

IEC 61850 Certificate Level A¹

Issued to:
PNC Technologies CO., LTD.
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Dongan-gu, Anyang-si, Gyeonggi-do,
Republic of Korea, 14042

For the client product:
Smart Control and Data Acquisition System Smart
Digital Processor
PNCSDP-100A
Software Version 1.0
HW : PNC-ESIO8377
OS : Linux Multi-File Image version 2.6.33.7
S/N : PNC-ESIO8377-2010003

Issued by: **KOREA TESTING LABORATORY**

The client system has not shown to be non-conforming to:
IEC 61850 First Edition Parts 6, 7-1, 7-2, 7-3, 7-4 and 8-1
Communication networks and systems in substations

The conformance test has been performed according to IEC 61850-10 and UCA IUG Conformance Test Procedures for Client System with IEC 61850-8-1 interface, revision 1.1 with TPCL version 1.2.3 with client system's protocol, model and technical issue implementation conformance statements: "PNCTech_PNCSDP-100A_PICS_v1", "PNCTech_PNCSDP-100A_MICS_v1", "PNCTech_PNCSDP-100A_TICS_v1" and the extra information for testing: "PNCTech_PNCSDP-100A_PIXIT_v1".

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):

| | | | |
|----|--------------------------------|-----|-------------------------------|
| 1 | Basic Exchange (22/22) | 12a | Direct Control (7/7) |
| 2 | Data Sets (7/9) | 12b | SBO Control (9/9) |
| 2+ | Data Set Definition (6/6) | 12c | Enhanced Direct Control (7/7) |
| 4 | Setting Group Selection (4/4) | 12d | Enhanced SBO Control (9/9) |
| 4+ | Setting Group Definition (2/2) | 13 | Time Synchronization (4/4) |
| 5 | Unbuffered Reporting (16/18) | 14 | File Transfer (6/8) |
| 6 | Buffered Reporting (20/22) | | |

This certificate includes a summary of the test results as carried out at KTL in the Republic of Korea with IEC 61850 Virtual Server with test suite IEC 61850 Client Conformance Verifier1.0 and KEPCO ANALYZER 1.0. This document has been issued for information purposes only, and the original paper copy of KTL report: No. TR-20-069283-01-1 will prevail.

Seoul, Jan. 21, 2021

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1 Level A - Independent Test lab with accredited ISO/IEC 17025 Quality System
2 TPCL – test procedure change list

Applicable Test Procedures from the UCA IUG Conformance Test Procedures for Client System with IEC 61850-8-1 interface, revision 1.1 with TPCL version 1.2.3

| Conformance Block | Mandatory | Conditional |
|------------------------------|--|--|
| 1: Basic Exchange | cAss1, cAss2, cAss3, cAss4, cAssN1, cAssN4, cAssN5, cAssN6 | cAssN7, cSrv1, cSrv2, cSrv3, cSrv4, cSrv5, cSrv6, cSrv7, cSrvN1, cSrvN2, cSrvN3, cSrvN4, cSrvN5, cSrvN6 |
| 2: Data Sets | | cDs1, cDs2, cDs3, cDs5, cDsN1a, cDsN1b, cDsN2 |
| 2+: Data Set Definition | cDsN4 | cDs6a, cDs6b, cDs7a, cDs7b, cDsN5 |
| 4: Setting Group Selection | cSg2, cSgN1 | cSg1, cSg3 |
| 4+: Setting Group Definition | cSg3, cSg4 | |
| 5: Unbuffered Reporting | cRp3, cRp4, cRp5, cRp8, cRp9, cRp10, cRpN2, cRpN3, cRpN7, cRpN8 | cRp1, cRp2, cRp6, cRp7, cRpN1, cRpN4 |
| 6: Buffered Reporting | cBr3, cBr4, cBr5, cBr8, cBr9, cBr10, cBr11, cBr12, cBrN2, cBrN3, cBrN7, cBrN8, cBrN9 | cBr1, cBr2, cBr6, cBr7, cBr13, cBrN1, cBrN4 |
| 12a: Direct control | cCtl4, cCtlN1 cDOns1, cDOns2 | cCtl1, cCtl2, cCtl3 |
| 12b: SBO control | cCtl4, cCtlN1 cSBOns1, cSBOns2, cSBOns3 | cCtl1, cCtl2, cCtl3, cSBOns4 |
| 12c: Enhanced Direct Control | cCtl4, cCtlN1 cDOes1, cDOes2 | cCtl1, cCtl2, cCtl3 |
| 12d: Enhanced SBO control | cCtl4, cCtlN1, cSBOes1, cSBOes2, cSBOes3 | cCtl1, cCtl2, cCtl3, cSBOes4 |
| 13: Time sync | cTm1 | cTm2, cTmN1, cTmN2 |
| 14: File transfer | cFt1, cFt2, cFt3, cFtN1, cFtN2 | cFt5 |