No. 10344294-DSO 22-2859

IEC 61850 Certificate Level A[1]

Issued to:
Arcteq Relays Ltd.
Kvartsikatu 2A1
65300 Vaasa
Finland

For the server product:
AQ-250: AQ-F255 Feeder protection IED
Software version: v2.5.7.1
S/N: 2211018877

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 2.0.5 with product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement (PICS) for the IEC 61850 interface in AQ250, version 2.5.7, date March 04, 2022", "Model Implementation Conformance Statement (MICS) for the IEC 61850 interface in AQ250, version 2.5.7, date March 22, 2022" and "TISSUEs Implementations Conformance Statement (TICS) for the IEC 61850 interface in AQ250, version 2.5.7, date March 04, 2022" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 interface in AQ250, version 2.5.7, date March 04, 2022".

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 (20/26)	9b GOOSE Subscribe (19/20)
2 Data Sets (4/7)	12a Direct Control (8/18)
3 Substitution (3/3)	12b SBO Control (15/27)
4 Setting Group Selection (4/4)	12c Enhanced Direct Control (9/20)
5 Unbuffered Reporting (19/23)	12d Enhanced SBO Control (17/28)
6 Buffered Reporting (27/33)	13 Time Synchronization (5/7)
9a GOOSE Publish (11/13)	14 File Transfer (7/8)

This certificate includes a summary of the test results as carried out at DNV in The Netherlands with UniGrid SA Simulator 2.1.1 with test suite 20220414 and UniCA 61850 Analyzer 6.41.00. This document has been issued for information purposes only, and the archived DNV verification report No. 10344294-DSO 22-2858 rev 2 will prevail.

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

Arnhem, May 6, 2022

Issued by:

G. Akse
Business Development Manager
Interoperability of Smart Power Systems

R. Schimmel
Verification Manager

[1] Level A - Independent test lab with certified ISO 9001 Quality System
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IEC 61850 Certificate Level A

Applicable Test Procedures from the UCA International Users Group Edition 2 Server Test Procedures version 2.0.5

Conformance Block	Mandatory	Conditional
1: Basic Exchange	sAss1, sAss2, sAss3, sAss4, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrv8, sSrvN1abcdf, sSrvN4	sAssN6, sSrv9, sSrv10, sSrv12
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
3: Substitution	sSub1, sSub2, sSub3	
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8	sRp8, sRp10, sRp11, sRp12, sRp15, sRpN5
6: Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8	sBr8, sBr10, sBr11, sBr12, sBr15
9a: GOOSE publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12	sGop1, sGop5, sGop6, sGopN1
9b: GOOSE subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGos12, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos4, sGos13
12a: Direct control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl7, sCtl15, sCtl16, sCtl17
12b: SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17
12c: Enhanced Direct Control	sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl14, sCtl15, sCtl16, sCtl17
12d: Enhanced SBO Control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl26
13: Time sync	sTm1, sTm2, sTmN1	sTm3, sTm5
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:

- AQ-C255 Capacitor bank protection IED
- AQ-G257A Generator protection IED
- AQ-M257A Motor protection IED
- AQ-S254 Alarm and indication IED
- AQ-S255 Bay control IED
- AQ-T256 Transformer protection IED
- AQ-T257A Transformer protection IED

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