Certification requirements for Solar Photovoltaic (PV) Systems
From MBIE: Energy Safety

PV Systems can comprise of different combinations, for example, the systems may have a combination of extra low voltage (ELV) and low voltage (LV), the systems may include a parallel mains inverter or it may be a standalone system that includes an inverter, or battery storage. The work carried out to install the PV system may include prescribed electrical work (PEW): "the installation of conductors and the fittings attached to those conductors".

An inverter is defined as a fitting, it is not an appliance, and therefore any PEW includes the inverter. The inverter being a fitting attached to the conductors becomes part of the installation and will require certification.

Where there is a mains inverter within the PV system, which is a low voltage mains parallel system that is connected to the national grid, it must be installed to comply with the standards AS/NZS 3000 and AS 4777.1. This work is categorised as high risk PEW which will require certification and a record of inspection (ROI).

The work carried out to install a PV system that operates at LV is PEW and will require certification. The PV system must be installed to comply with the standards AS/NZS 3000 and AS/NZS 5033. Additionally the LV- direct current (DC) component of the PV system is categorised as high risk PEW which will require an inspection and a ROI.

In a PV system that operates with a combination of ELV and LV the system must be installed to comply with the standards AS/NZS 3000 and AS/NZS 5033. The work on the ELV-DC side of the system is not PEW, therefore will not require certification or inspection. However the work on the LV-alternating current (AC) side of the system is PEW, this includes the inverter, and will require certification. If this PV system is an independent supply and the inverter is not paralleled to a mains supply it will not require an inspection.

When a PV system operates entirely at ELV the work on that system will still have to be installed to comply with the standards AS/NZS 3000 and AS/NZS 5033; however the work will not be PEW, therefore will not require certification or an inspection.

---

[1] Extra-low voltage means any voltage normally not exceeding 50 volts AC or 120 volts ripple-free DC

2 Low voltage means any voltage exceeding 50 volts AC or 120 volts ripple-free DC but not exceeding 1000 volts AC or 1500 volts ripple-free DC

3 One requirement we are insisting on is the segregation from the DC system because if DC comes across into the AC system it will affect the RCD's tripping ability by upsetting the toroid. This requirement is in 5033:2012.

Reproduced by SEANZ in accordance with Energy Safety Requirements for Solar PV Systems