

## IEC 61850 Certificate Level A<sup>1</sup>

**Issued to:**

Siemens AG  
Wernerwerkdammm 5  
13629 Berlin  
Germany

**For the server product:**

SIPROTEC 5  
7SL87 Line differential and distance protection 1-/3- pole  
with two IO202 modules  
Firmware version: V08.82  
Hardware version: 7SL87-DAAA-AA0-0AAAAA0-AZ3111-  
33112B-DBD000-000AC0-CH1BA1-CB1CB3

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 Edition 2, the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.1 with product's protocol, model and technical issue implementation conformance statements and the extra information for testing: "SIPROTEC 5 PIXIT, PICS, TICS, IEC 61850 Manual V8.82 and higher, document version C53000-G5040-C013-C, Edition 12.2021" and "SIPROTEC Model Implementation Conformance Statement (MICS) According to the IEC 61850, Device x7SL87, Mapping version V08.82.01".


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 (26/29)	11a SV publish (19/21)
2 Data Sets (4/7)	11b SV subscribe (21/21)
2+ Data Set Definition (24/24)	12a Direct Control (7/18)
3 Substitution (3/3)	12b SBO Control (15/27)
4 Setting Group Selection (4/4)	12c Enhanced Direct Control (10/20)
4+ Setting Group Definition (13/13)	12d Enhanced SBO Control (16/28)
5 Unbuffered Reporting (25/26)	13a Time Synchronization with SNTP (7/8)
6 Buffered Reporting (35/36)	13b Time Synchronization with PTP (4/4)
9a GOOSE publish (10/13)	14 File Transfer (5/8)
9b GOOSE subscribe (27/27)	15 Service Tracking (2/17)

This certificate includes a summary of the test results as carried out at DNV in The Netherlands with UniGrid SA Simulator 1.8 with test suite 20210617.16 and UniCA 61850 Analyzer 6.40.01. This document has been issued for information purposes only, and the archived DNV verification report No. 10300967-INC 21-3223 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 Siemens AG. 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, December 14, 2021



**N.A. Heijker**  
Business Leader  
Interoperability of Smart Power Systems

**Issued by:**




**R. Schimmel**  
Verification Manager

<sup>1</sup> Level A - Independent test lab with certified ISO 9001 Quality System

## IEC 61850 Certificate Level A

Applicable Test Procedures from the UCA International Users Group Edition 2 with Amendment 1 Server Test Procedures version 1.1

Conformance Block	Mandatory	Conditional
1a: Basic Exchange	sAss1, sAss2, sAss3, sAss4, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrv8, sSrvN1abcd, sSrvN4	sAssN6, sSrv6, sSrv9, sSrv10, sSrv11, sSrv12, sSrv13, sSrv15, sSrvN1e, sSrvN3
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
2+: Data Set Definition	sDs2, sDs3, sDs4, sDs5, sDs6, sDs7, sDs8, sDs9, sDs13, sDs14, sDsN1cd, sDsN2, sDsN3, sDsN4, sDsN5, sDsN6, sDsN7, sDsN8, sDsN9, sDsN10	sDs11, sDs12, sDsN11, sDsN12
3: Substitution	sSub1, sSub2, sSub3	
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11
4+: Setting Group Definition	sSg2, sSg4, sSg6, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5	sSg5, sSg9
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRp23, sRpN1, sRpN2, sRpN3, sRpN4, sRpN5, sRpN7, sRpN8, sRpN9	sRp6, sRp7, sRp8, sRp10, sRp11, sRp12, 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	sBr6, sBr7, sBr8, sBr10, sBr11, sBr12, sBr15, sBr17
9a: GOOSE publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12	sGop1, sGop6, sGopN1
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
11a: Sampled Values Publish	sSvp1, sSvp2, sSvp3, sSvp4, sSvp5, sSvp6, sSvp7, sSvp8, sSvp14	sSvp9, sSvp10, sSvp11, sSvp15, sSvp16, sSvp17, sSvp20, sSvp21, sSvp22, sSvp23
11b: Sampled Values Subscribe	sSvs1, sSvs2, sSvs3, sSvs4, sSvs5, sSvs6, sSvs7, sSvs8, sSvs9, sSvs10, sSvs11, sSvs14, sSvs15, sSvsN1, sSvsN2, sSvsN3, sSvsN4, sSvsN5, sSvsN6	sSvs12, sSvs13
12a: Direct control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl7, sCtl16, sCtl17
12b: SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6	sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl27
12c: Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl13, sCtl14, sCtl16, sCtl17, sCtl26
12d: Enhanced SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl26
13a: Time sync with SNTP	sTm1, sTm2, sTm7, sTmN1	sTm3, sTm4, sTm5
13b: Time sync with PTP	sTmP1, sTmP2, sTmPN1	sTmP5
14: File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	
15: Service tracking		sTrk7, sTrk17

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

- 7SA86 Distance protection 3-pole
- 7SA87 Distance protection 1-/3-pole

- 7SD86 Differential protection 3-pole
- 7SD87 Differential protection 1-/3-pole
- 7SL86 Differential & Distance protection 3-pole
- 7VK87 Breaker management
- 7SJ86 Overcurrent protection (for lines)
- 7SJ85 Overcurrent protection
- 7UT85 Transformer differential protection 2 sides
- 7UT86 Transformer differential protection 3 sides
- 7UT87 Transformer differential protection 5 sides
- 7SK85 Motor protection
- 7UM85 Generator protection
- 7VE85 Paralleling device
- 7SS85 Busbar protection
- 6MD85 Bay controller
- 6MD86 Bay controller
- 6MD89 Bay controller railway
- 7SX85 Universal device
- 7ST85 Railway protection

Test case	Limitations
sSvp17	Current clipping limit could not be reached