

CERTIFICATE

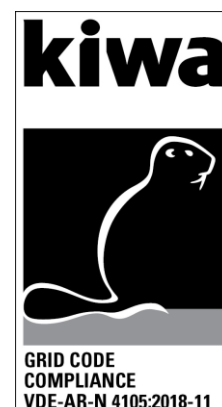
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Certificate of NS protection		Nr.: 22-063-00
Manufacturer / Applicant	ComAp a.s. U Uranie 1612/14a 170 00 Prague 7 Czech Republic	
Type of NS protection	Controller for Mains and Tie breaker control	
Central NS protection	<input checked="" type="checkbox"/>	
Integrated NS protection	<input type="checkbox"/>	
Network connection rule	SOP-9-1_15 GCC Certification Program, 09/21 <u>Based on:</u> VDE-AR-N 4105:2018-11 Generators connected to the low-voltage distribution network – Technical requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Test requirement	DIN VDE V 0124-100 (VDE V 0124-100):(2020-06) “Network integration of power generation systems – Low voltage” Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network	
Test Report	21PP214-01_1 from 2022-02-17	
The network and system protection designated above meet the requirements of VDE-AR-N 4105:2018-11.		

Kaufbeuren, 2022-02-22

Raphael Rader
Certification Engineer



This NS protection certificate shall not be used in extracts



Annex 1

Description of the system

InteliMains 1010 controller are Mains supervision controllers for multiple generating sets operating in parallel to the Mains. It has features such as Automatic Mains Failure detection which uses integrated Mains protections, MCB and MGCB synchronization, configuration level switches based on Mains import or Load consumption.

For the certification, only NS protection tests for generators were considered.

The controller was tested with a "starter kit" simulation setup, in which the various feedback signals were implemented via switches and potentiometers in order to simulate realistic operation.



Annex 2

E.7 Extract of the test report for NS protection

No.: 21PP214-01_1

„Determination of electrical properties“

Test report NS protection

Type of NS protection	InteliMains 1010	Further manufacturer indications: Valid parameter setting "InteliMains1010_IM 1010_20211122_01_50-. aig3" or "InteliMains1010_IM 1010_20211122_01_50+.aig3"
Software-Version:	2.1.0 (Grid-Codes Module Version: V1.3)	
Manufacturer:	ComAp a.s. U Uranie 1612/14a; 170 00 Prague 7; Czech Republic	
Measurement period:	from 2021-07-30 to 2021-12-09	

	Sitriling generators, fuel cells			Inverter(s)		
	Synchronous and asynchronous generators with $P_n \leq 50\text{kW}$ coupled directly or via inverters			Directly coupled synchronous and asynchronous generators with $P_n > 50\text{kW}$		
Protective function	Set Value	Tripping Value	Tripping time NS Protection*	Set Value	Tripping Value	Tripping time NS Protection*
Rise-in-voltage protection $U_{>>}$	$1,15 * U_n$	$1,154 * U_n$	32ms	$1,25 * U_n$	$1,254 * U_n$	41ms
Rise-in-voltage protection $U_{>}$	$1,10 * U_n$	$1,10 * U_n$	10 min mean value	$1,10 * U_n$	$1,10 * U_n$	10 min mean value
Voltage drop protection $U_{<}$	$0,8 * U_n$	$0,794 * U_n$	37ms	$0,8 * U_n$	$0,794 * U_n$	1,017s
Voltage drop protection $U_{<<}$	Not applicable			$0,45 * U_n$	$0,448 * U_n$	315ms
Frequency decrease protection $f_{<}$	47,5Hz	47,50Hz	74ms	47,5 Hz	47,48Hz	78ms
Frequency decrease protection $f_{>}$	51,5Hz	51,50Hz	77ms	51,5 Hz	51,5Hz	81ms

* The tripping time includes the period from the limit value violation U_{lf} until the tripping signal to the interface switch.

When planning the power generation system, the response time of the interface switch shall be added to the maximum time value obtained as indicated above.

☐ For integrated NS protection

Assigned to power generation unit of type	
Type integrated interface switch	
Response time of interface switch for integrated NS protection	
Verification of the entire functional chain "integrated NS protection – interface switch" has resulted in successful disconnection	<input type="checkbox"/>