

Fronius USA System Configuration Tool Overview



Thank you for using the Fronius USA System Configuration Tool. By using this tool, you agree to verify all calculations for yourself. Fronius is providing this tool to assist you, but as local and state codes and system conditions vary from site to site, it is not always possible for software to completely account for all of these. The following are some guidelines that should be followed when using the System Configuration Tool:

Inverter Model: Select the inverter that is most appropriate for your needs.

IG series

Inverter	Max AC output	Nom AC output	AC Voltage	DC Input Voltage
IG 2000	2000 W	1800 W	240 V	150-500 V
IG 3000	2700 W	2500 W	240 V	150-500 V
IG 2500-LV	2350 W	2150 W	208 V	150-500 V
IG 4000	4000 W	4000 W	240 V	150-500 V
IG 5100	5100 W	5100 W	240 V	150-500 V
IG 4500-LV	4500 W	4500 W	208 V	150-500 V

IG Plus series

Inverter	Max AC output			Nom AC output	AC Voltage	DC Input Voltage
	@208	@240	@277			
IG Plus 3.0-1 UNI	3000	3000	3000	3000 W	208, 240, 277 V	230-600 V
IG Plus 3.8-1 UNI	3750	3800	3800	3800 W	208, 240, 277 V	230-600 V
IG Plus 5.0-1 UNI	5000	5000	5000	5000 W	208, 240, 277 V	230-600 V
IG Plus 6.0-1 UNI	6000	6000	6000	6000 W	208, 240, 277 V	230-600 V
IG Plus 7.5-1 UNI	6800	7500	7500	7500 W	208, 240, 277 V	230-600 V
IG Plus 10.0-1 UNI	9995	9995	9995	9995 W	208, 240, 277 V	230-600 V
IG Plus 11.4-1 UNI	10800	11400	11400	11400 W	208, 240, 277 V	230-600 V
IG Plus 11.4-3 Delta	10800	11400	n/a	11400 W	208, 240 V	230-600 V
IG Plus 12.0-3 WYE277	n/a	n/a	12000	12000 W	277 V	230-600 V

Hottest Ambient Temp: Generally speaking, it is recommended to use the average hottest ambient temperature for the given site. The important issue for this temperature is to make sure the operating voltage is above the 150 V (IG series) or 230 V (IG Plus series) operating limit during typically-hot conditions. Remember to allow for voltage degradation as the modules age (generally 0.5 to 1% per year).

Coldest Ambient Temp: It is strongly recommended that the minimum record temperature is used, since this would yield the highest possible V_{oc} at the site. In some situations, it may be appropriate to consider the average minimum temperature instead. Regardless of the temperature you select, please bear in mind that the maximum allowable V_{oc} is 500 V (IG series) or 600 V (IG Plus series). It is the system designer's responsibility to make sure this voltage is never exceeded. Any damage resulting from the inverter being subjected to voltages in excess of these voltages will void the manufacturer's warranty.

System Configuration Design Parameters:

Lowest STC Rated Configuration: The minimum number of modules given by the System Configuration Tool is the fewest number of modules that are equal to or greater than 150 V (IG series) or 230 V (IG Plus series) operating given maximum temperature conditions selected, and a minimum array STC rating of 1000 W. All IGs will operate with less DC power, however configurations using under 1000 W do not utilize the IG's capabilities as effectively as possible. Remember to allow for voltage degradation as the modules age (generally 0.5 to 1% per year).

Yellow Selections – Array May Be Undersized: These selections will work perfectly with the IG, but may not be taking full advantage of the selected model's entire power range. This range is often used if the array will be installed in phases over a few years.

Green Selections – Optimal Configuration: These selections should be the most ideal for the selected inverter. Keep in mind, these are general recommendations and should be confirmed as an optimum configuration based on your specific site requirements.

Orange Selections – Array May Be Oversized: Generally speaking, this configuration will not be optimal, but may be appropriate if there are cases of partial shading, non-optimal orientation, or if irradiance of less than 1000 W/m², or is otherwise non-ideal. There is no maximum power input limit, but the power output is limited to the values listed above. In cases where the power is too high to convert it all, the unit will operate off the MPP value of the array and convert as much of the array as possible.

Asterisks – These configurations are over the 500 V (IG series) or 600 V (IG Plus series) limit using the minimum temperature range selected. If the expected minimum temperature at your site is not near the low end of the selected range (for example, if you expect -10 degrees F & you selected -5 to -40), you may wish to run the calculation by hand & see if it exceeds the maximum Voc for your inverter.

Highest STC Rated Configuration - Because the IG is not current-limited and can back off an array's MPP as is necessary, there is no maximum allowable array size. However, the AC output is limited to the maximum for the IG selected, meaning that larger array sizes may not optimize overall system conversion. It may make sense to use these configurations in cases of partial shading, non-optimal orientation, if irradiance of less than 1000 W/m², or if the array is otherwise non-ideal. However, in many cases it may be more effective to use two inverters instead of one.