CERTIFICATE

Applicant: **ComAp a.s.**
U Uranie 1612/14a
170 00 Prague 7
Czech Republic

Product: **NS protection device for Synchronous Generator**

Model: **InteliGen 1000**

Firmware Version: 1.2.X (Grid code module V1.3)

Intended use:

Controller for Synchronous gen set according to EN 50549-1:2019 with integrated grid disconnection protection.

Applied standards and guidelines:

SOP-9-1_15 GCC Certification Program, 09/21
Based on:
EN 50549-1:2019
Requirements for generating plants to be connected in parallel with distribution networks Part 1: Connection to a LV distribution network - Generating plants up to and including Type B
Tested according to:
EN 50549-10:2022
Requirements for generating plants to be connected in parallel with distribution networks Part 10: Tests for conformity assessment of generating units

The safety concept of an aforementioned representative product corresponds at the time of issue of this certificate to the valid safety specifications for the specified use in accordance with regulations.

Limitation:
- The interface switch is not part of the unit.
- The ROCOF protective function has not been evaluated

Report No: 21PP213-12_0

Certificate No: 23-364-00

Date of issue: 2023-09-25

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GRID CODE COMPLIANCE EN 50549-1

Parameter table acc. EN50549-10:2022

(Parameters as declared by the manufacturer and not according to a specific grid code. Additional testing for deviation to a specific grid code can be necessary)

Parameter setting name in the generating unit:		InteliGen 1000_IG 1000_EN 50549_1.ais3				
Clause(s) / subclause(s) of EN50549-1	**Parameter**	**Parameter name in the generating unit**	**Configurable range**	**Default value**	**Minimum step size**	**Considered value range**
4.5.2 Rate of change of frequency (ROCOF) immunity	ROCOF withstand capability (defined with a sliding measurement window of 500 ms) non-synchronous generating technology: synchronous generating technology:	-	-	-	-	-
4.9.3 Requirements on voltage and frequency protection	Threshold for protection as dedicated device [in A or kW, kVA]		16 A – 250 kVA			-
	Undervoltage threshold stage 1	Mains <V	10,0-99,0%	80,0%	0,1	10,0 – 99,0
	Undervoltage operate time stage 1	Mains <V Del	0,00 s – 600,00 s	1,50s	0,01	0,00-10,00s
	Undervoltage threshold stage 2	Mains <<V	10,0-99,0%	30,0%	0,1	10,0 – 99,0
	Undervoltage operate time stage 2	Mains <<V Del	0,00 s – 600,00 s	0,10s	0,01	0,00-10,00s
	Overvoltage threshold stage 1	Mains >V	100,0-130,0%	110,0%	0,1	100,0-122,0%
	Overvoltage operate time stage 1	Mains >V Del	0,00 s – 600,00 s	5,00s	0,01	0,00-10,00s
	Overvoltage threshold stage 2	Mains >>V	100,0-130,0%	120,0%	0,1	100,0-122,0%
	Overvoltage operate time stage 2	Mains >>V Del	0,00 s – 600,00 s	0,10s	0,01	0,00-10,00s
	Overvoltage threshold 10 min mean protection	Mains 10min AVG >V	100,0 – 150,0 %	110,0%	0,1	100,0-122,0%
	Underfrequency threshold stage 1	Mains <f	-2,50– 0,00 Hz	-1,50Hz	0,01	40,00-50,00Hz
	Underfrequency operate time stage 1	Mains <f Del	0,00 s – 1000,00 s	5,00s	0,01	0,00-10,00s
	Underfrequency threshold stage 2	Mains <<f	-10,00 – 1,50 Hz	-2,50Hz	0,01	40,00-50,00Hz
	Underfrequency operate time stage 2	Mains <<f Del	0,00 s – 1000,00 s	0,00s	0,01	0,00-10,00s
	Overfrequency threshold stage 1	Mains >f	0,00 – 2,50 Hz	1,50Hz	0,01	50,00-60,00Hz
	Overfrequency operate time stage 1	Mains >f Del	0,00 s – 1000,0 s	5,00s	0,01	0,00-10,00s
	Overfrequency threshold stage 2	Mains >>f	1,50 – 10,00 Hz	2,50Hz	0,01	50,00-60,00Hz
	Overfrequency operate time stage 2	Mains >>f Del	0,00 s – 1000,00 s	0,00s	0,01	0,00-10,00s

Parameter table acc. EN50549-10:2022

(Parameters as declared by the manufacturer and not according to a specific grid code. Additional testing for deviation to a specific grid code can be necessary)

Parameter setting name in the generating unit:		InteliGen 1000_IG 1000_EN 50549_1.ais3				
Clause(s) / subclause(s) of EN50549-1	**Parameter**	**Parameter name in the generating unit**	**Configurable range**	**Default value**	**Minimum step size**	**Considered value range**
4.10.2 Automatic reconnection after tripping	Lower frequency	After MP Synchronization f Min	-3,00 – 0,00Hz	-0,50Hz	0,01	-
	Upper frequency	After MP Synchronization f Max	0,00 – 2,00Hz	0,20 Hz	0,01	-
	Lower voltage	After MP Synchronization V Min	10 – 110%	85%/90%	1	-
	Upper voltage	After MP Synchronization V Max	95 – 130%	110 %	1	-
	Observation time	After MP Synchronization Period	0 – 1800s	600s	1	-
	Active power increase gradient	After Mains Trip Period Ramp	0 – 1800s	60s	1	-
4.10.3 Starting to generate electrical power	Lower frequency	Mains Synchronization f Min	-3,00 – 0,00Hz	-0,50Hz	0,01	-
	Upper frequency	Mains Synchronization f Max	0,00 – 2,00Hz	0,10 Hz	0,01	-
	Lower voltage	Mains Synchronization V Min	10 – 110%	85%/90%	1	-
	Upper voltage	Mains Synchronization V Max	95 – 130%	110 %	1	-
	Observation time	Mains Synchronization Period	0 – 1800s	0s	1	-
	Active power increase gradient	Load ramp	0 – 1800s	120s	1	-