

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

No. 10200769-INC 20-2142

**Issued to:** ALFANAR Electrical Systems ALFANAR Industrial City New Al Kharj Road, Riyadh Kingdom of Saudi Arabia For the server product: SPRECON-E-C Protection and Control Unit Firmware version: 8.66 Hardware version/Serial Number: 210.054/G013

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\_rev2 with product's protocol, model and technical issue implementation conformance statements: "SPRECON-E IEC 61850 - Edition 2 Protocol Implementation Conformance Statement Server + Client, doc.nr. 94.2.918.80 Issue F", "SPRECON-E IEC 61850 - Edition 2 Model Implementation Conformance Statement, doc.nr. 94.2.918.84 Issue E" and "SPRECON-E IEC 61850 - Edition 2 Tissues Implementation Conformance Statement Server + Client, doc.nr. 94.2.918.84 Issue E" and "SPRECON-E IEC 61850 - Edition 2 Tissues Implementation Conformance Statement Server + Client, doc.nr. 94.2.918.86 Issue E" and the extra information for testing: "SPRECON-E Protocol Implementation Extra Information For Testing For Server, doc.nr. 94.2.918.82 Issue E".

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):

<ol> <li>Basic Exchange (22/28)</li> <li>Data Sets (4/7)</li> <li>Data Cat Definition (24/24)</li> </ol>	9a GOOSE Publish (10/13) 9b GOOSE Subscribe (16/18)
2+ Data Set Definition (24/24) 3 Substitution (3/3)	12a Direct Control (4/17) 12b SBO control (15/26)
4 Setting Group Selection (4/4)	12c Enhanced Direct Control (10/19)
4+ Setting Group definition (13/13)	12d Enhanced SBO Control (17/27)
5 Unbuffered Reporting (21/22)	13 Time Synchronization (5/7)
6 Buffered Reporting (29/32)	14 File Transfer (5/8)
	15 Service Tracking (3/17)

This certificate includes a summary of the test results as carried out at DNV GL in The Netherlands with UniGrid SA Simulator 1.6.7 with test suite 1.0.24 and UniCA 61850 Analyzer 5.34.01. This document has been issued for information purposes only, and the archived DNV GL verification report No. 10200769-INC 20-2141 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV GL by Sprecher Automation. 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, February 7, 2020

N.A. Heijker

Business Leader Interoperability of Smart Power Systems

Issued by:



DNV KEMA is now DNV GL



 $^{\rm 1}\,{\rm Level}\,{\rm A}$  - Independent test lab with certified ISO 9001 Quality System

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Applicable Test Procedures from the UCA International Users Group Edition 2 Server Test Procedures version 2.0\_rev2

Control	Conf	ormance Block	Mandatory	Conditional
2+:Data Set DefinitionSDS2, SDS3, SDS4, SDS5, SDS6, SDS7, SDS8, SDS9, SDS13, SDS14, SDSN4, SDSN5, SDSN6, SDSN7, SDSN8, SDSN3, SDSN4, SDSN5, SDSN6, SDSN7, SDSN8, SDSN3, SDSN4, SDSN5, SDSN6, SDSN7, SDSN8, SDSN9, SDSN10SDS11, SDS12, SDSN11, SDSN123:SubstitutionSSub1, SSub2, SDSN3, SDSN4, SDSN5, SDSN6, SDSN7, SDSN8, SDSN9, SDSN10SSG114:Setting Group SelectionSSg1, SSg3, SSgN1SSg115:Unbuffered ReportingSSp1, SSp4, SSg14, SSgN4, SSgN5, SSp3, SRP14, SRP16, SRPN1, SRPN2, SRP3, SRP14, SRP16, SRP14, SRP16, SRP7, SRP8, SRP10, SRP11, SRP12, SBr15, SBr20, SBr20, SBr23, SGSN4, SGS91, SBr15, SBr20, SBr21, SBr23, SGSN4, SGS9, SGO510, SGO51, SGO52, SGO33, SGO54, SGO59, SGO510, SGO51, SGOSN, SGOSN4, SGOSN1, SGOSN2, SGOSN3, SGOSN4, SGOSN1, SGOSN4, SSCN3, SGOSN4, SGOSN1, SSCN3, SGOSN4, SSCN3, SSCN4, SSCN4, SSCN4, SSCN4, SCU10, SCU10, SCU11, SCU25, SSEOns1, SSCN3, SGOSN4, SSCN3, SSCN4, SSCN4, SCU4, S	1:	Basic Exchange	sAssN3, sAssN4, sAssN5, sSrv1, sSrv2,	
SDS8, SDS9, SDS13, SDS14, SDSN1cd, SDSN2, SDSN3, SDSN4, SDSN5, SDSN6, SDSN7, SDSN8, SDSN9, SDSN103:SubstitutionsSub1, SSub2, SSub34:Setting Group SelectionsSg1, sSg3, SSgN15:Setting Group DefinitionsSg12, sSg3, sSgN4, sSgN5, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5sSg5, sSg95:Unbuffered ReportingsRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRpN1, sRpN2, sRpN3, sRp14, sRp16, sRpN1, sRpN2, sRpN3, sRp14, sRpN4, sRpN5sBr6, sBr7, sBr8, sBr10, sRp11, sRp12, sBr15, sBr20, sBr21, sBr22, sBr25, sBr26, sBr15, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBr156:Buffered Reporting sG02E publishsGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6sGop1, sCopN1 sGosN1, sCosN2, sGosN3, sGosN4, sGosN1, sGosN1, sGosN2, sGosN3, sGosN4, sSBOns1, sSBOns2, sSBOns612a:Direct controlsCt15, sCt110, sDOes1, sDOes2sCt17, sCt114, sCt116, sCt117, sCt118, sCt2012c:Enhanced Direct ControlsCt15, sCt110, sDOes1, sDOes2sCt17, sCt114, sCt116, sCt117, sCt118, sCt20	2:	Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
4:Setting Group SelectionSSg1, SSg3, SSgN1SSg14:Setting Group DefinitionSSg1, SSg3, SSgN1SSg114+:Setting Group DefinitionSSg2, sSg4, SSg6, SSg7, SSg8, SSg10, SSg12, SSgN2, SSgN4, SSgN5SSg5, SSg95:Unbuffered ReportingSRp1, SRp2, SRp3, SRp4, SRp5, SRp9, SRp14, SRp16, SRpN1, SRpN2, SRp9, SRp14, SRp16, SRp11, SRp12, SRp15, SRp9, SRp14, SRp16, SRp11, SRp12, SRp3, SRp4, SRp5, SBr9, SR14, SRp15, SRp5, SRp5, SRp10, SRp11, SRp12, SRp15, SRp15, SRp10, SRp11, SBr12, SBr15, SRp15, SRp10, SBr11, SBr12, SBr15, SBr27, SBr28, SBr29, SBr14, SBr22, SBr25, SBr26, SBr15, SBr159a:GOOSE publishSGop2a, SGop3, SGop4, SGop9, SGop10, SGop11, SGop12SGop1, SGop6, SGopN19b:GOOSE subscribeSGos1, SGos2, SGos3, SGos5, SGos6a, SGosN1, SGosN2, SGosN6, SGosN4, SGoSN1, SGoSN6SGt15, Sct110, SDOns1, SDOns212a:Direct controlSCt15, Sct110, SDOns1, SDOns2Sct14, Sct16, Sct17, Sct116, Sct117, Sct118, Sct126, SCt15, Sct110, SDOes1, SDOes2Sct17, Sct114, Sct116, Sct117, Sct118, Sct126	2+:	Data Set Definition	sDs8, sDs9, sDs13, sDs14, sDsN1cd, sDsN2, sDsN3, sDsN4, sDsN5, sDsN6,	sDs11, sDs12, sDsN11, sDsN12
SelectionSelectionSig2, sSg4, sSg6, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5sSg5, sSg94+:Setting Group DefinitionsSg2, sSg4, sSg6, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5sSg5, sSg95:Unbuffered 	3:	Substitution	sSub1, sSub2, sSub3	
DefinitionsSg12, sSgN2, sSgN3, sSgN4, sSgN55:Unbuffered ReportingsRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp16, sRpN1, SRpN2, sRpN3, sRpN4, sRpN8sRp6, sRp7, sRp8, sRp10, sRp11, sRp12, sRp15, sRpN56:Buffered ReportingsBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr88, sBr10, sBr11, sBr12, sBr16, sBr20, sBrN5, sBrN8sBr6, sBr7, sBr8, sBr10, sBr11, sBr12, sBr159a:GOOSE publishsGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12sGop1, sGop6, sGopN19b:GOOSE subscribesGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6sCtl5, sCtl10, sDOns1, sDOns212a:Direct controlsCtl5, sCtl10, sDOns1, sDOns2sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl1812c:Enhanced Direct ControlsCtl5, sCtl10, sDOes1, sDOes2sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26	4:	5 1	sSg1, sSg3, sSgN1	sSg11
ReportingsRp14, sRp16, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8sRp15, sRpN56:Buffered ReportingsBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8sBr6, sBr7, sBr8, sBr10, sBr11, sBr12, sBr15, sBr159a:GOOSE publishsGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12sGop1, sGop6, sGopN19b:GOOSE subscribesGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6sCtl5, sCtl10, sDOns1, sDOns212a:Direct controlsCtl5, sCtl10, sDOns1, sDOns2sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl18, sCtl26, sSBOns1, sSBOns2, sSBOns612c:Enhanced Direct ControlsCtl5, sCtl10, sDOes1, sDOes2sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26, sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26	4+:			sSg5, sSg9
sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8sBr159a:GOOSE publishsGop2a, sGop3, sGop4, sGop9, sGop10, sGop11, sGop12sGop1, sGop6, sGopN19b:GOOSE subscribesGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6sGop1, sGop1, sGop1, sGop1212a:Direct controlsCtl5, sCtl10, sDOns1, sDOns2sCtl5, sCtl3, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl18, sCtl2612c:Enhanced Direct ControlsCtl5, sCtl10, sDOes1, sDOes2sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26	5:		sRp14, sRp16, sRpN1, sRpN2, sRpN3,	
sGop11, sGop129b:GOOSE subscribesGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN612a:Direct controlsCt15, sCt10, sDOns1, sDOns212b:SBO controlsCt15, sCt18, sCt19, sCt110, sCt111, sCt125, sSBOns1, sSBOns2, sSBOns612c:Enhanced Direct ControlsCt15, sCt110, sDOes1, sDOes2sCt17, sCt116, sCt117, sCt18, sCt126	6:	Buffered Reporting	sBr16, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBr29, sBrN1, sBrN2,	
sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6sGosN1, sGosN2, sGosN4, sGosN5, sGosN612a: Direct controlsCtl5, sCtl10, sDOns1, sDOns212b: SBO controlsCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, 	9a:	GOOSE publish		sGop1, sGop6, sGopN1
12b: SBO control       sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOns1, sSBOns2, sSBOns6       sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl18         12c: Enhanced Direct Control       sCtl5, sCtl10, sDOes1, sDOes2       sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26	9b:	GOOSE subscribe	sGos7, sGos8, sGos9, sGos10, sGos11, sGosN1, sGosN2, sGosN3, sGosN4,	
sSB0ns1, sSB0ns2, sSB0ns6       12c: Enhanced Direct Control     sCtl5, sCtl10, sD0es1, sD0es2       sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26	12a:	Direct control	sCtl5, sCtl10, sDOns1, sDOns2	
Control	12b:	SBO control		sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl18
	12c:		sCtl5, sCtl10, sDOes1, sDOes2	sCtl7, sCtl14, sCtl16, sCtl17, sCtl18, sCtl26
12d: Enhanced SBO ControlsCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8sCtl4, sCtl6, sCtl7, sCtl16, sCtl17, sCtl18, sCtl26	12d:			
13: Time sync     sTm1, sTm2, sTmN1     sTm3, sTmN2	13:	Time sync	sTm1, sTm2, sTmN1	sTm3, sTmN2
14: File transfer sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	14:	File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	
15: Service tracking sTrk7, sTrk8, sTrk9	15:	Service tracking		sTrk7, sTrk8, sTrk9

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