

## Declaration Of Compliance With PPDS 2022 And With Selected Properties According To Regulation RfG 2016/631

Manufacturer Shanghai Hoenergy Power Technology CO., LTD. hereby confirms the compliance of the inverters listed below with selected features of the EN50549-1 standard, the required regulation RfG 2016/631 (EU) and compliance with the requirements of the network operator listed in PPDS 2022, Annex No. 4:

iINV-HB Series Hybrid :

Single-phase	Three-phase
iINV-HB1-3.6KL	iINV-HB3-8.0KH
iINV-HB1-5.0KL	iINV-HB3-10.0KH
iINV-HB1-6.0KL	iINV-HB3-12.0KH

### 1. Grid protection settings

Parameter	Maximum disconnect time	Trip value
overvoltage 1. level <sup>(1)</sup>	3	230V + 10% (253 VAC)
overvoltage 2. level	1	230V + 15% (264,5 VAC)
overvoltage 3. level	0,1	230V + 20% (276 VAC)
undervoltage	1,5	230V - 15% (195,5 VAC)
overfrequency	0,5	52 Hz
underfrequency	0,5	47,5 Hz

(1) 10min value corresponding to EN50160. The calculation of the 10-min value shall comply with the 10min aggregation of EN EN61000-4-30, class S. The function shall be based on the calculation of the square root of the arithmetic mean of the squared input values over 10min. In deviation from EN61000-4-30 a moving window shall be used. The calculation of a new 10min value at least every 3s is sufficient.

### 2. FREQUENCY AND VOLTAGE STABILITY according PPDS 2022 pr.c.4, section 9.1.1 and 9.1.2

The inverters are not allowed to disconnect from grid within changes of frequency specified with a RoCoF immunity of at least +/- 2Hz/s in the time and f-U windows specified below.

**The minimum time period for operating in underfrequency and over frequency situations:**

Rozsah frekvence	Doba trvání
47 – 47,5 Hz	20 s
47,5 – 48,5 Hz	30 min*
48,5 – 49 Hz	90 min*
49 – 51 Hz	neomezeně
51 – 51,5 Hz	30 min



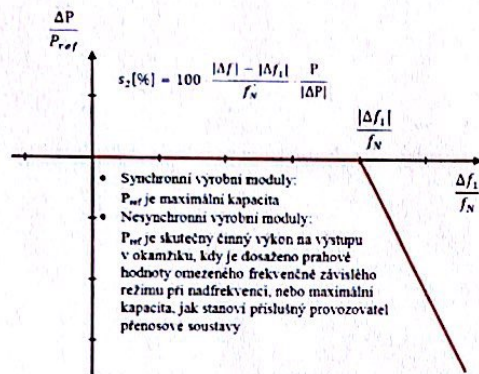
The continuous operating voltage range is defined for the inverters within the range of 85%  $U_n$  to 110%  $U_n$  at the point of connection.

### 3. POŽADAVEK NA SNÍŽENÍ ČINNÉHO VÝKONU PŘI NADFREKVENCI dle PPDS

2022 př.č.4, odstavec 9.3.1.

The inverters are able to activate the provision of frequency response of the active power at a frequency threshold range between 50.05 Hz and 52 Hz with a static set of  $s=4\%$  to  $s=10\%$ .

Default values for threshold  $f$  in CZ are 50.2 HZ and  $s=5\%$



### 4. POWER RESPONSE TO UNDERFREQUENCY according PPDS 2022 pr.c.4, section 9.3.2.

The inverters power is 100% stable within underfrequency occurrences in the range of 47,5 to 50,0 Hz

### 5. DIGITAL INPUT TO THE INTERFACE PROTECTION according PPDS 2022 pr.c.4, section 5.1

The inverters are equipped with an EPO port to allow transfer trip and stop immediately the power feeding to the grid.

### 6. AUTOMATIC RECONNECTION AFTER TRIPPING

The inverter, disconnected from grid by the protections, will automatically re-connect,

6.1. if the voltage and frequency is observed for 300s (5min) in the range of:

Voltage: 85-110 % of its nominal value

Frequency: 47,5-50,05 Hz

6.2. with a ramp up curve of 10%  $P_n$  per minute

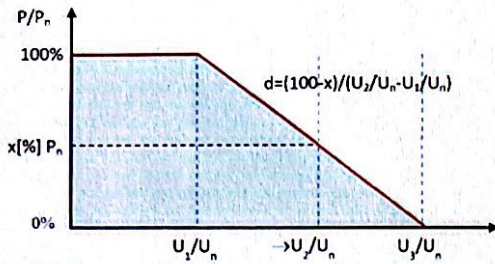
#### OTHER:

Functions  $P(U)$ ,  $Q(U)$  and LVRT, HVRT according to PPDS 2020 ex. no. 4, paragraph 9.3.5, 9.4.2 and 9.2.2.1,

9.2.2.2 The above inverters comply with the above standards with the defaults below values. For further information or to set enabled functions, please contact your local GBC Solino service partner.

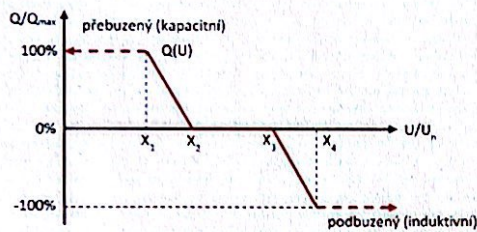


0.1 for P(U):



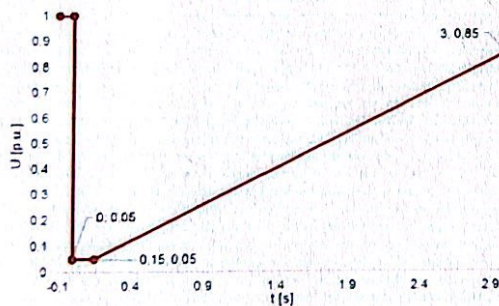
$U1/U_n = 109\%$ ;  $U2/U_n = 110\%$ ;  $U3/U_n = 111\%$

0.2 for Q(U):



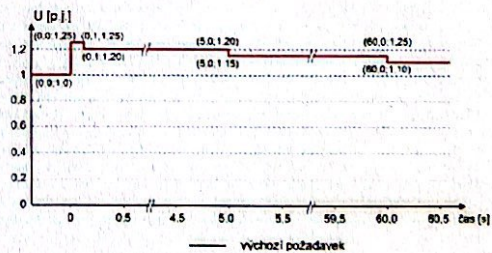
$x1 = 0,94$ ;  $x2 = 0,97$ ;  $x3 = 1,05$ ;  $x4 = 1,08$

0.3 for LVRT:



0.4 for HVRT (vyžaduje další nastavení):

*(requires further setup)*



Title: R&D Director

Signature:

*Chen Yang*

Date:

*16. Aug, 2022*

