

No. 10202568-INC 20-2460

Issued to:

Maschinenfabrik Reinhausen GmbH
Falkensteinstr. 8
93059 Regensburg
Germany

For the server product:

TAPCON®
Voltage Regulator Unit
IEC 61850 Software Version: 2.22
S/N: 1963794

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

IEC 61850 First Edition Parts 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 Edition 1, the UCA International Users Group Server Device Test Procedures version 3.3, the product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement (PICS) for the IEC 61850 Interface in TAPCON®/ETOS®, May 2020", "Model Implementation Conformance Statement (MICS) for the IEC 61850 Client Interface, May 2020" and "TISSUES Implementation Conformance Statement (TICS) for the IEC 61850 Ed2 Interface in TAPCON®/ETOS®, May 2020" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 interface in TAPCON®/ETOS®, May 2020".

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 (23/25)	9a GOOSE Publish (9/12)
2 Data Sets (3/6)	9b GOOSE Subscribe (11/11)
2+ Data Set Definition (24/24)	12a Direct Control (4/11)
5 Unbuffered Reporting (18/18)	13 Time Synchronization (4/5)
6 Buffered Reporting (25/27)	

This certificate includes a summary of the test results as carried out at DNV GL in the Netherlands with UniGrid SA Simulator 1.6.8 with test suite 1.0.27 and UniCA 61850 Analyzer 5.34.01. This document has been issued for information purposes only, and the original DNV GL report No. 10202568-INC 20-2459 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV GL by Maschinenfabrik Reinhausen. 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 19, 2020



N.A. Heijker
Business Leader
Interoperability of Smart Power Systems

Issued by:



DNV KEMA is now DNV GL



R. Schimmel
Verification Manager

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

Copyright © DNV GL Netherlands B.V. Arnhem, the Netherlands. All rights reserved. It is prohibited to update or change this certificate in any manner whatsoever, including but not limited to dividing it into parts.



Applicable Test Procedures from the UCA International Users Group Server Device Test Procedures version 3.3

Conformance Block	Mandatory	Conditional
1: Basic Exchange	Ass1, Ass2, Ass3, AssN2, AssN4, AssN5 Srv1, Srv2, Srv3, Srv4, Srv5, SrvN1abcd, SrvN4	AssN3, AssN6, Srv6, Srv7, Srv8, Srv9, SrvN1e, SrvN1f, SrvN2, SrvN3
2: Data Sets	Dset1, Dset10a, DsetN1ae	
2+: Data Set Definition	Dset2, Dset3, Dset4, Dset5, Dset6, Dset7, Dset8, Dset9 DsetN1cd, DsetN2, DsetN3, DsetN4, DsetN5, DsetN6, DsetN7, DsetN8, DsetN9, DsetN10, DsetN11, DsetN12, DsetN13, DsetN14	DsetN15a, DsetN15b
5: Unbuffered Reporting	Rp1, Rp2, Rp3, Rp4, Rp9, RpN1, RpN2, RpN3, RpN4, RpN8	Rp5, Rp6, Rp7, Rp8, Rp10, Rp11, Rp12, RpN5
6: Buffered Reporting	Br1, Br2, Br3, Br4, Br9, Br20, Br21, Br22, Br25, Br26, Br27, Br28, BrN1, BrN2, BrN3, BrN4, BrN5, BrN8	Br5, Br6, Br7, Br8, Br10, Br11, Br12
9a: GOOSE Publish	Gop2, Gop3, Gop4, Gop9, Gop10a	Gop1, Gop6, Gop10b, GopN1
9b: GOOSE Subscribe	Gos1a, Gos2, Gos3, GosN1, GosN2, GosN3, GosN4, GosN5, GosN6	Gos1b, Gos4
12a: Direct Control	CtIN3, DOns1	CtIN11, DOns3
13: Time Sync	Tm1, Tm2	TmN1, TmN2

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

- ETOS®, Embedded Transformer Operating System