

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

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No. 23-063447-01-1

Issued to:  
HD Hyundai Electric Co., Ltd.  
477, Bundangsuseo-ro, Bundang-gu,  
Seongnam-si, Gyeonggi-do,  
Republic of Korea

For the server product:  
Digital Monitoring and Protection Relay  
HGMAP-BCS  
Software Version : 1.00  
OS : LINUX 6.1.1  
S/N : BF23-01033

Issued by: **Korea Testing Laboratory**

**The server product has not been shown to be non-conforming to:  
IEC 61850 Edition 2 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 Edition 2, the UCA International Users Group Edition 2 Server Test Procedures version 2.0.6 with product's protocol, model and technical issue implementation conformance statements: "HD\_HGMAPBCS\_PICS\_v.1", "HD\_HGMAPBCS\_MICS\_v.1", "HD\_HGMAPBCS\_TICS\_v.1" and the extra information for testing: "HD\_HGMAPBCS\_PIXIT\_v.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):

1	Basic Exchange (24/26)	9b	GOOSE Subscribe (20/21)
2	Data Sets (7/7)	12a	Direct Control (7/18)
2+	Data Set Definition (24/24)	12b	SBO Control (14/27)
4	Setting Group Selection (4/4)	12c	Enhanced Direct Control (8/20)
5	Unbuffered Reporting (22/23)	12d	Enhanced SBO Control (16/28)
6	Buffered Reporting (32/33)	13	Time Sync (4/7)
9a	GOOSE Publish (12/13)	14	File Transfer (8/8)

This Certificate includes a summary of the test results as carried out at Korea Testing Laboratory in Republic of Korea with IEC 61850 Ed2 KTL Testing Tool 1.0 with test suite IEC 61850 Ed2 Server Conformance Test V.1.0 and IEC 61850 Ed2 KTL Trace Manager V.1.0. This document has been issued for information purposes only, and the original paper copy of the KTL report: No. TR-23-063447-01-1 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to KTL by HD Hyundai Electric Co., Ltd.. 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, Dec. 13, 2023

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

Applicable Test Procedures from the UCA International Users Group Server Device Test Procedures version 2.0.6

Conformance Block	Mandatory	Conditional
1: Basic Exchange	sAss1, sAss2, sAss3, sAss4, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrv8, sSrvN1abcd, sSrvN4	sAssN6, sSrv6, sSrv9, sSrv10, sSrv12, sSrvN1e, sSrvN2, sSrvN3
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs10b, sDs15, sDsN1b, sDsN13
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
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8	sRp6, sRp7, sRp8, sRp10, sRp11, sRp12, sRp13, sRp15, sRpN5
6: Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8	sBr6, sBr7, sBr8, sBr10, sBr11, sBr12, sBr13, sBr15, sBr23, sBr24
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, sGos23, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos4, sGos13
12a: Direct Control	sCtl5a, sCtl10a, sDOs1, sDOs2	sCtl7a, sCtl15a, sCtl16a
12b: SBO Control	sCtl5b, sCtl8b, sCtl9b, sCtl10b, sCtl11b, sCtl25b, sSBOs1, sSBOs2, sSBOs6	sCtl4b, sCtl6b, sCtl7b, sCtl15b, sCtl16b
12c: Enhanced Direct Control	sCtl5c, sCtl10c, sDOes1, sDOes2	sCtl7c, sCtl14c, sCtl15c, sCtl16c
12d: Enhanced SBO Control	sCtl5d, sCtl8d, sCtl9d, sCtl10d, sCtl11d, sCtl25d, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4d, sCtl6d, sCtl7d, sCtl15d, sCtl16d, sCtl26d
13: Time Sync	sTm1, sTm2, sTmN1	sTmN2
14: File Transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt2c, sFt3, sFtN1c