IEC 61850 Certificate Level A[1]

Issued to:

Efacec Energia

Máquinas e Equipamentos Eléctricos, S.A.

Via de Francisco Sá Carneiro

4471-907 Moreira da Maia

Portugal

For the server product:

BCU 500 Bay Controller

Firmware version: 4.08.001

IEC 61850 version: 5.06.001

S/N: 954525

SV Subscribe: F4800S1I4U4, F4800S2I8U8

The server product has not been shown to be non-conforming to:

IEC 61850 Edition 2 with Amendment 1 Parts 6, 7-1, 7-2, 7-3, 7-4, 8-1, 9-2 and IEC 61869 First Edition Part 9

Communication networks and systems for power utility automation

The conformance test has been performed according to IEC 61850-10 and the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.2 with product's protocol, model and tissues implementation conformance statements: "Protocol Implementation Conformance Statement for the IEC 61850 interface in BCU 500 and TPU 500, version 02.00 date 2023-10-26" ,"Model Implementation Conformance Statement (MICS) for the IEC 61850 Edition 2 Amendment 1 server interface for TPU T500, TPU L500, TPU D500, BCU 500, AS23002743, Rev. 02, October 2023", "TISSUES Implementation Conformance Statement (TICS) for the IEC 61850 Edition 2 Amendment 1 Server for TPU T500, TPU L500, TPU D500, BCU 500, AS23002455, Rev. 02, August 2023", and the extra information for testing: "Protocol Implementation Extra Information for Testing (PIXIT) for the IEC 61850 Edition 2 Amendment 1 Server Interface in TPU T500, TPU L500, TPU D500, BCU 500, AS23002745, Rev. 02.00, October 2023".

The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1a	Basic Exchange (25/29)		11b	SV subscribe (22/22)
2	Data Sets (4/7)		12a	Direct Control (9/18)
3	Substitution (3/3)		12b	SBO Control (17/28)
4	Setting Group Selection (5/5)		12c	Enhanced Direct Control (10/20)
4+	Setting Group Definition (14/14)		12d	Enhanced SBO Control (18/28)
5	Unbuffered Reporting (23/26)		13a	Time Synchronization with SNTP (6/8)
6	Buffered Reporting (33/36)		13b	Time Synchronization with PTP (3/4)
9a	GOOSE publish (12/13)		14	File Transfer (5/8)
9b	GOOSE subscribe (27/27)			

This certificate includes a summary of the test results as carried out at DNV in The Netherlands with UniGrid SA Simulator 2.2.1 with test suite 20230927 and UniCA 61850 Analyzer 6.44.01. This document has been issued for information purposes only, and the archived DNV verification report No. 10449319-DSO 23-3219 rev 2 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV by Efacec Energia. The manufacturer's production process has not been assessed. This certificate does not imply that DNV has approved any product other than the specimen tested.

Arnhem, October 30, 2023

O.C. Serban
Team Leader
Interoperability of Power Systems
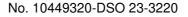
Issued by:

R. Schimmel
Verification Manager

[1] Level A - Independent test lab with certified ISO 9001 Quality System

UCA International Users Group P.O. Box 315, Shell Knob, MO 65747 USA

IEC 61850 Certificate Level A

Applicable Server Test Procedures from the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.2

Conformance Block		Mandatory	Conditional
1a:	Basic Exchange	sAss1, sAss2, sAss3, sAss4, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrv8, sSrvN1abcdf, sSrvN4	sAssN6, sSrv6, sSrv9, sSrv10, sSrv11, sSrv12, sSrv15, sSrvN1e, sSrvN3
2:	Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
3:	Substitution	sSub1, sSub2, sSub3	
4:	Setting Group Selection	sSg1, sSg3, sSgN1	sSg11, sSg13
4+:	Setting Group Definition	sSg2, sSg4, sSg6, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5	sSg5, sSg9, sSg14
5:	Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRp23, sRpN1, sRpN2, sRpN3, sRpN4, sRpN5, sRpN7, sRpN8, sRpN9	sRp8, sRp10, sRp11, sRp12, sRp13, sRp15
6:	Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr16, sBr20, sBr21, sBr22, sBr23, sBr24, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN7, sBrN8, sBrN9, sBrN10	sBr8, sBr10, sBr11, sBr12, sBr13, sBr15
9a:	GOOSE publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12	sGop1, sGop2b, sGop6, sGopN1, sGopN2
9b:	GOOSE subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGos12, sGos14, sGos15, sGos20, sGos21, sGos22, sGos23, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6, sGosN7	sGos4, sGos6b, sGos13
11b:	Sampled Values Subscribe	sSvs1, sSvs2, sSvs3, sSvs4, sSvs5, sSvs6, sSvs7, sSvs8, sSvs9, sSvs10, sSv11, sSvs14, sSvs15, sSvs16, sSvsN1, sSvsN2, sSvsN3, sSvsN4, sSvsN5, sSvsN6	sSvs12, sSvs13
12a:	Direct control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl7, sCtl15, sCtl16, sCtl17, sCtl28
12b:	SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6, sSBOns8	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl28
12c:	Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl14, sCtl15, sCtl16, sCtl17, sCtl28
12d:	Enhanced SBO Control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl26, sCtl28
13a:	Time sync SNTP	sTm1, sTm2, sTm7, sTmN1	sTm3, sTmN2
13b:	Time sync PTP	sTmP1, sTmP2, sTmPN1	
14:	File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	

All configuration file and data model tests have been successfully performed for the product variants using the same communication hardware and software version:

- TPU T500 Transformer Protection
- TPU D500 Line Differential Protection
- TPU L500 Line Distance Protection