

No. 10080975-INC 18-2536 Rev1

Issued to:

NR Electric CO., Ltd.
69 Suyuan Avenue
211102 Nanjing
China

For the server product:

PCS-9611S
FEEDER RELAY
Communication software version: Ed2
Application software version: 1.00
Hardware version: NR6106-3
S/N: 3P2318150430T

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 1.0 with TPCL² 1.2.4 with product's protocol, model and technical issue implementation conformance statements: "PICS for the IEC61850 Ed2 interface in PCS-S Product Family, V1.0", "MICS for the IEC61850 Ed2 interface in PCS-S Product Family, V1.0" and "TICS for the IEC61850 Ed2 interface in PCS-S Product Family, V1.0" and the extra information for testing: "PIXIT for the IEC61850 Ed2 interface in PCS-S Product Family, V1.0".

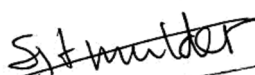
The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1 Basic Exchange (23/26)	9a GOOSE Publish (12/13)
2 Data Sets (4/7)	9b GOOSE Subscribe (14/14)
3 Substitution (3/3)	12a Direct Control (12/18)
4 Setting Group Selection (4/4)	12b SBO Control (19/27)
4+ Setting Group Definition (12/13)	12c Enhanced Direct Control (14/20)
5 Unbuffered Reporting (18/21)	12d Enhanced SBO Control (20/28)
6 Buffered Reporting (27/30)	13 Time Synchronization (4/7)
	14 File Transfer (7/8)
	15 Service Tracking (8/17)

This certificate includes a summary of the test results as carried out at NR Electric in China with UniGrid SA 61850 Client Simulator 1.4.360 with test suite Ed2 1.0.55 and UniCA 61850 Analyzer 5.34.01 This document has been issued for information purposes only, and the archived DNV GL verification report No. 10080975-INC 18-2537 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV GL by NR Electric. The manufacturer's production process has not been assessed. This certificate does not imply that DNV GL has approved any product other than the specimen tested.

Arnhem, May 5, 2018


S.J.T. Mulder
Business Leader
Interoperability of Smart Power Systems

Issued by:

DNV-GL
DNV KEMA is now DNV GL


R. Schimmel
Verification Manager

¹ Level A - Independent test lab with certified ISO 9001 Quality System

² TPCL - Test procedures change list

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Applicable Test Procedures from the UCA International Users Group Edition 2 Server Test Procedures version 1.0 with TPCL 1.2.4

Conformance Block	Mandatory	Conditional
1: Basic Exchange	sAss1, sAss2, sAss3, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrvN1abcd, sSrvN4	sAssN6, sSrv6, sSrv8, sSrv11, sSrv12, sSrvN1e, sSrvN1f, sSrvN2, sSrvN3
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
3: Substitution	sSub1, sSub2, sSub3	
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11
4+: Setting Group Definition	sSg2, sSg4, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5	sSg5, sSg9
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp15, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8	sRp8, sRp10, sRp11, sRp12, sRpN5
6: Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr15, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8	sBr8, sBr10, sBr11, sBr12, sBr23, sBr24
9a: GOOSE publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11	sGop1, sGop5, sGop6, sGop7, sGopN1, sGopN2
9b: GOOSE subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos4, sGos6b
12a: Direct control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl2, sCtl7, sCtl13, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19
12b: SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6	sCtl2, sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl27
12c: Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl2, sCtl7, sCtl13, sCtl14, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
12d: Enhanced SBO Control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl2, sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
13: Time sync	sTm1, sTm2, sTmN1	sTm3
14: File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt2c, sFtN1c
15: Service tracking		sTrk1, sTrk2, sTrk3, sTrk4, sTrk7, sTrk8, sTrk9, sTrk17

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

- PCS-902S LINE DISTANCE RELAY
- PCS-931S LINE DIFFERENTIAL RELAY
- PCS-978S TRANSFORMER RELAY
- PCS-9705S BAY CONTROL UNIT
- PCS-915SC BUSBAR RELAY