

Application Inverter for Photovoltaic Power Generation Facility (Type A)

The application concerns inverter for a type A photovoltaic power-generating facility which must meet all requirements of Commission Regulation (EU) 2016/631 "establishing a network code on requirements for grid connection of generators", the related Swedish regulation EIFS 2018:2 as well as requirements for protection settings for Sweden based on the applicable Swedish standard SS-EN 50549-1 and recommendations in the handbook ALP – "Anslutning av elproduktion till lågspänningsnätet" from Energiföretagen Sverige (Swedenergy).

A type A power-generating facility is a facility with a maximum continuous capacity of between 0.8 kW and 1500 kW.

The attached pages with questions must be completed and signed by a responsible party and be included in an application to Ellevio for pre-approval. All requirements and details are mandatory unless stated otherwise.

Basic inverter details

Manufacturer	
Model	
Connection	<input type="checkbox"/> Three-phase <input type="checkbox"/> Single-phase
Power factor (cos φ)	
Can be combined with battery storage	<input type="checkbox"/> Yes <input type="checkbox"/> No

Grid protection settings

Protection settings	Settings		Required values	
	Time	Level	Time	Level
Overtoltage (stage 2)			60 s	253,0 V
Overtoltage (stage 1)			0,2 s	264,5 V
Undervoltage			0,2 s	195,5 V
Overfrequency			0,5 s	>51,5 Hz
Underfrequency			0,5 s	<47,5 Hz
Protection against unwanted island operation			< 2 s	2,5 Hz/s ¹

¹ Frequency derivative

Information about flicker and harmonics emissions

Power quality data		Value	Rec. Limit	
Flicker values	Pst		0,35	<input type="checkbox"/> ≤ 16 A Calculated according to SS-EN 61000-3-3 <input type="checkbox"/> 16 – 75 A Calculated according to SS-EN 61000-3-11 <input type="checkbox"/> > 75 A Calculated according to SS-EN 61400-21
	Plt		0,25	
Harmonics max 16 A	<input type="checkbox"/> Meets SS-EN 61000-3-2			
Harmonics 16-75 A	<input type="checkbox"/> Meets SS-EN 61000-3-12			
Harmonics > 75 A	<input type="checkbox"/> Interharmonics and individual current harmonics can be reported separately			

Requirement regarding logic interface according to EU Commission Regulation 2016/631 article 13.6

The inverter is equipped with a logic interface that allows remote control

Frequency response

The following configuration requirements for frequency response settings are taken from the Swedish Energy Market Inspectorate's regulation EIFS 2018:2, Commission Regulation (EU) 2016/631 (RFG) and the applicable Swedish standard SS-EN 50549-1. All requirements are mandatory unless stated otherwise.

<input type="checkbox"/> The listed inverter on the previous page meets the following requirements:	
The inverter meets the requirement to remain connected within the following frequency ranges: <ul style="list-style-type: none"> • Not less than 30 minutes for frequency range 47,5 – 49,0 Hz • Unlimited for frequency range 49,0 – 51,0 Hz • Not less than 30 minutes for frequency range 51,0 – 51,5 Hz 	EIFS 2018:2 Ch. 3 par. 1
The inverter meets the requirement to remain connected to the grid and operate with a rate of change of frequency up to 2.0 Hz/s ¹	EIFS 2018:2 Ch. 3 par. 2
The inverter meets the requirement to reduce its active power output when the frequency exceeds 50.5 Hz	EIFS 2018:2 Ch. 3 par. 3
The droop ² setting is 8%	EIFS 2018:2 Ch. 3 par. 4
Active power output from the inverter is reduced by a maximum of 3.0 percent per Hz at frequencies below 49.0 Hz	EIFS 2018:2 Ch. 3 par. 7
The inverter is automatically reconnected only within the frequency range 47,5 – 50,1 Hz: <ul style="list-style-type: none"> • Connection occurs only if the network frequency has been within this range continuously for at least 3 minutes 	EIFS 2018:2 Ch. 3 par. 8
The inverter meets the requirement concerning the increase of active power output during automatic connection as follows: <ul style="list-style-type: none"> • < 49,9 Hz – Rate of increase of active power output unlimited • 49,9–50,1 Hz – Rate of increase of active power output is limited to a maximum of 10 percent of nominal power output per minute • > 50,1 Hz – There is no increase of active power output 	EIFS 2018:2 Ch. 3 par. 9
State the lowest active power output (in kW) to which the inverter can be downregulated in case of overfrequency: kW	EIFS 2018:2 Ch. 3 par. 5

¹ The value of the rate of change of frequency must be measured at the grid connection point and be calculated over a period of 0.5 s

² The droop is the ratio of a change of frequency to the change in power output, expressed in percentage terms. The change of frequency is expressed as a ratio between the actual frequency and the nominal frequency. The power output is expressed as a ratio between the nominal power and the power output in case of overfrequency in the network. For regulation of the power output based on overfrequency (at "limited frequency sensitivity mode - overfrequency" or LFSM-O), the droop is calculated based to the installed power of the plant according to section 6 of the EIFS 2018:2.

Hereby it is certified that the above information is correct and that technical documentation that support the stated information, values and settings can be presented upon request

Date, City, Country	
Signature	Name clarification