

# CENTRAL POWER RESEARCH INSTITUTE

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



No. : MUADSASL1718C003

**Issued to:**

M/s. Bharat Heavy Electricals Ltd.,  
BHEL Corporate Research & Development,  
Vikas Nagar, Hyderabad - 500093  
INDIA

**For the server product:**

Bay Control Unit  
Model No.: BHEL-BCU  
Serial No.: B16002  
Hardware Version: 2.0  
Software Version: 2.0

**Issued by:** CENTRAL POWER RESEARCH INSTITUTE, India

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> version 1.2.4 with product's protocol, model and technical issue implementation conformance statements: PICS version 2.0.0<sup>1</sup>, "MICS version 2.0.0", "TICS version 2.0.0" and the extra information for testing: "PIXIT version 2.0.0".

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

1 Basic Exchange (22/26)	9a GOOSE Publish (12/13)
2 Data Sets (4/7)	9b GOOSE Subscribe (13/14)
2+ Data Set Definition (24/24)	12a Direct Control (11/18)
3 Substitution (3/3)	12b SBO Control (19/27)
4 Setting Group Selection (4/4)	12c Enhanced Direct Control (13/20)
4+ Setting Group Definition (12/13)	12d Enhanced SBO Control (20/28)
5 Unbuffered Reporting (21/21)	13 Time Synchronization (5/7)
6 Buffered Reporting (30/30)	14 File Transfer (8/8)

This Certificate includes a summary of the test results as carried out at Central Power Research Institute (CPRI), Bangalore in India with Client Simulator UniCAsim 4.31.02 (61850 Conformance Test suit Ed2\_Version 4.32.07\_TPCL1p2) and UniGrid SA Simulator 1.3.95.41 (Test suit iec61850\_ed2\_server\_v1p0tpcl1p2p4) and UniCA 61850 analyzer version 5.31.00. This document has been issued for information purposes only, and the original paper copy of the CPRI Report No.: MUADSASL1718T003; Dated: 17 September, 2018 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to CPRI by Bharat Heavy Electricals Ltd., BHEL Corporate Research & Development, Vikas Nagar, Hyderabad - 500093 INDIA. The manufacturer's production process has not been assessed. This certificate does not imply that CPRI has certified or approved any product other than the specimen tested.

Bangalore, 17 September, 2018

(Pradish M)  
Test Engineer



(Harinath Babu P V)  
Joint Director

Test Report Reference No.: MUADSASL1718T003; Dated 17 September, 2018

1 Level A – Independent Test lab with certified ISO/IEC 17025 Quality System.

2 Test Procedure 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 version 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, sSrvN1e, sSrvN1f, sSrvN2, sSrvN3
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
2+: Data Set Definition	sDs2, sDs3, sDs4, sDs5, sDs6, sDs7, sDs8, sDs9, sDs11, sDs13, sDs14, sDsN1cd sDsN2, sDsN3, sDsN4, sDsN5, sDsN6, sDsN7, sDsN8, sDsN9, sDsN10	sDs12, sDsN11, sDsN12
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	sRp6, sRp7, sRp8, sRp10, sRp11, sRp12, sRp13, 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	sBr6, sBr7, sBr8, sBr10, sBr11, sBr12, sBr13, sBr23, sBr24
9a: GOOSE publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11	sGop1, sGop2b, sGop5, sGop6, sGop7, sGopN1
9b: GOOSE subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos4
12a: Direct control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl7, sCtl13, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19
12b: SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl27, sSBOns7
12c: Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl13, sCtl14, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
12d: Enhanced SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26, sSBOes7
13: Time sync	sTm1, sTm2, sTmN1	sTm3, sTm5
14: File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt2c, sFt3, sFtN1c



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