

Settings required by CEZ Distribuce

Fronius International GmbH

hereby confirms that the following inverters fulfill EN 50549-1 and EN 50549-2, as well as the requirements defined in Czech grid code P4 PPDS 2022.

They also comply with the CEZ Distribuce's requirements of connection "*Requirements for connection to CEZ Distribuce's distribution system*" and with other requirements specified under "*COMMISSION REGULATION (EU) 2016/631*":

- **Fronius Symo Hybrid 3.0-3 to 5.0-3**
- **Fronius Primo 3.0-1 to 8.2-1**
- **Fronius Symo 3.0-3 to 8.2-3**
- **Fronius Symo 10.0-3 to 20.0-3**
- **Fronius Eco 25.0-3 to 27.0-3**
- **Fronius Symo GEN24 Plus 3.0 to 5.0**
- **Fronius Symo GEN24 Plus 6.0 to 10.0**
- **Fronius Primo GEN24 Plus 3.0 to 6.0**
- **Fronius Primo GEN24 Plus 8.0 to 10.0**
- **Fronius Tauro Eco 50.0 to 100.0**
- **Fronius Tauro 50.0**

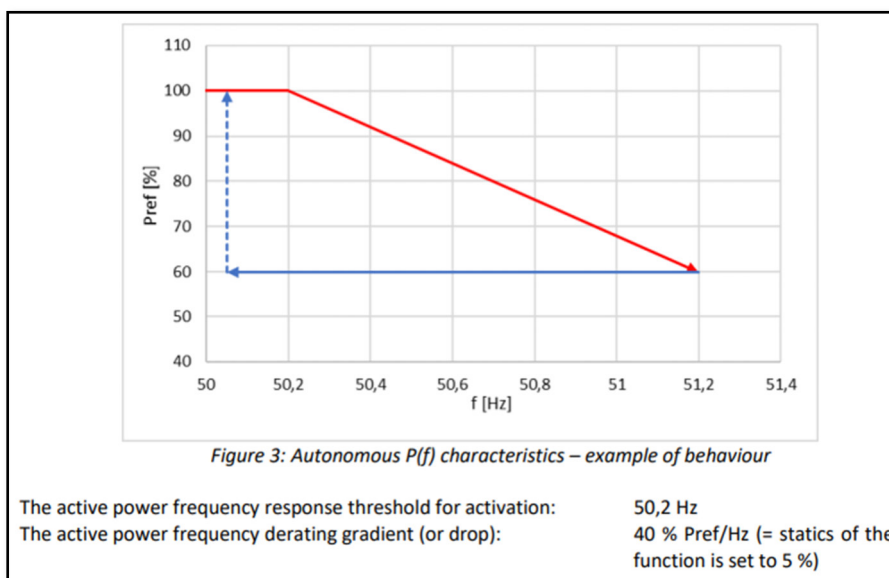
In the country specific setup CZ, the following protection limits for voltage and frequency tripping are preconfigured according to "*PŘÍLOHA 4 PPDS: PRAVIDLA PRO PARALELNÍ PROVOZ VÝROBEN A AKUMULAČNÍCH ZAŘÍZENÍ SE SÍTÍ PROVOZOVATELE DISTRIBUČNÍ SOUSTAVY; 2022*" with the specific country setup requirements provided by CEZ Distribuce:

protection function		settings	tripping time [s]
overvoltage 3 rd threshold	U >>>	1,2 Un	0,1
overvoltage 2 nd threshold	U >>	1,15 Un	5
overvoltage 10-minute mean protection*	U >	1,11 Un	-
undervoltage 1 st threshold	U <	0,7 Un	2,7
undervoltage 2 nd threshold	U <<	0,45 Un	0,2
overfrequency	f >	51,5 Hz	0,1
underfrequency	f <	47,5 Hz	0,1

*When PV inverters doesn't support 10-minute mean protection, then the overvoltage 2nd threshold will be set to 1,11 Un with 60 s as a tripping time.

Additional requirements of “PŘÍLOHA 4 PPDS: PRAVIDLA PRO PARALELNÍ PROVOZ VÝROBEN A AKUMULAČNÍCH ZAŘÍZENÍ SE SÍTÍ PROVOZOVATELE DISTRIBUČNÍ SOUSTAVY; 2022” are fulfilled as explained:

- Active power reduction at over-frequency (9.3.1) is preconfigured in the country setup according to the f:



- UVRT and OVRT as required in 9.2.2.1 and 9.2.2.2 is fulfilled by all inverter series except Fronius Symo 3.0-3-S – 5.0-3-S:

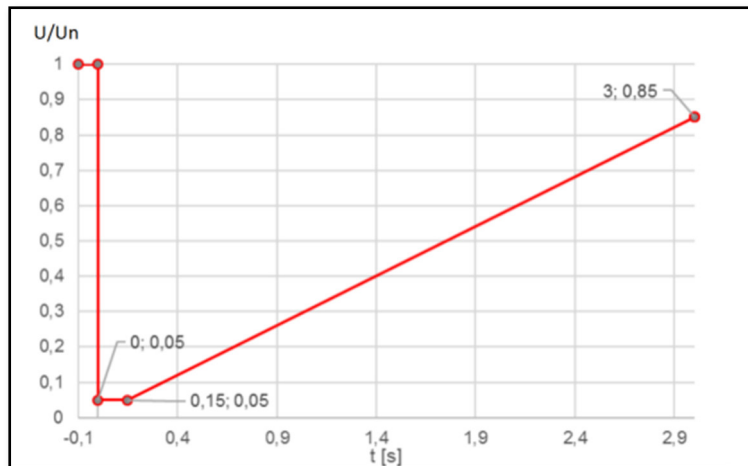


Figure 4: under voltage ride through

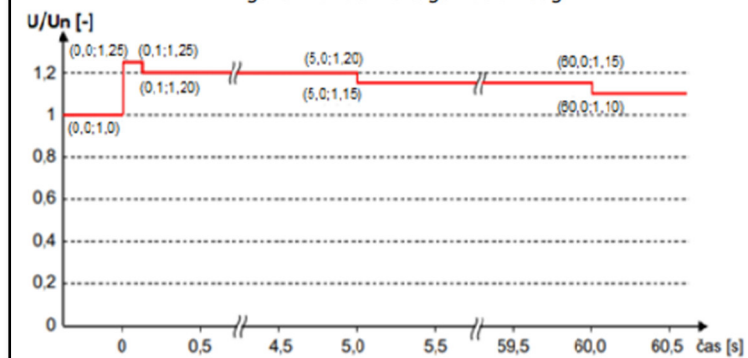


Figure 5: over voltage ride through

- The reconnection criteria (defined in chapter 9.5) are preconfigured in the setup, this includes the increase of active power with a gradient of 10 % P_n per minute, the reconnection limits for frequency (47,5 – 50,05 Hz) and voltage (85 - 110 %) as well as the monitoring time for reconnection (300 s).
- As default reactive power mode, the Q(U) function is active and preconfigured in the setup CZ according to the requirements defined in chapter 9.4.2 of P4 PPDS.

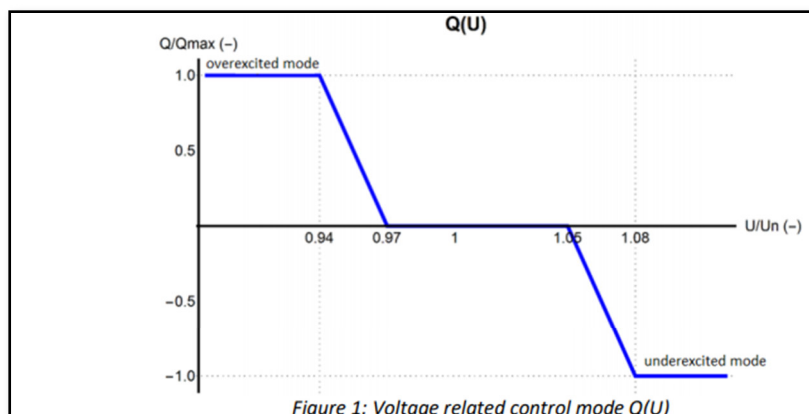


Figure 1: Voltage related control mode Q(U)

Voltage related control mode Q(U) set points:

$X_1 = 0,94 = 216,2 \text{ V}$

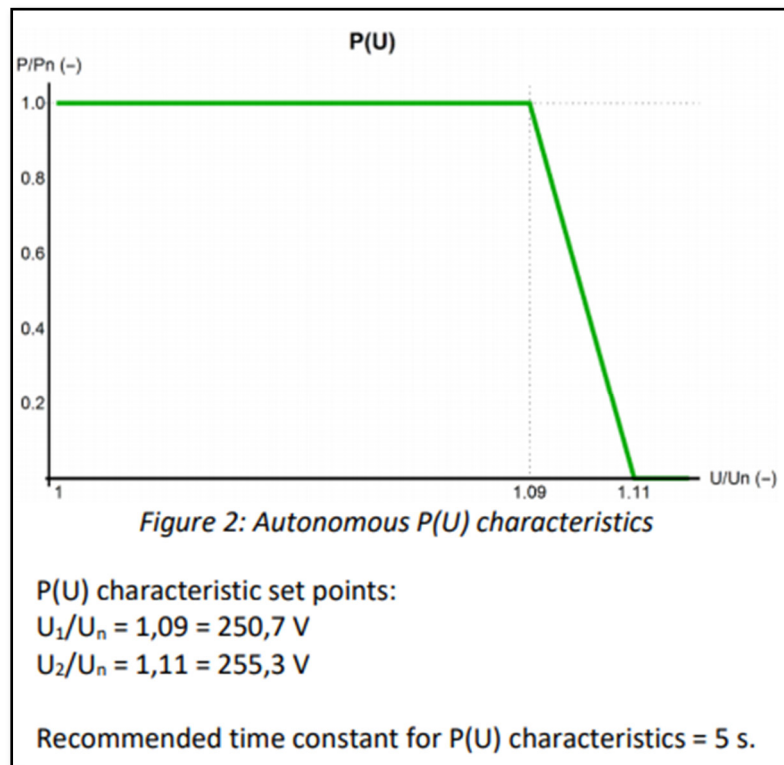
$X_2 = 0,97 = 223,1 \text{ V}$

$X_3 = 1,05 = 241,5 \text{ V}$

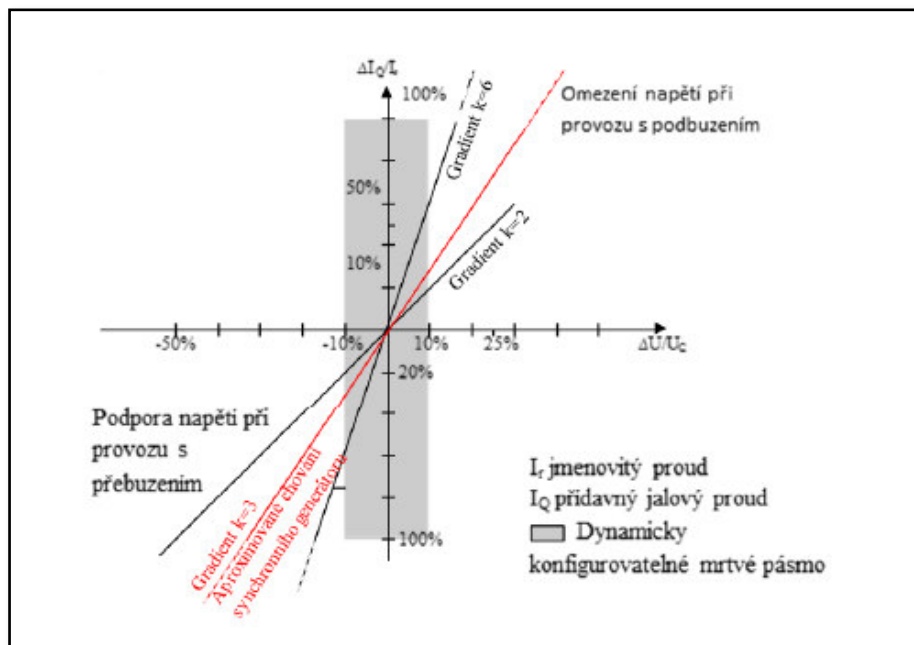
$X_4 = 1,08 = 248,4 \text{ V}$

Required time constant for voltage related control mode Q(U) = 20 s

- Per default, the P(U) function is activated in the setup CZ. The following characteristic is preconfigured:



- Additionally, a reactive power injection during according to chapter 9.2.2.3 is preconfigured in the Setup CZ, according to the requirements of the following characteristic:





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A handwritten signature in black ink, appearing to read "P. Rechberger".

Philipp Rechberger

Head of System Technology