

Adjustment of thresholds to local conditions

Dear customer,

Inverters from **SMA Technology AG** are equipped with a configurable grid interface for the usage under various grid conditions. This ensures that the inverter only operates within defined thresholds and disconnects from the grid in case of a grid failure. The thresholds must be configured by SMA according to the local requirements.

Thresholds for voltage and frequency as suggested by SMA have proven themselves in the field. In case other thresholds are necessary for your grid please fill in the form on the other side of this page. The thresholds have direct influence on the safety of the electrical grid. Consult first with your utility operator regarding the thresholds.

Description of Parameters in the Questionnaire

In order to facilitate filling in the questionnaire, we have provided a short description of the parameters to be filled in

Voltage and frequency monitoring

These voltage and frequency thresholds are used to configure the operating range of the inverter to the existing electrical grid. If these thresholds are exceeded or not reached, the inverter will immediately disconnect within the corresponding "Time until disconnection".

Islanding detection

Islanding is theoretically possible if the load within the grid matches the current grid-feeding power in case of grid failure. The grid monitoring of the inverter cannot detect this if the voltage and frequency values are within the permitted thresholds. The probability of such a case is extremely low due to the low grid impedance which is why this additional type of grid monitoring is deactivated in the delivery condition!

Reconnection time

This time specifies the grid monitoring time. After a grid failure, the voltage and frequency have to return to permissible value ranges before the inverter connects back to the public grid.

Grid quality

- DC injection
This parameter enables monitoring of the max. component in AC voltage. Once the DC component of the electricity fed into the grid is no longer within the permissible range, the inverter will disconnect from the grid. This type of monitoring is only carried out in inverters without transformers.
- Voltage increase protection
Sometimes it may be required to implement monitoring of the average 10-minute value of the AC voltage in terms of voltage increase, e. g. according to Standard EN 50160. If the 10-minute average exceeds the threshold value of 253 V, the inverter disconnects itself from the grid. While disconnected, the grid will continue to be monitored. Once the 10-minute average returns to a value of less than 253 V, the inverter will resume grid feeding. The 10-minute average therefore offers continuous grid monitoring and, in contrast to the fast cutoff limits "Voltage and Frequency Limits", represents another type of monitoring to ensure grid quality.

Indicate Country of Install

Special Considerations

Thresholds questionnaire

Please return this completed questionnaire with your order to Orders@SMA-America.com.

General information	
Name of customer:*	
Address:*	
Phone / fax number:*	
Contact person:*	
Information on the plant	
Project name:*	
Installation location (country/zip/city):*	
Information concerning the utility	
Name of the utility:*	
Contact person:*	
Phone / Email:*	
Type of plant*	<input type="checkbox"/> Grid-connected <input type="checkbox"/> Off-grid
Nominal voltage (U_{nom})*	
Nominal frequency (f_{nom})*	

The boxes marked with an asterisk (*) are mandatory

Fill in the following table in case the inverter shall feed into the public grid (grid-connected):

	Recommended value		Customer request	
	threshold	time until disconnection	threshold	time until disconnection
Voltage and frequency monitoring				
Lower limit AC voltage	$U_{nom} - 15\%$	0.2 s		
Upper limit AC voltage	$U_{nom} + 15\%$	0.2 s		
Lower limit AC frequency	$f_{nom} - 2.5\text{ Hz}$	0.2 s		
Upper limit AC frequency	$f_{nom} + 0.5\text{ Hz}$	0.2 s		
Islanding detection	active	time until disconnection	active	time until disconnection
Active recognition of stand-alone operation	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	5 s	<input type="checkbox"/> yes <input type="checkbox"/> no	
Reconnection time	active	grid monitoring time	active	grid monitoring time
Time until reconnection after grid fault	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	30 s	<input type="checkbox"/> yes <input type="checkbox"/> no	
Grid quality	active	threshold	active	threshold
DC injection - max. permitted value for offset of AC current	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	1 A	<input type="checkbox"/> yes <input type="checkbox"/> no	
Voltage rise protection- Monitoring of 10 min. mean value, e.g. as per EN 50160	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	253 V	<input type="checkbox"/> yes <input type="checkbox"/> no	
Should the settings be saved for all future orders for the specified country? (except for undo)	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no		<input type="checkbox"/> yes <input type="checkbox"/> no	

HANDWRITTEN SIGNATURE REQUIRED

Name*	Date*	Signature*
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