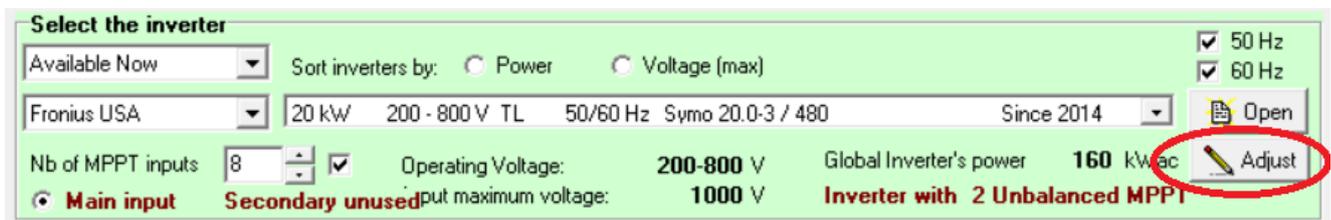


WORKING WITH THE FRONIUS SYMO AND PVSYS

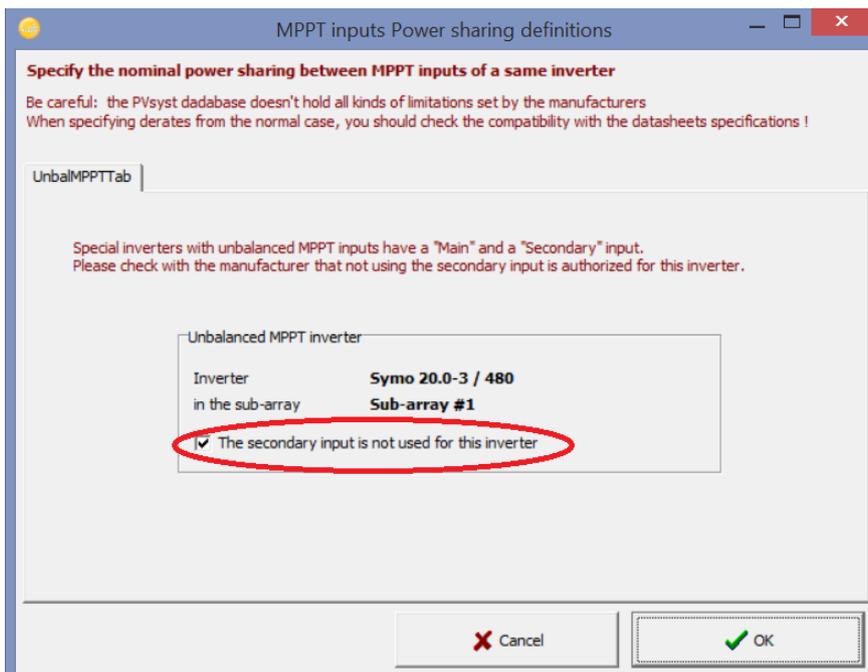
This document is a guide to working with Fronius Symo .OND files, unbalanced MPPTs, and the unique requirements of PVSyst when dealing with such files.

Balanced Strings

When using a configuration with all strings having the same number of modules, the easiest way to set the system up is with one MPPT per inverter. This is done by clicking on the 'Adjust' button next to the inverter. This feature is available on version 6.35 and later.



The 'Nb of MPPT inputs' is equal to the number of inverters in the sub-array.



Unbalanced Strings

When using a different string length on each of the Fronius Symo's two MPPTs, separate sub-arrays must be created. There will be two sub-arrays for each set of inverters, and 'Nb of MPPT inputs' should be the same for both sub-arrays. PVSyst treats these as separate inverters, but will check to make sure there is the same number of main and secondary inputs. Care should be taken to put less DC power on the secondary input as it has a lower input current rating, as noted by the 'Global Inverter's power.'

Sub-array #1

Select the inverter

Available Now Sort inverters by: Power Voltage (max) 50 Hz 60 Hz

Fronius USA 20 kW 200 - 800 V TL 50/60 Hz Symo 20.0-3 / 480 Since 2014

Nb of MPPT inputs: 8 Operating Voltage: 200-800 V Global Inverter's power: 80 kWac

Main input Secondary Input maximum voltage: 1000 V **Inverter with 2 Unbalanced MPPT**

Sub-array #2

Select the inverter

Available Now Sort inverters by: Power Voltage (max) 50 Hz 60 Hz

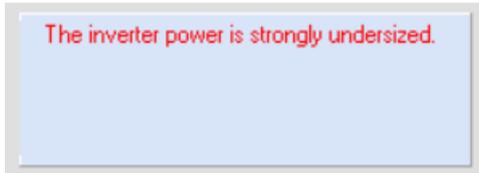
Fronius USA 20 kW 200 - 800 V TL 50/60 Hz Symo 20.0-3 / 480 Since 2014

Nb of MPPT inputs: 8 Operating Voltage: 200-800 V Global Inverter's power: 60 kWac

Main input Secondary Input maximum voltage: 1000 V **Inverter with 2 Unbalanced MPPT**

Undersized Inverter Power

PVsyst assigns a maximum AC power to each MPPT and treats it as a separate inverter for sizing and simulation. This is a consequence of the program's design history and cannot, at the moment, be changed. With DC-AC ratios much greater than 100%, it is possible to get an "Inverter is undersized" error, and the program will not allow the simulation to be run. To overcome this, it's possible to adjust the 'limit overload loss' in the 'Albedo -settings' parameters for the project.



Project's parameter: Albedo for the project's situation

Albedo Design conditions Other limitations

Site-dependent Design parameters

Reference temperatures for array design by respect to the inverter input voltages

Lower temperature for Absolute Voltage limit: -2 °C Default

Winter operating temperature for VmppMax design: 0 °C

Usual operating temperature under 1000 W/m: 50 °C

Summer operating temperature for VmppMin design: 60 °C

Other design Parameters

Array Max. voltage

IEC (usually 1000 V) UL (usually 600 V)

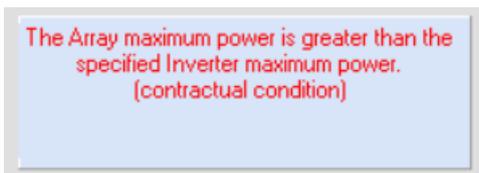
muVoc value

From one-diode model From specification

Limit overload loss for design: 5.0 %

The default setting of 5.0% can be increased to allow the configuration and allow the simulation to be run. However, the simulation will assume the AC power limit on a per-MPPT basis. Caution is needed as this unrealistic view of the inverter operation can cause simulation losses that would not occur in actuality. The input current is limited on a per-MPPT basis, but AC power is only limited on the whole inverter.

It is also possible to not exceed the overload loss limitation and still get an error based on inverter power.

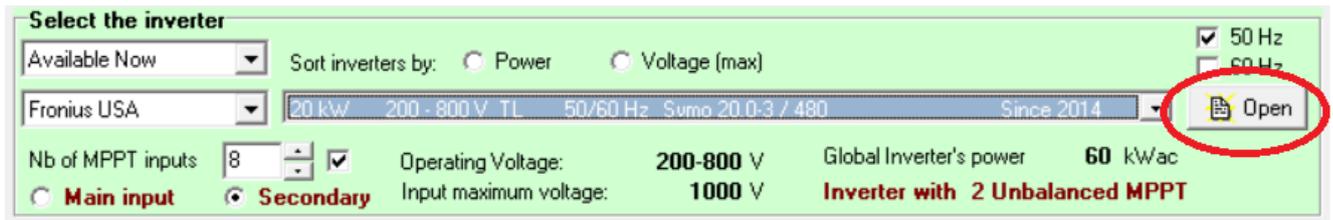


'Global Inverter's power' is determined based on the ratio of DC current between the main MPPT and secondary MPPT. The physical limitation on total DC power for the Fronius Symo is 150% and PVsyst applies this limit to each individual MPPT AC power allocation. The designer should ensure that 150% of the inverter power is not exceeded with all input power amongst the two MPPTs.

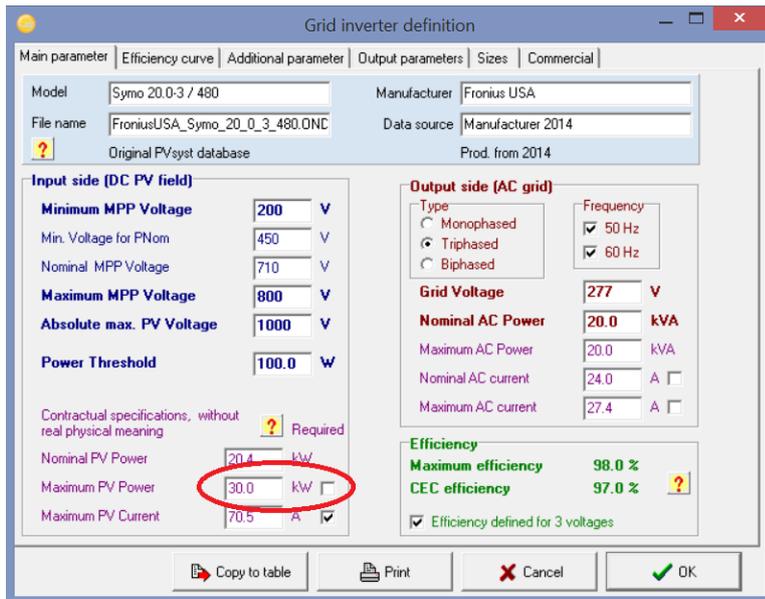
If this error occurs, the only way to allow the simulation to run is to modify the OND file by clicking 'Open' next to the inverter name.



SHIFTING THE LIMITS



The 'Required' box for Maximum PV Power should be unchecked. Then click OK and save the OND file.



The file can be saved with a different name to alert you to this change, or you must remember to ensure you check the overall DC-AC ratio, as PVsyst will no longer alert you.