

IEC 61850 Certificate Level A¹

Issued to:

Schweitzer Engineering Laboratories, Inc
2350 NE Hopkins Court
Pullman, WA 99163-5603
USA

For the server product:

SEL-487E-5 Transformer Protection Relay with
Sampled Values or TiDL technology
Firmware version: SEL-487E-5-R411
IEC 61850 library ID: 837C7AA9
Hardware version: MB6E
SV Subscribe: F4000S1I4U4, F4800S1I4U4,
F4800S2I18U6, F4800S2I21U3

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, name space definition 7-4:2007B5 and the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.3 ("UCATestProcedureServer61850-8-1Ed2Amd1_Rev1p3.pdf") with product's protocol, model and tissues implementation conformance statements: "Protocol Implementation Conformance Statement for the IEC 61850 interface in SEL-487E-5, SEL-451-6, SEL-487B-2, SEL-421-7 and SEL-411L-2, July 8, 2026", "Model Implementation Conformance Statement for the IEC 61850 interface in SEL-487E-5, SEL-451-6, SEL-487B-2, SEL-421-7 and SEL-411L-2, July 2026" and "TISSUES Implementation Conformance Statement for the IEC 61850 Ed2 interface in SEL-487E-5, SEL-451-6, SEL-487B-2, SEL-421-7 and SEL-411L-2, July 2026" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 interface in SEL-487E-5, SEL-451-6, SEL-487B-2, SEL-421-7 and SEL-411L-2, July 2026".

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 (24/31)	11b SV subscribe (24/24)
2 Data Sets (4/7)	12a Direct Control (9/19)
4 Setting Group Selection (5/5)	12c Enhanced Direct Control (10/21)
5 Unbuffered Reporting (24/26)	12d Enhanced SBO Control (18/29)
6 Buffered Reporting (34/36)	13a Time Synchronization with SNTP (8/8)
9a GOOSE publish (11/14)	13b Time Synchronization with PTP (4/4)
9b GOOSE subscribe (29/29)	14 File Transfer (6/8)
	15 Service Tracking (6/19)

This certificate includes a summary of the test results as carried out at DNV in The Netherlands with UniGrid SA Simulator 4.2 with test suite 20260529 and UniCA 61850 Analyzer 6.45. This document has been issued for information purposes only, and the archived DNV verification report No. 10622295-DSO 26-3132 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 Schweitzer Engineering Laboratories, Inc. 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, June 26, 2026



R. Leene
Test Engineer

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 11404, Olympia, WA 98508, USA

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Applicable Server Test Procedures from the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.3

Conformance Block	Mandatory	Conditional
1a: Basic Exchange	sAss1, sAss2, sAss3, sAss4, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrv6, sSrv8, sSrvN1abcd, sSrvN4	sAssN6, sSrv9, sSrv10, sSrv12, sSrv13, sSrv15, sSrv16
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11, sSg13
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, sRp17
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, sBr17
9a: GOOSE Publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12, sGop13	sGop1, sGop5, sGopN2
9b: GOOSE Subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGos12, sGos14, sGos15, sGos16, sGos17, 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, sSvs11, sSvs14, sSvs15, sSvs16, sSvs17, sSvs18, sSvsN1, sSvsN2, sSvsN3, sSvsN4, sSvsN5, sSvsN6	sSvs12, sSvs13
12a: Direct Control	sCtl5, sCtl10, sDOs1, sDOs2	sCtl7, sCtl15, sCtl16, sCtl17, sCtl29
12c: Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl14, sCtl15, sCtl16, sCtl17, sCtl29
12d: Enhanced SBO Control	sCtl4, sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl26, sCtl29
13a: Time Sync SNTP	sTm1, sTm2, sTm7, sTmN1	sTm3, sTm4, sTm5, sTmN2
13b: Time Sync PTP	sTmP1, sTmP2, sTmPN1	sTmP5
14: File Transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt3
15: Service Tracking		sTrk1, sTrk2, sTrk7, sTrk8, sTrk9, sTrk11

Test case	Comments
sCtl16	Tested according to redmine #6988 resolution
sSBOes8	Tested according to redmine #7527 resolution
sSvs4 and sSvs6	Tested according to redmine #7358 resolution

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

- SEL-451-6 Protection, Automation, and Bay Control System with Sampled Values or TiDL technology
Firmware version: SEL-451-6-R411
- SEL-487B-2 Bus Differential and Breaker Failure Relay with Sampled Values or TiDL technology
Firmware version: SEL-487B-2-R408
- SEL-411L-2 Line Differential Protection System with Sampled Values or TiDL technology
Firmware version: SEL-411L-2-R208
- SEL-421-7 Protection, Automation, and Control System with Sampled Values or TiDL technology
Firmware version: SEL-421-7-R414