

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

**Issued to:**

Thytronic S.p.A.  
Piazza Mistral 7  
20139 Milan  
Italy

**For the server product:**

XMR-P Multifunction protection relay  
Application firmware version: 1.90  
IEC 61850 version: 1.40  
S/N: 310282

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

### IEC 61850-5 Edition 2 Performance Class: P1 (3ms)

The performance test has been performed according to the UCA International Users Group GOOSE performance Test Procedures version 2.5 with product's protocol, implementation conformance statements: : "Protocol Implementation Conformance Statement for the IEC 61850 interface in XMR-P device and its variants XMR-A, XMR-V, XMR-D, XMR-T, date 13/04/2022", "Model Implementation Conformance Statement for the IEC 61850 interface in XMR-P device and its variants XMR-A, XMR-V, XMR-D, XMR-T, date 13/04/2022" and "Tissue Implementation Conformance Statement for the IEC 61850 interface in XMR-P device and its variants XMR-A, XMR-V, XMR-D, XMR-T, date 13/04/2022" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 Edition 2 server interface in XMR-P device and its variant XMR-A, XMR-V, XMR-D, XMR-T, date 13/04/2022".

This certificate includes a summary of the test results as carried out at DNV in The Netherlands with the Omicron Test Universe version 4.00, FTE ComProbe, UniGrid SA Simulator version 2.1.1 and UniCA 61850 Analyzer version 6.40.01. This document has been issued for information purposes only, and the original paper copy of the DNV report: No. 10341516-DSO 22-2841 rev 2 will prevail.

The GOOSE performance has been measured with Boolean values.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV by Thytronic S.p.A. 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, April 26, 2022



**G. Akse**

Business Development Manager  
Interoperability of Smart Power Systems

**Issued by:**



**DNV**



**R. Schimmel**  
Verification Manager

<sup>1</sup> Level A - Independent test lab with certified ISO 9001 Quality System  
UCA International Users Group P.O. Box 315, Shell Knob, MO 65747 USA

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### GOOSE Performance Measured Results

Results of the GOOSE performance benchmark tests as specified in the UCA International Users Group GOOSE performance Test Procedures version 2.5.

Performance class = P1 (3ms)

Goose Performance Benchmark summary results, compensated for scan cycle delay.

Test ID	Large dataset	Correlated subscribed	Back-ground	Minimum Transfer time [ms]	Maximum Transfer time [ms]	Average Transfer time [ms]
Gpf1	-	-	-	0.20	1.10	0.67
Gpf2	X	-	-	0.82	1.47	1.17
Gpf3	-	X	-	0.11	1.16	0.30
Gpf4	X	X	-	0.25	1.27	0.62
Gpf5	-	-	X	0.22	1.21	0.53
Gpf6	X	-	X	0.85	1.48	1.14
Gpf7	-	X	X	0.12	1.18	0.30
Gpf8	X	X	X	0.30	1.25	0.66