

## Setting for grid operator of Czech Republic

### SolaX Power Network Technology (Zhe jiang) Co. , Ltd.

hereby confirms that the following inverters fulfill EN 50549-1:2019:

Declaration of conformity with PPDS 2018, part of grid protection settings, further relating to RfG regulation 2016/631 (EU).

Here with SolaX Power Network Technology (Zhejiang) CO.,LTD. declares, that the following products are compliant to the below described properties required by RFG 2016/631(EU) described in EN50549-1, and fulfill the requirements of Czech grid regulations authorities according PPDS 2018 p.č. 4:

**X1-2.5-S-D(L)**      **X1-2.5-S-N(L)**

**X1-3.0-S-D(L)**      **X1-3.0-S-N(L)**

**X1-3.3-S-D(L)**      **X1-3.3-S-N(L)**

#### A.) Grid protection settings according PPDS 2018 pr.c.4, section 8.1 (MIKROZDROJE)

| Parameter                           | Maximum disconnect time | Trip value             |
|-------------------------------------|-------------------------|------------------------|
| overvoltage 1. level <sup>(1)</sup> | 3                       | 230V + 10% (253 VAC)   |
| overvoltage 2. level                | 0,2                     | 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.

#### B.) FREQUENCY AND VOLTAGE STABILITY according PPDS 2018 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 overfrequency situations:**

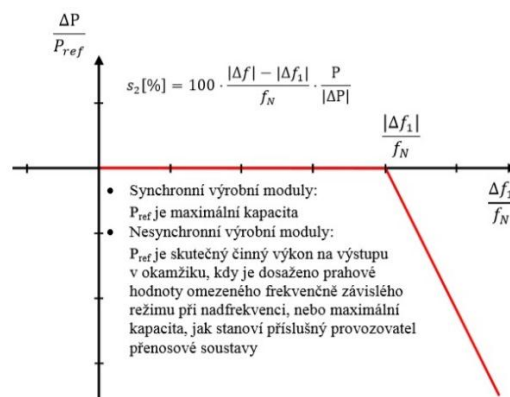
| Rozsah frekvence | Doba trvání |
|------------------|-------------|
| 47 – 47,5 Hz     | 20 s        |
| 47,5 – 48,5 Hz   | 30 min*     |
| 48,5 – 49 Hz     | 90 min*     |
| 49 – 51 Hz       | neomezeně   |
| 51 – 51,5 Hz     | 30 min      |

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

**C.) POWER RESPONSE TO OVERFREQUENCY according PPDS 2018 pr.c.4, section 9.3.1 .**

Inverters are capable of activating active power response to overfrequency at a frequency threshold  $f_1$  at least between and including 50,2 Hz and 52 Hz with a droop in a range of at least  $s=2\%$  to  $s=12\%$ .

Default values for threshold  $f$  in CZ are 50,2 HZ and  $s=5\%$



**D.) POWER RESPONSE TO UNDERFREQUENCY according PPDS 2018 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

**E.) DIGITAL INPUT TO THE INTERFACE PROTECTION according PPDS 2018 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.

**F.) AUTOMATIC RECONNECTION AFTER TRIPPING**

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

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

Voltage: 85-110 % of its nominal value

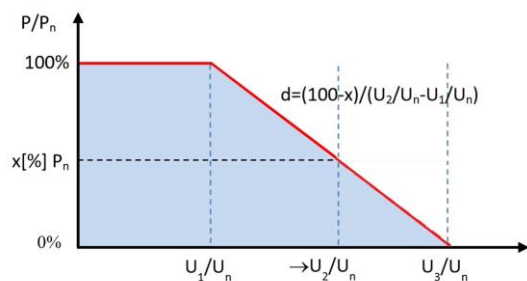
Frequency: 47,5-50,05 Hz

2. with a ramp up curve of 10% Pn per minute

**OTHERS:**

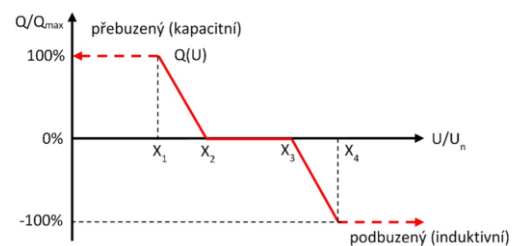
**Function P(U), Q(U) and P(f) according PPDS 2018 pr.c.4, section 9.3.3 and 9.4. and 9.3.1** The inverters are able to follow the above mentioned required functions. The default values are as written below. For activation or further information

B.1 for P(U):



U1/Un = 109%; U2/Un = 110%; U3/Un = 111%

B.2 for Q(U):



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

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