DC Isolators for PV Systems

Changes to installation requirements

Photovoltaic arrays must be installed in accordance with the requirements of AS/NZS 5033:2014 *Installation and safety requirements for photovoltaic (PV) arrays*.

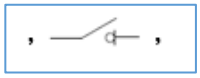
Amendment 2 was published on 29 June 2018 and came into effect on 29 June 2019. This amendment and in particular Clause 4.3.3.3.2 places additional obligations to protect DC Isolators (that are installed at the PV array) from environmental effects, i.e. protection from the sun and rain.

This Advisory Note is to assist the installing electrician in meeting these requirements.

Why has this change occurred?

Investigations into the failure of DC isolators, has revealed that improvements in design, manufacturing and installation are required to prevent future failures.

What do I need to do when purchasing DC Isolators and shrouds

- For outdoor installation the minimum permissible IP Rating is IP56NW
- Check the Isolator is marked on the front, including the following:
    - symbol for isolation under load 
    - indication of open and close positions of switch actuator
    - manufacturer's name or trade mark
    - model number/serial number/type designation
    - wording 'IP56NW'
    - wording 'AS 60947-3'
    - and also marked with the RCM 
- Consider your installation, e.g. do the manufacturer's instructions allow the isolator to be mounted other than in the vertical orientation?
- What type of shroud will ensure sufficient protection?

The relevant clause from AS/NZS 5033:2014 Amendment 2 is:

- *4.3.3.3.2 (a) The switch disconnector and its enclosure shall be installed adjacent the PV array modules with a suitable non-combustible and mechanically stable shroud installed to protect the associated switch disconnectors and its enclosure from direct exposure to sunlight and rain*
- *The shroud shall be resistant to ultraviolet radiation. (UV) exposure*

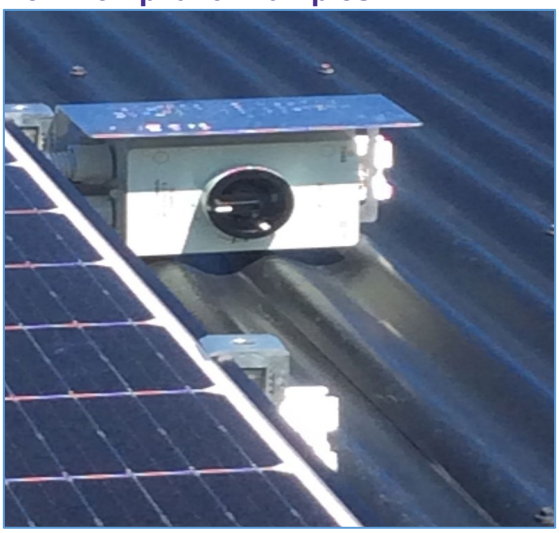
As it may be difficult to for the installer to ensure that no direct sunlight will reach the enclosure at any time of day in each of the seasons, **isolators that are installed to the requirements of this Advisory Note are deemed to meet the intentions of this clause**.

What are the new installation requirements?

AS/NZS 5033:2014 Amendment 2 - Installation and safety requirements for photovoltaic (PV) arrays.

- DC Isolators are to be mounted vertically unless the manufacturer's instructions specifically allow another orientation
- Cables and conduits must enter enclosure from lower face of the enclosure, may only enter vertical sides if specifically allowed in manufacturer's instructions
- Shrouds are required to protect from direct environmental effects of sun and rain

Non-Compliant Examples



Images 1 and 2 above are non-compliant examples. The shroud does not provide adequate protection from direct sunlight.

Who does this requirement apply to?

- All electricians and electrical contractors installing Photovoltaic (PV) systems

Compliance Guide

Vertical Mounting (Open Shroud)

- In all cases the "X" Dimension should not be less than 50mm
- "Y" represents the installed height

When an Open Shroud is used, the top surface of the isolator and accompanying shroud must be horizontal. If an angled installation is necessary an Enclosed Shroud should be used to ensure compliance.

Where the isolator is mounted vertically, and the gland is on the lower edge, the Y measurement does not include the gland See Figure 4.

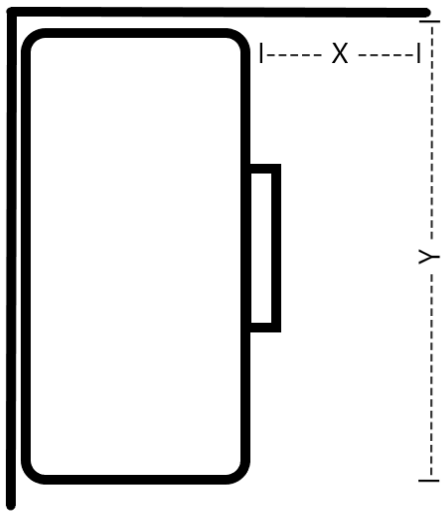


Figure 1 Side View Vertical Mounting

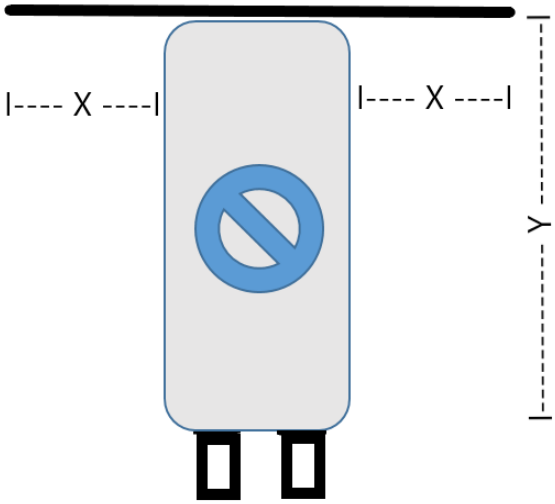


Figure 2 Front View Vertical Mounting

Vertical Mounting (Enclosed Shroud)

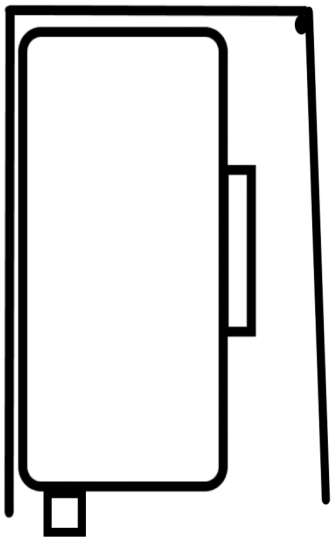


Figure 3 Side View Vertical Mounting

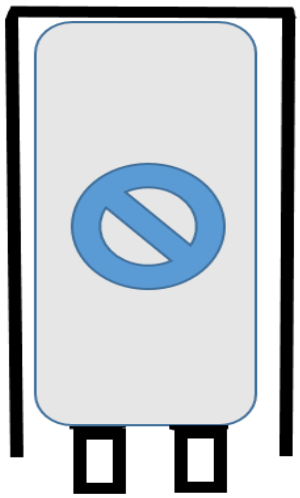


Figure 4 Front View Vertical Mounting

Horizontal Mounting (Open Shroud)

- In all cases the "X" Dimension should not be less than 50mm
- "Y" represents the installed height

Vertical mounting is required, unless the manufacturer's instructions specifically allow other orientations.

Where the Isolator is mounted horizontally, and the gland is situated on the horizontal side, the X measurement is from the end of the gland to the edge of the shroud See figure 6.

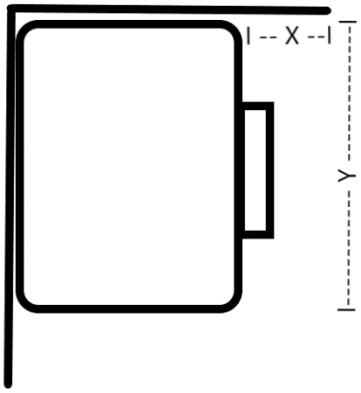


Figure 5 Side View Horizontal Mounting

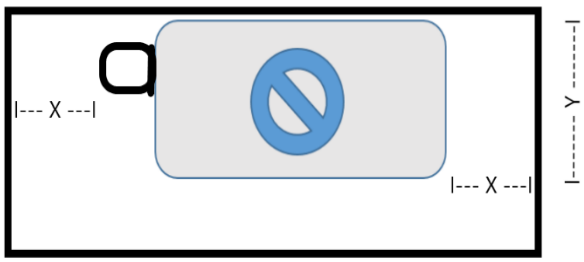


Figure 6 Front View Horizontal Mounting

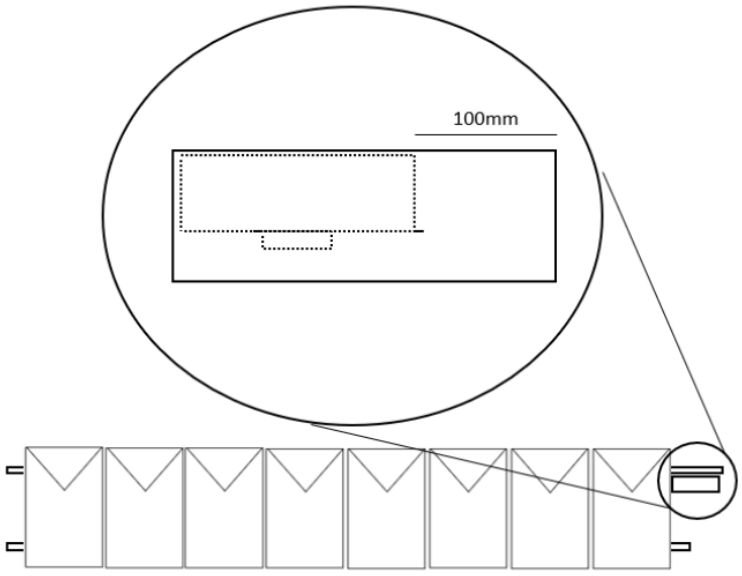


Figure 7

When using the method of mounting the isolator on the extreme left or right of the shroud, there is to be no gap between the PV panel and shroud on the side where the isolator is mounted.

The example in Figure 7 shows the isolator mounted on the left of the shroud, with no gap between the PV panel and shroud.

Figure 7.

Contact us

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Previous electrical notices are available at this link:
https://www.accesscanberra.act.gov.au/app/answers/detail/a_id/2998/kw/electrician%20note#!tabs-5

Document Development

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