IEC 61850 Certificate Level A[1]

No. 30720578-Consulting 07-2161

Issued to:
Bharat Heavy Electricals Limited
BHEL House
Siri Fort
New Delhi - 110049
India

For the product:
Protec-LN
Numerical line protection relay
Firmware V1.00

Issued by: **KEMA**

The product has not shown to be non-conforming to:

IEC 61850-6, 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 with product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement of the IEC 61850 communication interface in PROTEC-LN (BHEL) Version 1.00", "Model Implementation Conformance Statement of the IEC 61850 communication interface in PROTEC-LN (BHEL) Version 1.00", "PROTEC–LN, Numerical Line Protection Relay, IEC 61850 Tissues Conformance Statement Version 1.00" and product's extra information for testing: "Protocol implementation extra information for testing of the IEC 61850 communication interface in PROTEC-LN (BHEL) Version 1.00".

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 as defined in the UCA International Users Group Device Test procedures v1.1:

1	Basic Exchange (20/23)		6	Buffered Reporting (13/15)
2	Data Sets (2/5)		9a	GOOSE Publish (8/11)
3	Substitution (3/3)		13	Time Synchronization (3/4)
4+	Setting Group Definition (10/10)		14	File Transfer (3/6)
5	Unbuffered Reporting (11/13)			

This Certificate includes a summary of the test results as carried out at KEMA in Arnhem with UniCAsim 61850 version 3.16.01 with test suite 3.16.04 and UniCA 61850 analyzer 4.16.00. The test is based on the UCA International Users Group Device Test Procedures version 1.1. This document has been issued for information purposes only, and the original paper copy of the KEMA report: No. 30720578-Consulting 07-2160 will prevail.

The test have been carried out on one single specimen of the products as referred above and submitted to KEMA by BHEL. The manufacturer's production process has not been assessed. This Certificate does not imply that KEMA has certified or approved any product other than the specimen tested.

Arnhem, 2 November 2007

S.J.L.M. Janssen
Managing Director KEMA Consulting

R. Schimmel
Certification Manager

1 Level A - Independent Test lab with certified ISO 9000 or ISO 17025 Quality System

Applicable Test Procedures from the UCA International Users Group Device Test Procedures version 1.1

Conformance Block	Mandatory	Conditional
1: Basic Exchange	Ass1, Ass2, Ass3, AssN2, AssN3, AssN4, AssN5 Srv1, Srv2, Srv3, Srv4, Srv5, SrvN1abcd, SrvN4	Srv6, Srv7, Srv8, SrvN1e, SrvN2, SrvN3
2: Data Sets	Dset1, DsetN1ae	
3: Substitution	Sub1, Sub2, SubN1	
4: Setting Group Selection	Sg1, SgN1	
4+: Setting Group Definition	Sg2, Sg3, Sg4, Sg5 SgN2, SgN3, SgN4, SgN5	
5: Unbuffered Reporting	Rp1, Rp2, Rp3, Rp4, Rp7 RpN1, RpN2, RpN3, RpN4	Rp5, RpN5
6: Buffered Reporting	Br1, Br2, Br3, Br4, Br7, Br8, Br9 BrN1, BrN2, BrN3, BrN4, BrN5	Br5
9a: GOOSE publish	Gop2, Gop3, Gop4, Gop7, Gop9	Gop1, Gop6, GopN1
13: Time sync	Tm1, Tm2, TmN1	
14: File transfer	Ft1, Ft2ab, FtN1ab	