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FRONIUS INVERTERS - PV ISC INPUT RATING SAFETY FACTOR

The Australian Standard ***AS/NZS 5033: 2021 - Installation and safety requirements for photovoltaic (PV) arrays*** defines the requirements for legal and safe installation of PV arrays. It is however also used by PV system designers and Installers to ensure the system PV array characteristics are within the operating range of the PCE (PV Inverter) it is connected to.

With regards to the PCE's maximum PV Isc rating vs. the max. PV string/array current, the following Clause(s) from AS/NZS 5033: 2021 apply for string systems:

"4.5.1.1 General
The current rating of the PV input of the PCE (ISC PV) shall be at least the current rating of the circuit they will be fitted to according to Clause 4.2.2."

Clause 4.2.2 refers to *Table 4.2* which then refers to *Clause 3.3.3.1*.
Clause 3.3.3.1 requires the following formula to be used to calculate the max. string current:

$I_{STRING\ MAX} = 1.25 \times KI \times I_{SC\ MOD}$

The "1.25" factor in this equation is a "safety factor" to account for times of abnormal irradiance or temperatures and is not a continuous operating condition. Fronius inverters are designed in a manner that under normal operating conditions (fault free inverter), it will actively and reliably limit the current that occurs. In this condition, this safety factor has no relevance.

Based on extensive internal analyses and simulation models, as well as analyses of installed systems spanning several years, Fronius International GmbH has determined that where a safety factor of "1.25 x the Isc of the string / array current" is required to be applied (e.g. according to AS/NZS 5033 or other relevant standards) the Fronius inverter's *"Max. array short circuit current" (Isc PV)* value may be exceeded by a maximum of 1.25 x the present nameplate rating, without impacting the operational safety of the inverter or voiding the Fronius warranty terms. This includes the rating of the inbuilt PCE DC Isolator at DC-PV2
e.g. Fronius SnapINverter Primo 8.2-1 – MPPT 1 = 27A Isc max.
With safety factor applied = 33.75A

This applies to the following inverter ranges:

- **Fronius Primo series**
- **Fronius Symo series**
- **Fronius Eco series**
- **Fronius Primo GEN24 series**
- **Fronius Symo GEN24 series**
- **Fronius Primo GEN24 (Plus) series**
- **Fronius Symo GEN24 (Plus) series**
- **Fronius Tauro series**

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