 to H2	E	
C2H2ToC2H4	MV	Ratio of C2H2 to C2H4	E	
C2H2ToCH4	MV	Ratio of C2H2 to CH4	E	
C2H6ToC2H2	MV	Ratio of C2H6 to C2H2	E	
C2H4ToC2H6	MV	Ratio of C2H4 to C2H6	E	
CO2ToCO	MV	Ratio of CO2 to CO	E	
<b>Status Information</b>				
InsAlm	SPS	Insulation liquid critical	M	If any of the gas alarms are on, InsAlm will be true
InsWrn	SPS	Insulation liquid warning	E	If any of the gas warnings (cautions) are on, InsWrn will be true

CH4Alm	SPS	CH4 alarm	E	
CH4Wrn	SPS	Ch4 warning	E	
C2H2Alm	SPS	C2H2 alarm	E	
C2H2Wrn	SPS	C2H2 warning	E	
C2H4Alm	SPS	C2H4 alarm	E	
C2H4Wrn	SPS	C2H4 warning	E	
C2H6Alm	SPS	C2H6 alarm	E	
C2H6Wrn	SPS	C2H6 warning	E	
COAlm	SPS	CO alarm	E	
COWrn	SPS	CO warning	E	
CO2Alm	SPS	CO2 alarm	E	
CO2Wrn	SPS	CO2 warning	E	
TDCGAlm	SPS	TDCG alarm	E	
TDCGWrn	SPS	TDCG warning	E	
H2Alm	SPS	H2 alarm	O	
H2Wrn	SPS	H2 warning	O	
MstAlm	SPS	Moisture alarm	O	
MstWrn	SPS	Moisture warning	O	
RelMstAlm	SPS	Relative saturation of moisture in insulating liquid alarm	E	
RelMstWrn	SPS	Relative saturation of moisture in insulating liquid warning	E	
TGPMaXAlm	SPS	Total gas pressure high level alarm	E	
TGPMaXWrn	SPS	Total gas pressure high level warning	E	
TGPMinAlm	SPS	Total gas pressure low level alarm	E	
TGPMinWrn	SPS	Total gas pressure low level warning	E	
CH4ROCAIm	SPS	24 hours rate of change of CH4 alarm	E	
CH4ROCWrn	SPS	24 hours rate of change of CH4 warning	E	
C2H2ROCAIm	SPS	24 hours rate of change of	E	

		C2H2 alarm		
C2H2ROCWrn	SPS	24 hours rate of change of C2H2 warning	E	
C2H4ROCAIm	SPS	24 hours rate of change of C2H4 alarm	E	
C2H4ROCWrn	SPS	24 hours rate of change of C2H4 warning	E	
C2H6ROCAIm	SPS	24 hours rate of change of C2H6 alarm	E	
C2H6ROCWrn	SPS	24 hours rate of change of C2H6 warning	E	
COROCAIm	SPS	24 hours rate of change of CO alarm	E	
COROCWrn	SPS	24 hours rate of change of CO warning	E	
CO2ROCAIm	SPS	24 hours rate of change of CO2 alarm	E	
CO2ROCWrn	SPS	24 hours rate of change of CO2 warning	E	
TDCGROCAIm	SPS	24 hours rate of change of TDCG alarm	E	
TDCGROCWrn	SPS	24 hours rate of change of TDCG warning	E	
H2ROCAIm	SPS	24 hours rate of change of H2 alarm	E	
H2ROCWrn	SPS	24 hours rate of change of H2 warning	E	
CH4ROCWAIm	SPS	7 days rate of change of CH4 in alarm	E	
CH4ROCWWrn	SPS	7 days rate of change of CH4 warning	E	
C2H2ROCWAIm	SPS	7 days rate of change of C2H2 alarm	E	
C2H2ROCWWrn	SPS	7 days rate of change of C2H2 warning	E	
C2H4ROCWAIm	SPS	7 days rate of change of C2H4 alarm	E	
C2H4ROCWWrn	SPS	7 days rate of change of C2H4	E	



		warning		
C2H6ROCWAIm	SPS	7 days rate of change of C2H6 alarm	E	
C2H6ROCWWrn	SPS	7 days rate of change of C2H6 warning	E	
COROCWAIm	SPS	7 days rate of change of CO alarm	E	
COROCWWrn	SPS	7 days rate of change of CO warning	E	
CO2ROCWAIm	SPS	7 days rate of change of CO2 alarm	E	
CO2ROCWWrn	SPS	7 days rate of change of CO2 warning	E	
TDCGROCWAIm	SPS	7 days rate of change of TDCG alarm	E	
TDCGROCWWrn	SPS	7 days rate of change of TDCG warning	E	
H2ROCWAIm	SPS	7 days rate of change of H2 alarm	E	
H2ROCWWrn	SPS	7 days rate of change of H2 warning	E	
CH4ROCMAIm	SPS	30 days rate of change of CH4 alarm	E	
CH4ROCMWrn	SPS	30 days rate of change of CH4 warning	E	
C2H2ROCMAIm	SPS	30 days rate of change of C2H2 alarm	E	
C2H2ROCMWrn	SPS	30 days rate of change of C2H2 warning	E	
C2H4ROCMAIm	SPS	30 days rate of change of C2H4 alarm	E	
C2H4ROCMWrn	SPS	30 days rate of change of C2H4 warning	E	
C2H6ROCMAIm	SPS	30 days rate of change of C2H6 alarm	E	
C2H6ROCMWrn	SPS	30 days rate of change of C2H6 warning	E	
COROCMAIm	SPS	30 days rate of change of CO	E	

		alarm		
COROCMWrn	SPS	30 days rate of change of CO warning	E	
CO2ROCMAIm	SPS	30 days rate of change of CO2 alarm	E	
CO2ROCMWrn	SPS	30 days rate of change of CO2 warning	E	
TDCGROCMAIm	SPS	30 days rate of change of TDCG alarm	E	
TDCGROCMWrn	SPS	30 days rate of change of TDCG warning	E	
H2ROCMAIm	SPS	30 days rate of change of H2 alarm	E	
H2ROCMWrn	SPS	30 days rate of change of H2 warning	E	

#### Revision history

Revision	Date	Remarks
1.0	2019-03-04	First version
1.1	2019-04-25	Added gas specific alarms data objects in SIML

1.2	2020-10-07	Added TGP and TGPAvDay
1.3	2020-10-29	Added TGPMaXAlm, TGPMaXWrn, TGPMiNAlm and TGPMiNWrn