IEC 61850 Certificate Level A

Issued to:
HanShin ELECTRIC CORP
42, Sanbon-ro 48beon-gil,
Gunpo-si, Gyeonggi-do,
Republic of Korea, 15846

For the client system:
SA-OPD (Substation Automation Operation
Processing Device)
HS-OPD
Software Version 1.0
HW : DELL Precision 7920
OS : Windows Server 2019
S/N : HS24-OPD-001

Issued by: **KOREA TESTING LABORATORY**

The CLIENT 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 and 8-1
Communication networks and systems for power utility automation

The conformance test has been performed according to IEC 61850-10, the UCA International Users Group Edition 2 with Amendment 1 Client Test Procedures version 1.0 with product's protocol, model and technical issue implementation conformance statements: "HanShin_HS-OPD-MICS_CLIENT_Ed2.1", "HanShin_HS-OPD-TICS_CLIENT_Ed2.1", "HanShin_HS-OPD-PICS_CLIENT_Ed2.1" and product's extra information for testing: "HanShin_HS-OPD-PIXIT_CLIENT_Ed2.1".

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 (26/31)		12a	Direct Control (7/9)
2	Data Sets (8/10)		12b	SBO Control (10/12)
2+	Data Set Definition (8/8)		12c	Enhanced Direct Control (7/9)
4	Setting Group Selection (4/4)		12d	Enhanced SBO Control (9/11)
4+	Setting Group Definition (5/5)		13a	Time Synchronization with SNTP (4/4)
5	Unbuffered Reporting (34/34)		14	File Transfer (6/9)
6	Buffered Reporting (32/32)		15	Service Tracking (7/16)
9	GOOSE Control Block (3/3)			

This certificate includes a summary of the test results as carried out at Seoul in the Republic of Korea with IEC 61850 Client Test Tool v1.0 with test suite v1.0 and Wireshark Version 2.9.0-skunkworks.1. This document has been issued for information purposes only, and the original paper copy of the KTL report: No. 25-000678-01-3 will prevail.

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

Seoul, May 01. 2025.

Ah Han
Principal Engineer

Hyunwoo Lee
Assistant Research Engineer

1 Level A - Independent Test lab with accredited ISO/IEC 17025 Quality System

Applicable Test Procedures from the UCA International Users Group Edition 2 Amendment 1 Client Test Procedures version 1.0

Conformance Block	Mandatory	Conditional
1a: Basic Exchange	cAss1, cAss2, cAss3, cAssN1, cAssN4, cAssN5, cAssN6, cAssN8	cAssN7, cSrv1, cSrv2, cSrv3, cSrv4, cSrv5, cSrv6, cSrv7, cSrv10, cSrvN1, cSrvN3, cSrvN4, cSrvN5, cSrvN6, cSrvN7, cSrvN8, cSrvN9, cSrvN10
2: Data Sets		cDs1, cDs2, cDs3, cDs5, cDs6, cDsN1a, cDsN1b, cDsN1c
2+: Data Set Definition		cDs10, cDs11, cDs12, cDs13, cDs14, cDsN10a, cDsN10b, cDsN11
4: Setting Group Selection	cSg2, cSg46, cSgN1	cSg1
4+: Setting Group Definition	cSg11, cSg14	cSg10, cSg12, cSg13
5: Unbuffered Reporting	cRp3, cRp4, cRp5, cRp8, cRp9, cRp10, cRp11, cRp13a, cRp14, cRp15, cRp18, cRp19, cRp20, cRp21, cRp22, cRp40, cRp41, cRp42, cRp43, cRp44, cRp45, cRp46, cRpN2, cRpN5, cRpN6	cRp1, cRp2, cRp6, cRp7, cRp12, cRp13b, cRp16, cRp17, cRpN1
6: Buffered Reporting	cBr3, cBr4, cBr5, cBr8, cBr9, cBr10, cBr11, cBr13a, cBr14, cBr15, cBr18, cBr19, cBr20, cBr21, cBr22, cBr30, cBr31, cBr46, cBrN2, cBrN5, cBrN6	cBr1, cBr2, cBr6, cBr7, cBr12, cBr13b, cBr16, cBr17, cBr32, cBr33, cBrN1
9: GOOSE Control Block		cGcb1, cGcb2, cGcb46
12a: Direct Control	cCtl4a, cCtl5a, cDOns1, cDOns2	cCtl1a, cCtl2a, cCtl3a
12b: SBO Control	cCtl4b, cCtl5b, cSBOns1, cSBOns2, cSBOns3, cSBOns10	cCtl1b, cCtl2b, cCtl3b, cSBOns4
12c: Enhanced Direct Control	cCtl4c, cCtl5c, cDOes1, cDOes2	cCtl1c, cCtl2c, cCtl3c
12d: Enhanced SBO Control	cCtl4d, cCtl5d, cSBOes1, cSBOes2, cSBOes3	cCtl1d, cCtl2d, cCtl3d, cSBOes4
13a: Time Sync SNTP	cTm1, cTmN1	cTm2, cTmN2
14: File Transfer	cFt1, cFt3, cFt6, cFtN1	cFt2, cFtN2
15: Service Tracking		cTrk1, cTrk2, cTrk6, cTrk7, cTrk8, cTrk9, cTrk10