

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

No. 74108090-OPE/INC 15-2501

**Issued to:**

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

**For the server product:**

PCS-931 LINE DIFFERENTIAL RELAY  
HMI version: 2.13  
Hardware s/n: NRJB2000001460060 [96K060]  
61850 software version: Ed2 V1.00  
CPU board: NR1110 s/n: 3G9215350170T

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 TPCL<sup>2</sup> 1.0 with product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement for the IEC 61850 interface in PCS900 Product Family V1.0", "Model Implementation Conformance Statement for the IEC 61850 interface in PCS900 Product Family V1.0" and "TISSUES Implementation Conformance Statement for the IEC 61850 Ed2 interface in PCS900 Product Family V1.0" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 interface in PCS900 Product Family V1.0".

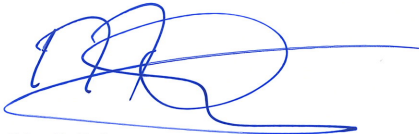
The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1 Basic Exchange (22/26)	9a GOOSE Publish (12/13)
2 Data Sets (4/7)	9b GOOSE Subscribe (14/14)
3 Substitution (3/3)	12a Direct Control (15/19)
4 Setting Group Selection (4/4)	12b SBO Control (21/28)
4+ Setting Group Definition (13/13)	12c Enhanced Direct Control (14/20)
5 Unbuffered Reporting (17/20)	12d Enhanced SBO Control (20/28)
6 Buffered Reporting (24/29)	13 Time Synchronization (4/7)
	14 File Transfer (7/8)

This certificate includes a summary of the test results as carried out at NR Electric CO., Ltd. in China with UniCA 61850 Client simulator 4.29.03 with test suite Ed2 3.29.01 and UniCA 61850 Analyzer 5.29.02. This document has been issued for information purposes only, and the original paper copy of the DNV GL report No. 74108090-OPE/INC 15-2500 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 CO., Ltd. 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, September 19, 2015

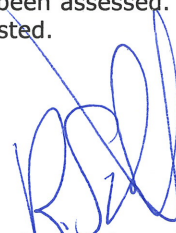


**M. Adriaensen**  
Head of Department  
Operational Excellence

**Issued by:**



DNV KEMA is now DNV GL



**R. Schimmel**  
Verification Manager

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

<sup>2</sup> 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 1.0

Conformance Block	Mandatory	Conditional
1: Basic Exchange	sAss1, sAss2, sAss3, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrvN1abcd, sSrvN4	sSrv6, sSrv8, sSrv11, sSrv12, sSrvN1e, sSrvN1f, sSrvN2, sSrvN3
2: Data Sets	sDs1, sDs10a, sDs15, sDsN1ae	
3: Substitution	sSub1, sSub2, sSub3	
4: Setting Group Selection	sSg1, sSg3, sSg11, sSgN1	
4+: Setting Group Definition	sSg2, sSg4, sSg7, sSg8, sSg9, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5	sSg5, sSg6
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp9, sRp14, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8	sRp5, sRp8, sRp10, sRp11, sRp12, sRpN5
6: Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr9, sBr14, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8	sBr5, sBr8, sBr10, sBr11, sBr12
9a: GOOSE publish	sGop2a, sGop3, sGop4, sGop7, sGop9, sGop10, sGop11	sGop1, sGop5, sGop6, sGopN1, sGopN2
9b: GOOSE subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos4, sGos6b
12a: Direct control	sCtl5, sCtl10, sCtl14, sDOns1, sDOns2	sCtl2, sCtl7, sCtl13, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26, sDOns4
12b: SBO control	sCtl5, sCtl6, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6	sCtl2, sCtl4, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26, sCtl27, sSBOns7
12c: Enhanced Direct Control	sCtl5, sCtl10, sCtl14, sDOes1, sDOes2	sCtl2, sCtl7, sCtl13, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
12d: Enhanced SBO Control	sCtl5, sCtl6, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl2, sCtl4, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
13: Time sync	sTm1, sTm2, sTmN1	sTm3
14: File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt2c, sFtN1c

All configuration file and data model tests have been successfully performed for the product variants using the same communication hardware and software version: PCS-902, PCS-915, PCS-921, PCS-924, PCS-974, PCS-978, PCS-985, PCS-994 and PCS-996.