

REMOTE SOLAR ISOLATOR

SOLAR SAFETY SHUTOFF

DOMESTIC ACCREDITATION



Remote Solar Isolator
Making solar safe

ALL RIGHTS RESERVED

©2015 All rights reserved. No part of this material may be reproduced in any form or by any means, without the prior written consent of Remote Solar Isolator Pty Ltd, Australia.

TABLE OF CONTENTS

<i>WHAT IS THE SOLAR SAFETY SHUTOFF ACCREDITATION SCHEME?</i>	<i>4</i>
<i>1. SOLAR PV INSTALLATION</i>	<i>6</i>
<i>1.1 Understanding the Safety Issue</i>	<i>6</i>
<i>1.2 When things go wrong with current isolation methods</i>	<i>8</i>
<i>1.3 UL Report Findings</i>	<i>9</i>
<i>1.4 Some warning signs already seen from around the world</i>	<i>10</i>
<i>2. SOLAR SAFETY SHUTOFF</i>	<i>12</i>
<i>2.1 History</i>	<i>12</i>
<i>2.2 Features</i>	<i>12</i>
<i>2.3 Choosing the right model for the job</i>	<i>13</i>
<i>2.4 Quoting the job</i>	<i>17</i>
<i>2.5 Safety</i>	<i>17</i>
<i>2.6 Installation Overview</i>	<i>18</i>
<i>2.7 Retro fit</i>	<i>19</i>
<i>2.8 New Installation</i>	<i>24</i>
<i>2.9 Control Wiring</i>	<i>26</i>
<i>2.10 Connecting Panels</i>	<i>26</i>
<i>2.11 Roof Testing Part A</i>	<i>27</i>
<i>2.12 Roof Testing Part B</i>	<i>28</i>
<i>2.13 Mounting Solar Safety ShutOFF</i>	<i>29</i>
<i>2.14 Switchboard</i>	<i>29</i>
<i>2.15 Switchboard Testing</i>	<i>30</i>
<i>2.16 Commissioning</i>	<i>31</i>
<i>2.17 Customer Explanation</i>	<i>31</i>
<i>2.18 Shutdown Procedure for Solar Safety ShutOFF</i>	<i>31</i>
<i>3 ACCESSORIES</i>	<i>32</i>
<i>3.1 Cable brackets</i>	<i>32</i>
<i>3.2 Arc detection</i>	<i>32</i>
<i>APPENDIX : SAA Certificate of Suitability</i>	<i>35</i>
<i>APPENDIX : Product Specification</i>	<i>37</i>
<i>APPENDIX : RSIA2-60-2-6</i>	<i>38</i>
<i>APPENDIX : RSIA2-60-2-8</i>	<i>39</i>
<i>APPENDIX : RSIA2-60-2-10</i>	<i>40</i>
<i>APPENDIX : RSIA2-40-3-9</i>	<i>41</i>
<i>APPENDIX : RSIA2-40-3-12</i>	<i>42</i>
<i>APPENDIX : RSIA2-40-3-15</i>	<i>43</i>

WHAT IS THE SOLAR SAFETY SHUTOFF ACCREDITATION SCHEME?

Solar Safety ShutOFF accreditation demonstrates an understanding of solar PV safety and the installation of the Solar Safety ShutOFF on both new and existing solar PV installations.

Upon completion, the Solar Safety ShutOFF Accreditation provides:

- Support to ensure the safest solar PV installation.
- Consumer confidence that an accredited installer will provide a high quality, safe and reliable installation.

The accreditation scheme aims:

- To provide installers with an expertise differential in the solar PV market.
- To encourage simple yet efficient installation of the Solar Safety ShutOFF.
- To maintain a network of competent Solar Safety ShutOFF installers.

WHY SHOULD I BECOME AN ACCREDITED INSTALLER?

- Becoming accredited with Solar Safety ShutOFF means you will be listed on the Solar Safety ShutOFF accreditation website, providing consumers a direct avenue for installation.
- Provide you with a new source of revenue stream.
- Provide your customers with maximum solar safety and protection.
- Provide you with a safety differentiator with your competitors.

WHO CAN APPLY

If you are a licensed electrical contractor with a passion for safety and quality you are eligible to apply for accreditation.

TRAINING MATERIAL

This training material provides the required information for you to complete the **Gold Accreditation of the Solar Safety ShutOFF**. Our Gold Accreditation is achieved by demonstrating your knowledge by completing our Online Gold Accreditation Questionnaire. This questionnaire enables you to demonstrate your understanding of solar PV safety, how to quote, and how to install a Solar Safety ShutOFF.

Website: remotesolarisolator.com

Email: training@remotesolarisolator.com

Phone: (02) 9833 7159

Definitions

1	AC	Alternating Current
2	Array	One or more strings of solar panels
3	DC	Direct Current
4	ELV	Extra Low Voltage - Australian standards define ELV as not exceeding 120VDC ripple free (see AS/3000/2007/1.4.98)
5	Inverter	Transforms DC power to AC power
6	Isc	Current Short Circuit
7	MC4	Genuine Multi Contact connector used for solar installations
8	Solar Panel	Converts light energy into DC electrical energy
9	String	Two or more solar panels wired in series providing a single DC output
10	VOC	Voltage Open Circuit

1. SOLAR PV INSTALLATION

1.1 Understanding the Safety Issue

Whenever the sun is shining, solar PV panels combine to generate lethal DC voltages that simply cannot be turned off.

The existing isolation system employed on most rooftop solar installations does nothing to stop the panels from combining and producing lethal DC voltages throughout the array.

The placement of a DC switch/isolator, as shown in *figure 1* (whether placed on the roof, next to the inverter or both), will still allow the generation of lethal accumulated DC voltage throughout the panels and associated wiring, highlighted in red. As a consequence, these installations are a continual source of danger for maintenance and emergencies, including fire throughout the world.

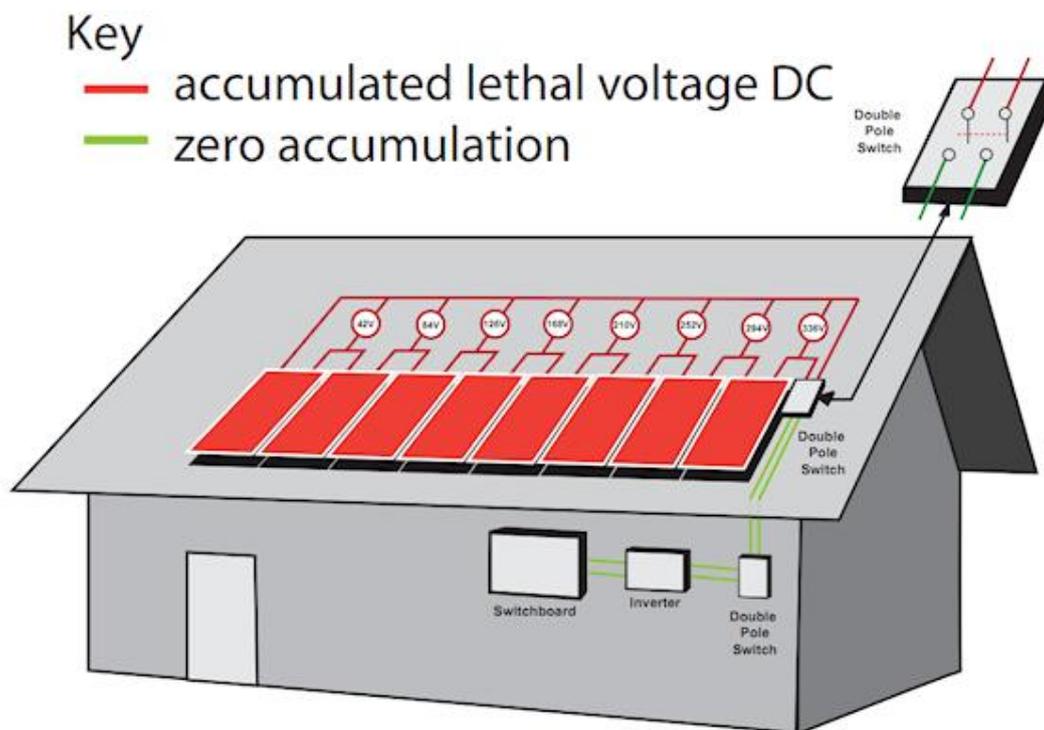


Figure 1: Lethal Voltage still combining with standard isolators off

When a Solar Safety ShutOFF is incorporated into your solar installation and turned off absolutely no combining of lethal DC Voltage occurs. The Solar Safety ShutOFF may be operated at the switchboard or as remote as the local substation. This feature is advantageous in a storm, flood, bushfire or even maintaining the electricity grid (stopping back feeding inverters) refer *figure 2*

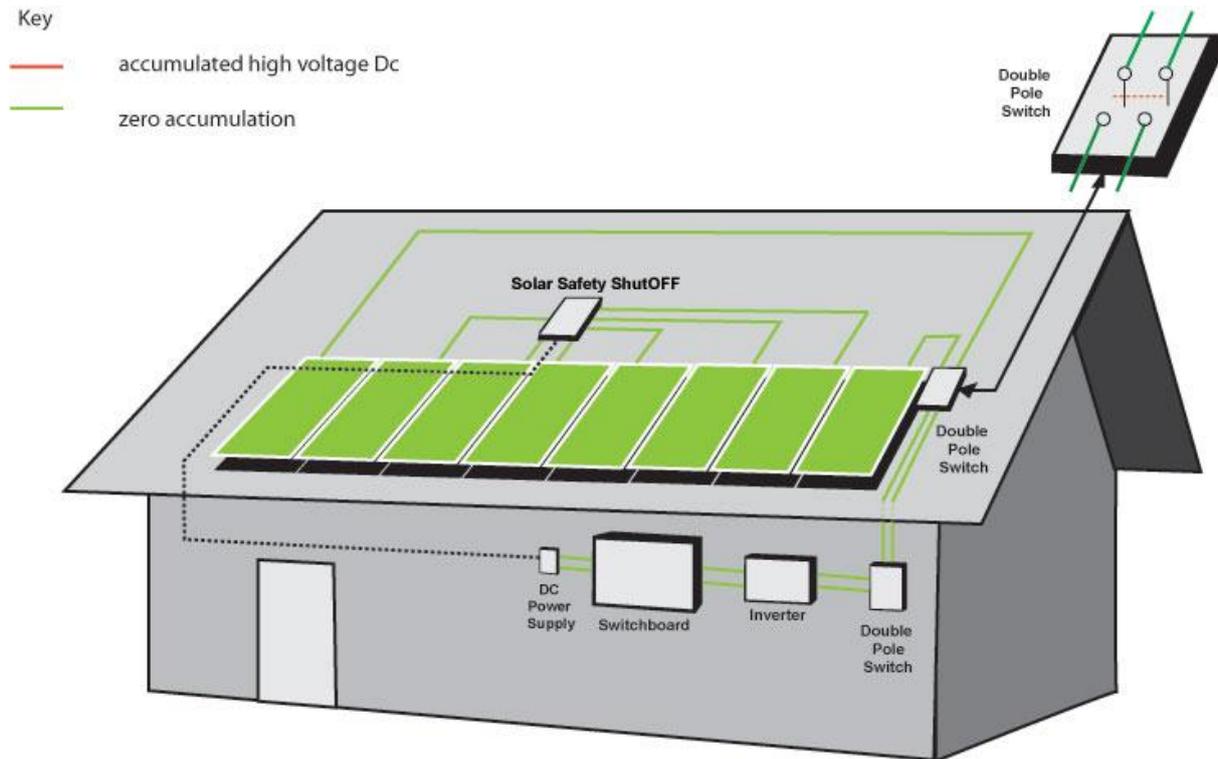


Figure 2: No lethal voltages when Solar Safety ShutOFF installed

Explanation Video: <https://youtu.be/34unFmka6GM>



1.2 When things go wrong with current isolation methods

To provide sufficient energy from solar panels to inverters with minimum losses increased voltages have been required for the generation of solar installations. For the Australian domestic market, a cap of 600VDC was introduced. Unfortunately, all forms of isolation have focussed on switching the combined output of the panels leaving the issue of lethal DC potential throughout the entire solar installation, even when all isolators are off. Because a solar array continues to combine panels and generate electricity whenever the sun is shining, all components are subject to continuous DC potential. If damaged, this solar generator may cause instant combustion at any point in the solar installation. More alarming is that in many cases the Fire Brigade have needed to implement extra precautions to extinguish roof fires where solar panels are installed – for fear they may receive a lethal electric shock – whether the panels were the cause of the fire or not.

Unprotected solar arrays accumulate and produce lethal levels of DC voltage increasing risk to homeowners, emergency service personnel and anyone accessing the roof area for general maintenance of the solar panels or roof area (cleaning gutters etc).



When things go wrong: Damaged panels, wiring, inverters or dc isolators can cause fire due to the continuous power feed from solar panels.

1.3 UL Report Findings

Some findings provided by Underwriters Laboratories:

- Turning off an array is not as simple as opening a disconnect switch. Depending on the individual system, there may be multiple circuits wired together to a common point such as a combiner box. All circuits supplying power to this point must be interrupted to partially de-energise the system. As long as the array is illuminated, parts of the system will remain energised. Unlike a typical electrical or gas utility, on a PV array, there is no single point of disconnect.
- Tarps offer varying degrees of effectiveness to interrupt the generation of power from a PV array, independent of cost. Heavy, densely woven fabric and dark plastic films reduce the power from PV to near zero. As a general guide, if light can be seen through a tarp, it should not be used. Caution should be exercised during the deployment of tarps on damaged equipment as a wet tarp may become energized and conduct hazardous current if it contacts live equipment. Also, firefighting foam should not be relied upon to block light.
- When illuminated by artificial light sources such as fire department light trucks or an exposure fire, PV systems are capable of producing electrical power sufficient to cause a lock-on hazard.
- Severely damaged PV arrays are capable of producing hazardous conditions ranging from perception to electrocution. Damage to the array may result in the creation of new and unexpected circuit paths. These paths may include both array components (module frame, mounting racks, conduits etc.) and building components (metal roofs, flashings and gutters). Care must be exercised during all operations, both interior and exterior. Contacting a local professional PV installation company should be considered to mitigate potential hazards.
- Damage to modules from tools may result in both electrical and fire hazards. The hazard may occur at the point of damage or at other locations depending on the electrical path. Metal roofs present unique challenges in that the surface is conductive unlike other types such as shingle, ballasted or single ply.
- Severing of conductors in both metal and plastic conduit results in electrical and fire hazards. Care must be exercised during ventilation and overhaul.

Link: http://ul.com/global/documents/offerings/industries/buildingmaterials/fireservice/PV-FF_SafetyFinalReport.pdf

1.4 Some warning signs already seen from around the world

The United States and Great Britain like Australia with its high take up of commercial and residential PV solar installations is now facing the serious challenge caused by the lack of an Extra Low Voltage solar isolation safety system, like the Solar Safety ShutOFF. Below are recent news article abstracts on the emerging negative effects of unprotected solar energy.



A fire on a shed roof in Victoria, Australia caused concern for fire-fighters after solar panels caught alight. An electrician who happened to be on-site said, “*fires involving panels on roofs can cause issues with access because they continue to create power.*” The fire is suspected to have started from a fault with the isolating switch that is attached to the solar panels.

Link: <http://www.bordermail.com.au/story/2863075/solar-panels-a-fire-concern/>

A fire that was started by a faulty solar panel component in North Rockhampton this week has raised safety concerns. Unsafe systems were defined as possible safety hazards, posing an “*imminent risk of damage to property or persons*”. Of the more than 50 brands of DC isolators on the market, six had been recalled after internal faults were found to cause overheating and fires.

Recalled DC isolator brands: Avanco, PVPower, SPM, Gen3, NHP and ISO Max

Source: Queensland Electrical Safety Office

Link: <http://m.news-mail.com.au/news/component-of-panel-starts-fire/2466803/>

British Gas has launched an investigation into solar panels at dozens of schools and businesses after a series of mystery fires. Some 92 schools have been told their equipment will need improvements before it is considered safe.

Professor Stuart Irvine, director of Glyndwr University's Centre for Solar Energy Research, said *"The cause here may lie in wiring or junction boxes, where power is converted for the grid"*.

Link: http://www.dailymail.co.uk/news/article-2738673/Schools-warned-solar-panel-fire-risk-Free-green-scheme-halted-three-mystery-blazes.html?ITO=1490&ns_mchannel=rss&ns_campaign=1490

Recently in Delanco, New Jersey, fire fighters' efforts in extinguishing a massive fire at the Dietz & Watson facility were hampered by a large PV 7000 panel installation on the roof. *"The panels obstructed us from doing any roof operations,"* Delanco Fire Deputy Chief Robert Hubler said. Officials said they feared the panels, which remain charged even after being disconnected, posed electrocution dangers. And they do, says Ken Willette, division manager for public fire protection at the National Fire Protection Association.

Link: <http://www.thedailyjournal.com/article/20130907/NEWS01/309070016/Rooftop-solar-panels-challenge-firefighters>

A house fire in Piedmont, California that was partly covered with solar panels had local fire fighters exposed to additional risk and danger. 'Piedmont Fire Capt. Dave Swan told KTVU that solar-powered systems can pose a threat to fire fighters even if crews shut off the flow of power from Pacific Gas & Electric Company and the panels. *"We know that even if we find the switch, to shut off the photo-voltaic flow into the house that there's still energy all the way from the panels down to the switch,"* said Swan... the State of California was considering new building codes and fire fighters say they're hoping those new codes will reflect their concerns about solar power installation.'

Link: <https://www.facebook.com/RemoteSolarIsolator/posts/573975615972959>

A recent fire on the roof at Owen J. Roberts High School in South Coventry, Pennsylvania highlighted the fire risk of solar installations, including the wiring. The fire started from a wiring malfunction within the solar panel power system, according to Superintendent Michael Christian. *"They believe it was a wiring malfunction within the conduit."*

Link: <http://www.pottsmmerc.com/article/20130909/NEWS01/130909455/ojr-official-roof-fire-caused-by-wiring-damage-minimal>

In the American Southwest, fires are becoming harder to put out on homes that have solar panels installed. *"The thing is identifying it early, making sure we secure the system ... but you can't turn the system off,"* said Keith Welch, battalion chief of the Chandler Fire Department in Arizona, told the East Valley Tribune.

Link: <http://dailycaller.com/2014/06/26/growing-solar-panel-use-poses-huge-safety-risk-for-firefighters/>

2. SOLAR SAFETY SHUTOFF

2.1 Overview

The Solar Safety ShutOFF may be added to any new or existing solar installation and provides true safety for any solar installation. The Solar Safety ShutOFF can be installed on homes, farm sheds, schools and commercial buildings and can be easily operated by home owners, emergency services personnel, tradespeople and roof maintenance personnel.

When the Solar Safety ShutOFF is fitted to your home, anyone may stop the generation of electricity of the solar panels simply by following the standard solar shutdown procedure located at the meter box. In an emergency, when access to the meter box is limited the entire solar array may be deactivated, removing all lethal DC voltages just by disconnecting the incoming power at the house, the street or the nearest substation. This then provides a SAFE environment for all emergency personnel, tradespeople and you to access the solar PV system and roof knowing that NO lethal DC voltages are being generated anywhere in your solar installation including the solar panels and associated wiring.

2.2 Features

The Solar Safety ShutOFF is the first step in resolving the safety issues accompanied with solar installations by providing the only air gap solution to shutting down an entire solar installation just by disconnecting the incoming grid supply. Solar Safety ShutOFF provides the:

- Ability to switch off any solar generator both locally and remotely, providing a safe environment for anyone accessing a roof.
- Does not place operator at risk if solar array is damaged or the roof is electrified.
- Utilises the latest air gap isolation technologies providing up to 4mm air gap in less than 5 milliseconds.
- Provides true module level shut down isolation.
- When shut off, it leaves zero DC voltage circulating anywhere in system.
- Ability to clearly indicate safe solar panel isolation via existing inverter.
- Ability to switch off when a predetermined temperature has been reached (if heat is detected from an internal or external fire the entire system will safely shut down).
- Ability to shut down solar generation independent from the solar panels.
- Prevents solar panels back feeding into the electricity grid.
- Allows emergency services an immediate and unrestricted path to attack a fire or emergency situation rather than lose precious time performing risk assessments or not be willing to go on the roof due to increased risk of electric shock.
- Electricians would be able to work on the array and change faulty components knowing that NO lethal voltage can be generated.
- Anyone would have safe access to work on or just near the array without fear of finding themselves in a hazardous situation caused by an unknown fault or damage to the array.
- Prevents potential for electric shock when cleaning solar panels.
- Is compatible with Arc Detection Units which can provide 24/7 Safety monitoring and control.
- Can be installed on any new or existing system.
- Cost effective and safe.

2.3 Choosing the right model for the job

The Solar Safety ShutOFF is designed to limit the combined maximum generated voltage of a grid connected solar array to Extra Low Voltage as defined in Australian Standard 3000/2007, Clause 1.4.98.

To complete the ordering chart below we must know:

1. Model (RSIA2)
2. Maximum individual single panel voltage. (X)
3. Maximum panels per group (Result must be less than 120 divided by Point 2). (Y)
4. Total panels per string (combined panels wired in series). (Z)
5. Panel Orientation (portrait or landscape). (O)

See Figure 3

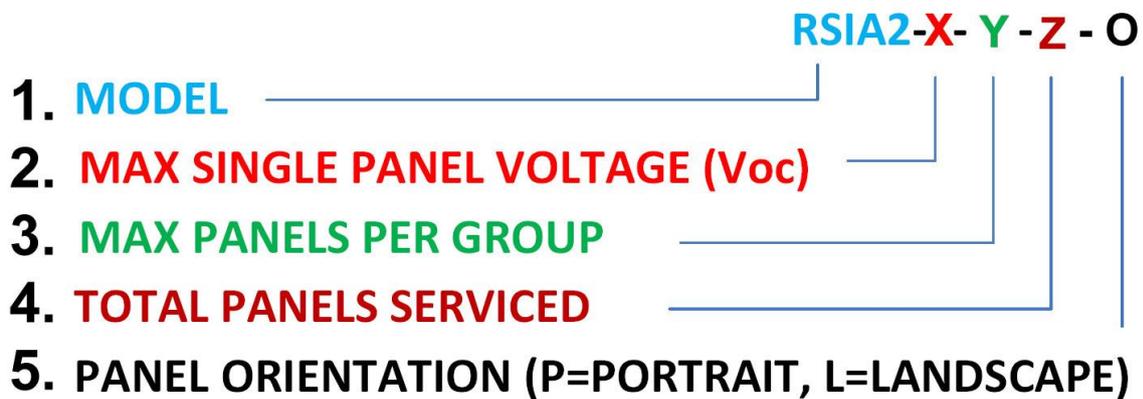


Figure 3



Figure 4: Common models for the Australian market.

Example 1



Figure 5: Switchboard rating label Voc 440VDC Isc 5.6A

On a single string of 8 panels with a combined Open Circuit Voltage of 440V and a Short Circuit Current (Isc) of 5.6A we need the following information: (Note If Isc exceeds 10A usually 2 or more strings are being used)

1. Model **RSIA2**
2. Maximum single panel voltage. From switchboard solar rating label (see Figure 5) we divide Open Circuit voltage (Voc) by number of panels per string being 440 divided by 8 = **55**, then **round up** to the nearest value of 40 or 60 = **60**
3. Maximum panels per group. If we then divide our maximum allowed group voltage of 120VDC by the Individual panel voltage of 55VDC = 2.18, then **round down** to the nearest whole number being **2**.
4. Total panels serviced per string **8**
5. Panel Orientation **P**

The appropriate Solar Safety ShutOFF: **RSIA2-60-2-8-P** (see Appendix RSIA2-60-2-8-P)



Figure 6: 8 panel single string

2.4 Quoting the job

Numerous variations occur on every solar installation. After deciding on the correct Solar Safety ShutOFF required (Refer section 2.3 choosing the right model for the job), consideration should be given to the following:

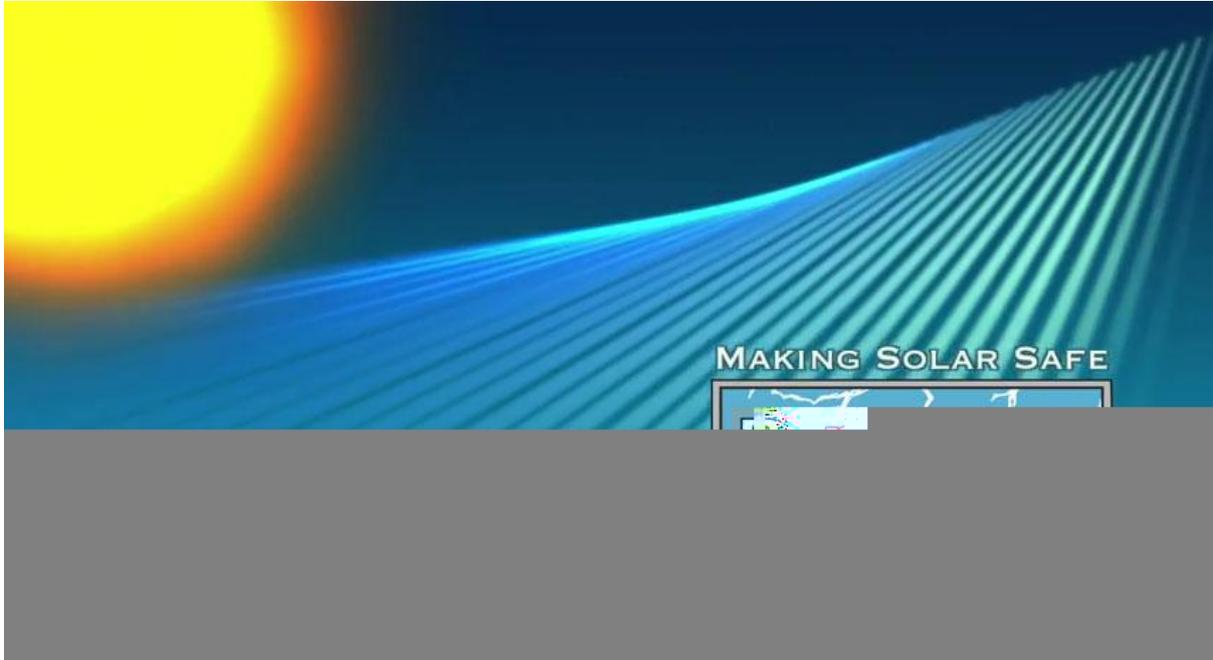
- If New or Retrofit installation
- Access
- Number of stories
- Existing connectors (whether MC4 or MC3) Solar Safety ShutOFF comes standard with genuine MC4 connectors
- Distance from switchboard to solar array
- If removal of panels will be required to access various rows of panels (a single row, single string retrofit is an easier job to complete in comparison to a multi row single string retrofit) see retro fit example 1 and retro fit example 2

2.5 Safety

It is recommended that all local standards for electrical work be adopted when installing the Solar Safety ShutOFF. Whenever access to a roof cavity is performed it is recommended ALL power is isolated de-energised and tested. All roof work should employ safe ladder use and harnesses as per any health and safety directives

2.6 Installation Overview

It is recommended to obtain a general overview of the Solar Safety ShutOFF please view <https://www.youtube.com/watch?v=eHaO-blerQM&list=UUKcpF-NwwLttYqI1xVthzLg>



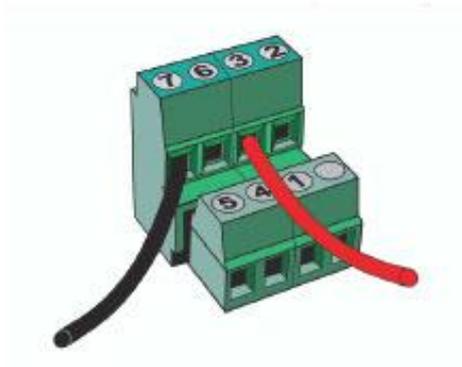


Figure 12: "Control wiring C"

Example 2: Single String 12 panel (1 row 12 panels)

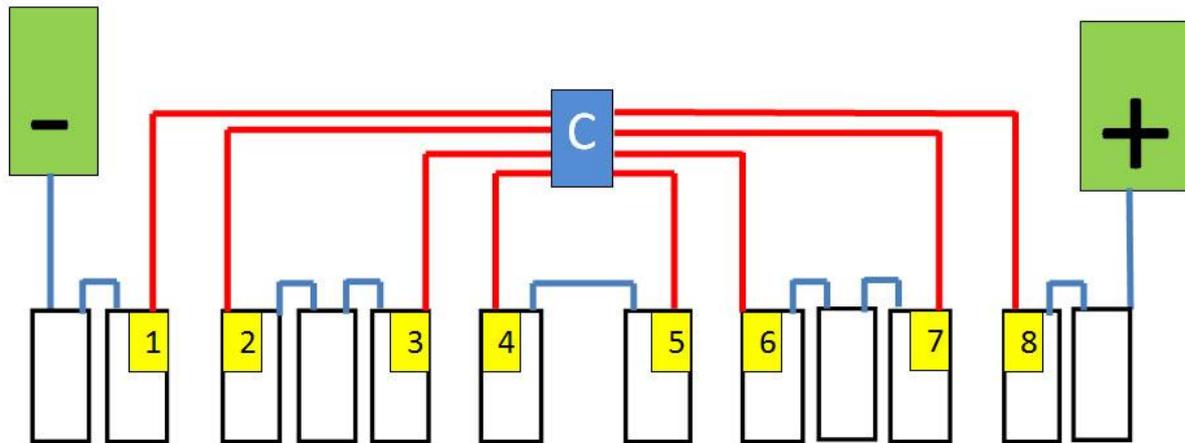


Figure 13: Single String 12 panel (1 row of 12) RSIA2-40-3-12-P

Retro fit procedure – Single string 12 panel (1 row of 12)

- 1 Confirm polarity of total array as per GREEN (+) and (-).
- 2 Isolate system by following standard shut down procedure
- 3 Confirm you have correct RSI (C = RSIA2-40-3-12-P) as per Figure 13
 - a. Open lid,
 - b. loosen gland
 - c. remove seal plug,
 - d. feed control cable through vacant hole
- 4 Terminate Control cable as per Figure 14 “Control wiring C”
- 5 Reseal vacant holes in gland with supplied gland seal plugs
- 6 Tighten gland with 33mm wrench until correct IP rating is achieved
- 7 Connect red leads marked (1-8) as per Figure 13. All terminals on RSIA2 are the correct polarity and must not be changed (Note existing blue connecting wires between panels remain)
- 8 Using a DC Voltmeter test as per Roof testing Part A & B.
- 9 Replace lid and tighten using screws provided to achieve correct IP rating
- 10 Mount RSI “C” using standard mid clamps (see Figure 19)
- 11 All cables must be supported as per standards (We have additional brackets available for purchase)
- 12 Proceed to switch board and follow switchboard installation.

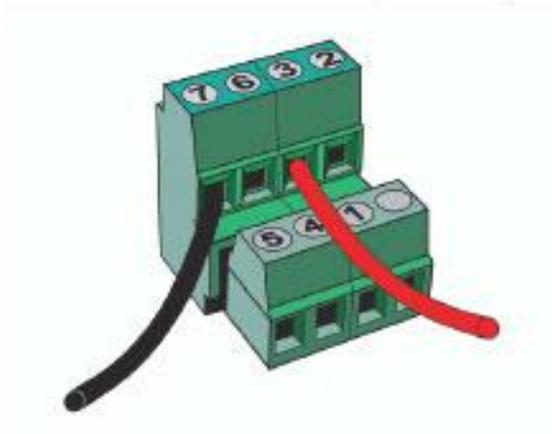


Figure 14: "Control wiring C"

Example 3 Multi string

When installing multi stringed installations each string should be wired separately in accordance with any single string example as per appendix. The control wire is paralleled between RSIA2 units. The maximum number of paralleled RSIA2 units must be limited to 80% of the power supply rating. Each RSIA2 unit is rated at 2.112 watts, so on a 20 watt power supply we would limit the number of RSIA2 units to 7.

Each Solar Safety ShutOFF = 2.112 watts
Total power available = 20 watts
Restrict to 80%
Restricted power available = $0.8 \times 20 = 16$
Divide 16 by 2.112

Equals maximum RSIA2 units per power supply is 7.57

Round figure down to nearest whole number = 7

There must be one power supply per inverter which will supply power the related RSIA2 units supplying the inverter.

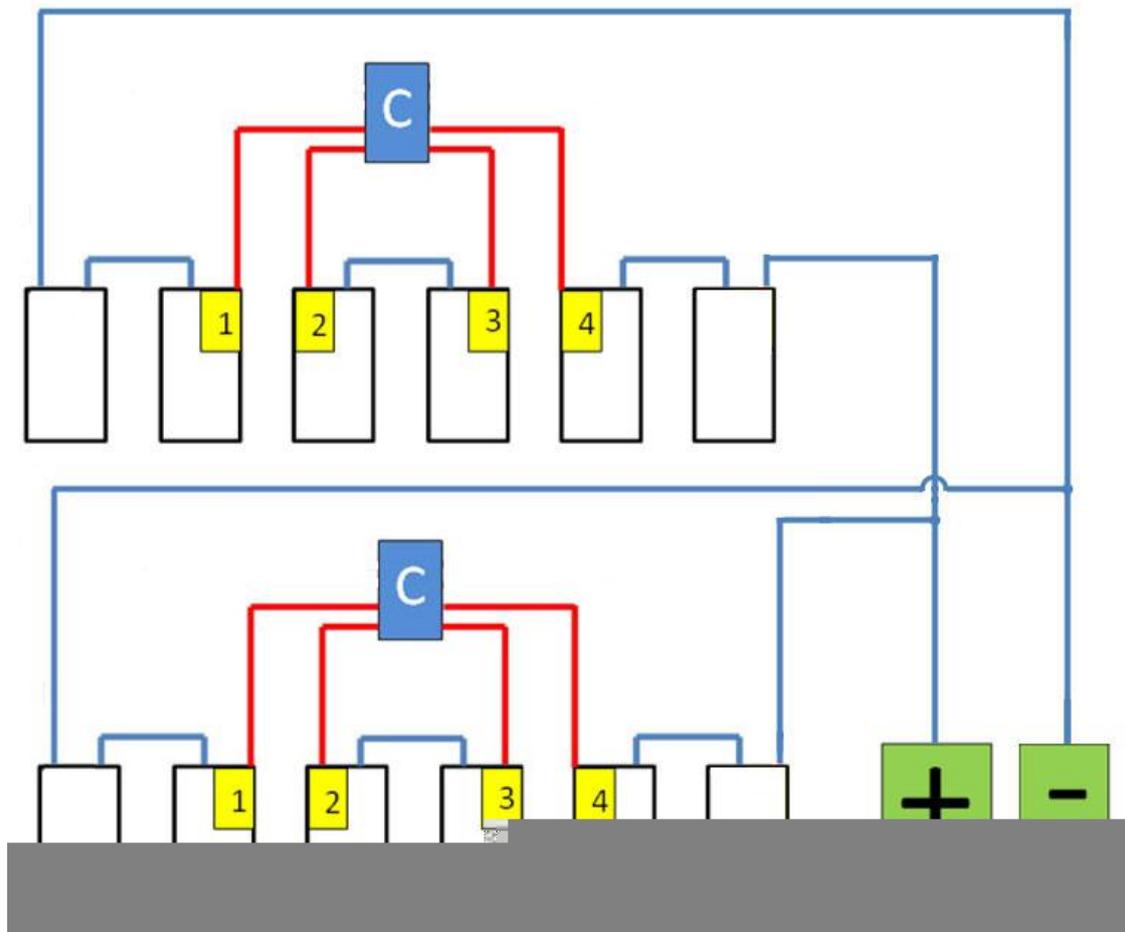


Figure 15: Multi String (6 panels per string) 2 x RSIA2-60-2-6-P

Also required at the switchboard is the connection of the AC to the power supply. This is done by connecting the brown AC IN to the load side (inverter side) of the AC solar supply main switch via an additional 10 amp circuit breaker to provide overload and short circuit to the power supply (see figure 21) and also connecting the blue AC IN to the corresponding neutral.

IMPORTANT NOTE: Confirmation of load/inverter side of AC isolator must be performed and double checked.

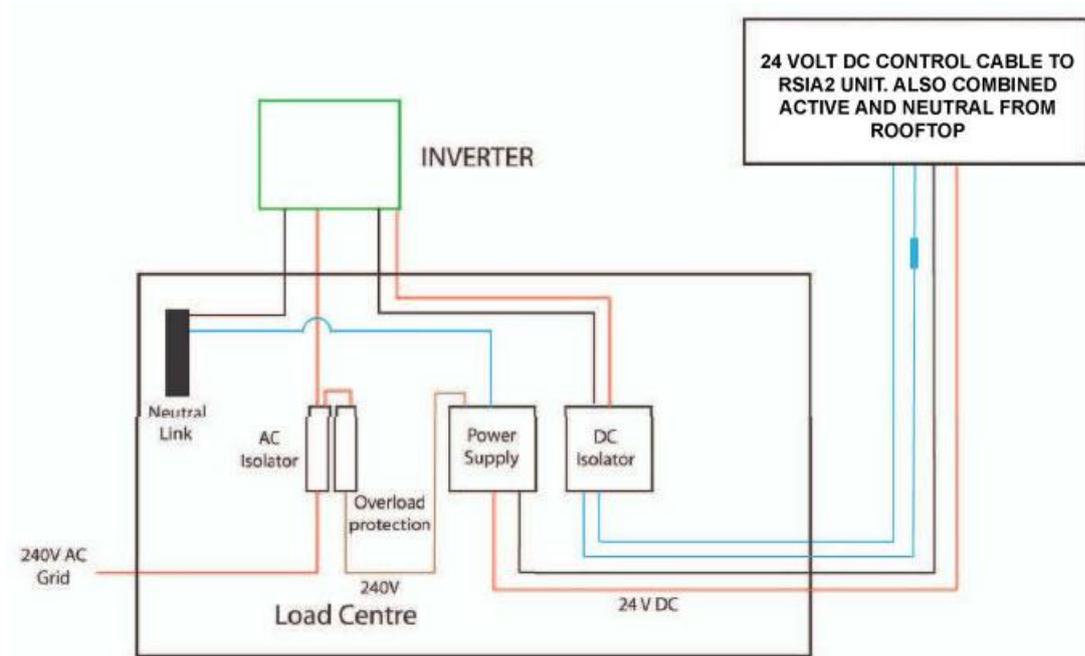


Figure 21

2.15 Switchboard Testing

Before commissioning the RSIA2 unit to the DC isolator, first crosscheck the combined outputs being generated from the panels.

1. Ensure the Rooftop DC isolator is on and the Ground DC isolator is off
2. At the switch board turn on the AC isolator and RSIA2 unit circuit breaker.
3. Then using a DC voltmeter proceed to test the output of the solar string at the ground DC isolator ensuring that the combined voltage is equal to the expected combined solar arrays Open Circuit Voltage.
4. **TURN OFF THE AC ISOLATOR AND CHECK the combined string voltage at the ground DC isolator now equals zero volts.**
5. **Double check all polarities at the inverter are correct**

2.16 Commissioning

To commission unit:

- 1 Turn on all DC isolators
- 2 Turn on the AC isolator and RSI circuit breaker
- 3 Note inverter startup
- 4 Fix PV sticker to switchboard lid displaying system is installed
- 5 Complete warranty card

2.17 Customer Explanation

The customer should be advised and shown the operation of this by stepping through the Solar Safety ShutOFF supplied Shutdown procedure.

Warranty card should be completed and forwarded to:

Remote Solar Isolator
P.O. Box 46
Budgewoi, NSW, 2262

2.18 Shutdown Procedure for Solar Safety ShutOFF

- 1 Check Inverter screen operating
- 2 Turn off AC Isolator or AC Main Switch
- 3 Confirm Inverter screen goes blank
- 4 Turn off DC Isolator

The roof is now safe to access and the solar array is isolated to Extra Low Voltage.

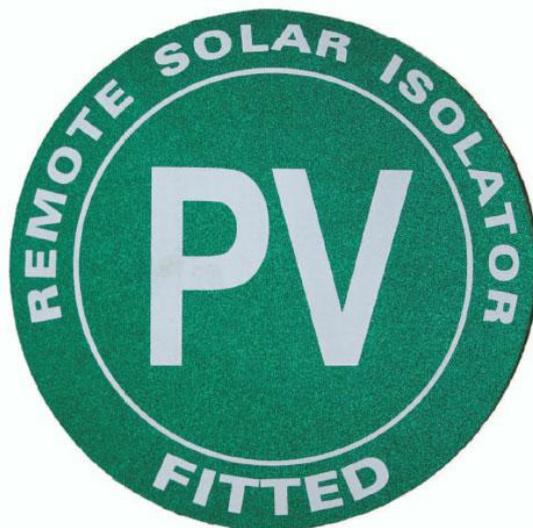


Figure 22

3. ACCESSORIES

3.1 Cable brackets

Cable brackets are a useful accessory on any solar installation. Our brackets provide full mechanical support for solar cables and are easily fitted using a standard mid clamps

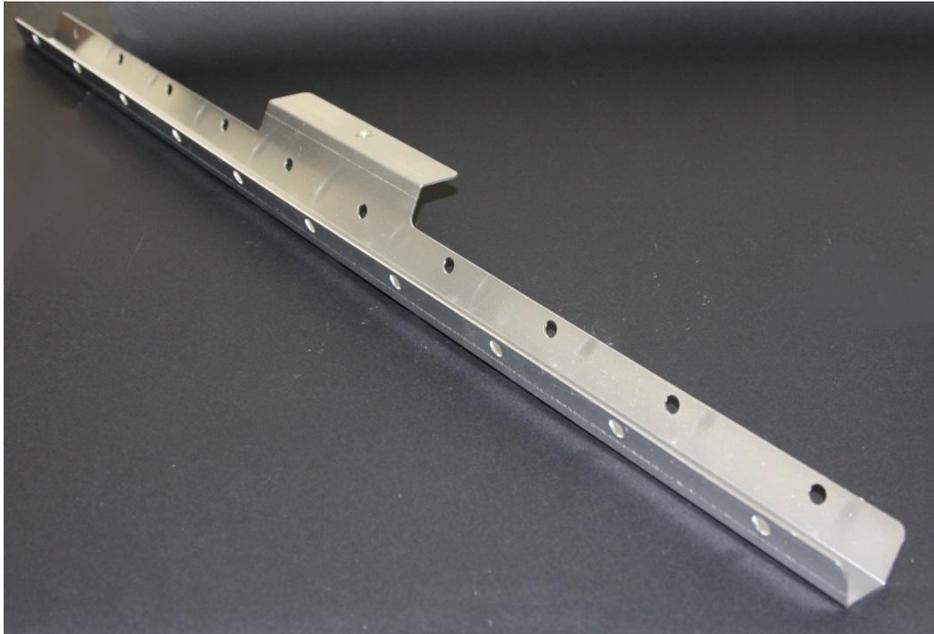


Figure 23

3.2 Arc detection

The ultimate safety device for any solar installation is the inclusion of a Solar Safety Shutoff combined with an Arc Detection Unit.

What does it do?

When installed the Arc Detection Unit constantly searches for any series arcs within your entire solar array. This means that when a series arc fault occurs, whether caused by a damaged or poor quality panel, aged connectors and wiring or even a recalled dc isolator, the arc detection unit will sense the problem and remove power to the Solar Safety ShutOFF. This then stops the lethal dc voltage being generated by your solar panels leaving no voltage circulating within your entire solar array. In other words your solar array will not be further damaged by continuous arcing and will not catch fire.

Why do I need this?

Current solar installations have been installed with no way of sensing a fault or way of stopping lethal dc voltages being generated. In other words there is no true isolator, fuse, circuit breaker or safety switch available for the generator on your roof. Many recorded failures have been noted where fire has occurred and has spread because the solar array could not be shut down. Roof top dc isolators and shutdown procedures at the switchboard do not stop lethal dc voltages being generated throughout the entire solar array whenever the sun is shining.

Automatic 24/7 Safety Monitoring

The Solar Safety ShutOFF is the first step in resolving the safety issues accompanied with solar installations by providing the only air gap solution to shutting down an entire solar installation just by disconnecting the incoming grid supply. With both an Arc Detection Unit and the Solar Safety ShutOFF any installation can be provided the following safety features:

- Automatic 24/7 safety monitoring system
- Can safely detect any series arcing within the solar array and automatically shut down the solar generator before any fire occurs
- Can be Remotely turned off in case of fire flood or maintenance, removing all lethal voltages from the solar array
- Any operator can shut down the entire solar array just by disconnecting the incoming mains or following the standard shutdown procedure
- Detect and shutdown if heat sensed from a fire other than the solar panels making it safe for access to fight the fire
- Provides an audible alarm when an Arc fault has been detected
- The Solar Safety ShutOFF is proudly Australian owned and manufactured

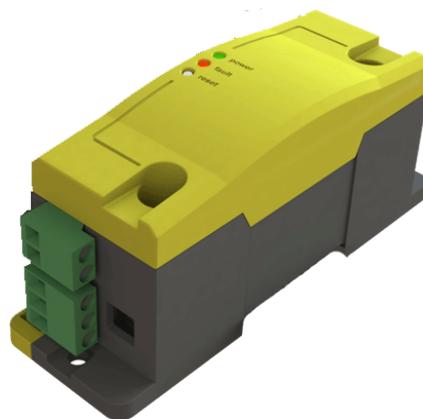


Figure 24

Link to video

It is recommended to obtain a general overview of Arc Detection combined with Solar Safety ShutOFF please view <https://youtu.be/ODbTndlhKL0>



Wiring diagram

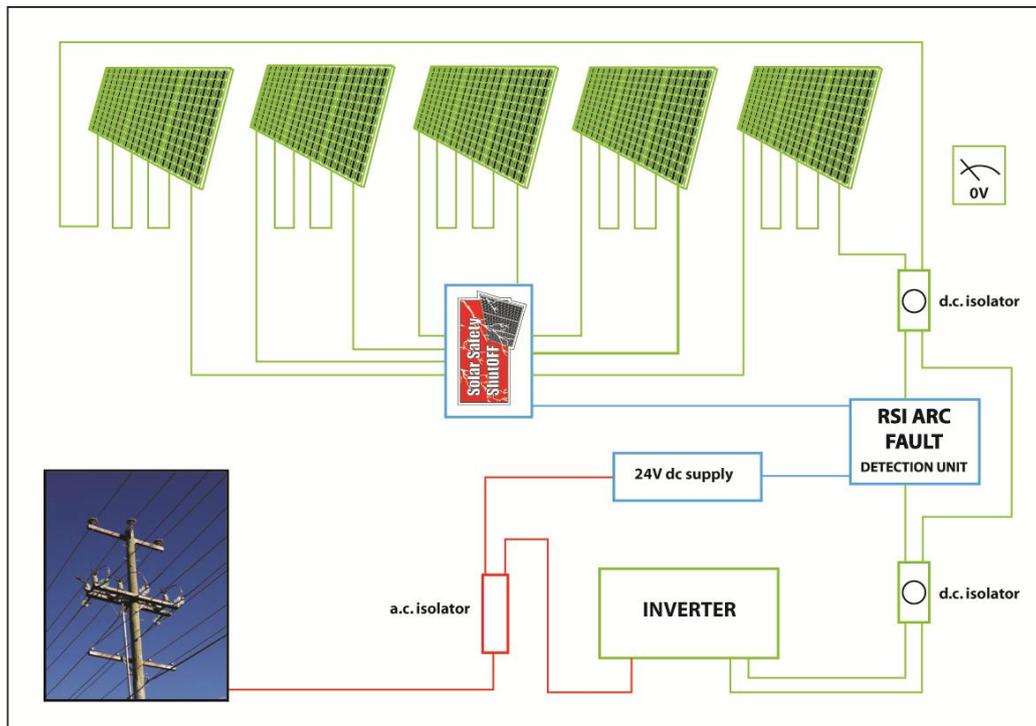
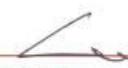


Figure 25

APPENDIX : SAA Certificate of Suitability

 SAA APPROVALS®	
<h3>Certificate of Suitability</h3>	
Certificate No.:	SAA142076
Certificate Holder:	Remote Solar Isolator Pty. Ltd 22 Swindon Place., Lake Haven NSW 2263
Class Description:	Non-Declared
Product Description:	Remote Solar Shutoff
Brand Name:	Solar Safety Shutoff
Model No.:	RSIA2
Markings:	Max. Solar String Voltage: 900Vdc Max. Solar Panel Voltage: 120Vdc Max. Solar Switching Current: 10A Max. Short Circuit Current: 12A Control Voltage: 24Vdc Control Current: 88mA Temperature Rating: 55°C IP66
Standard:	AS/NZS 3100:2009 Inc A1-3
Conditions:	Nil
Certification Mark:	SAA142076 or RCM
Date First Registered:	7 November 2014
Date of Expiry:	7 November 2019

 For and on Behalf of SAA Approvals Pty Ltd	 www.jas-anz.org/register	 Issued: 07-11-14 142076/1
--	---	---

SAA Approvals Pty Ltd Electrical Product Safety Certification Scheme as accredited by JAS-ANZ under ISO/IEC Guide 65 certifies that the electrical product described on this certificate complies with the minimum electrical safety requirements for which the application has been made.
For SAA Contact Details and to verify this Certificate go to:
www.sasapprovals.com.au



APPROVALS®

Certificate of Suitability

Addendum

Certificate No.: SAA142076

Date of Issue: 7 November 2014

Class Description: Non-Declared

Product Description: Isolate Portions of A Solar Array

General Modification:

External cables can be 8, 6 or 4.


For and on Behalf of
SAA Approvals Pty Ltd

SAA Approvals Pty Ltd Electrical Product Safety Certification Scheme as accredited by JAS-ANZ under ISO/IEC Guide 65 certifies that the electrical product described on this certificate complies with the minimum electrical safety requirements for which the application has been made.

For SAA Contact Details and to verify this Certificate go to:
www.saaapprovals.com.au

JAS-ANZ



www.jas-anz.org/register



Issued: 07-11-14 142076/2

APPENDIX : Product Specification

Input Data

Max. Solar Panel Voltage	120Vdc
Max. Solar String Voltage	900Vdc
Rec. Panels per Isolator	10 @ 60Vdc
Refer Installation Guide	15 @ 40Vdc
Max. Panels per String	15 @ 60Vdc
Refer Installation Guide	22 @ 40Vdc
Solar Input Current	10A
Short Circuit Current (Isc)	12A

Environment

IP Rating	66
Ambient Temperature	55 ° C

Control

Control voltage	24Vdc
Control current	88mA

Life

Mechanical Switching	2,000,000
Electrical Switching	10,000

Compliance

SAA Approvals	Certificate No SAA142075
C-Tick	Pass

Compatible

Inverters	All
Arc Fault Detection Units	Santon
Monitoring	Owl Cloud

Warranty and Manufactured

5 Year	Remote Solar Isolator
Invented & Owned	Australia
Manufacture	Australia

Weight

Packaged weight	1750 grams
-----------------	------------

APPENDIX : RSIA2-60-2-6

(Panel Orientation: Portrait shown)

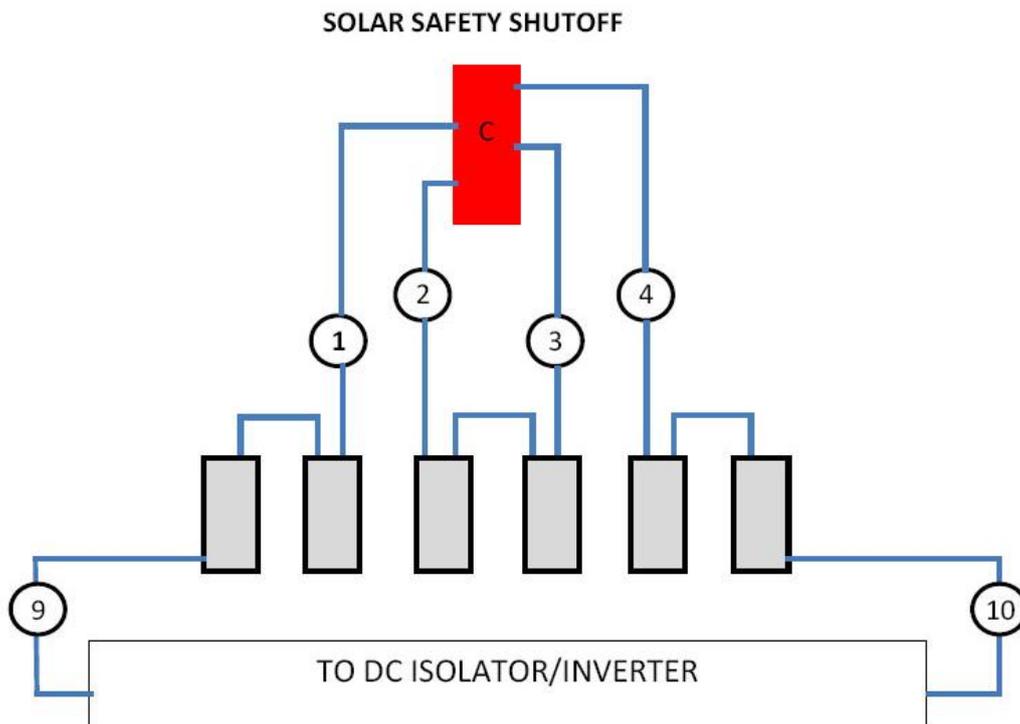
MODEL : RSIA2-60-2-6-P

MAX SINGLE PANEL VOLTAGE (Voc) : 60

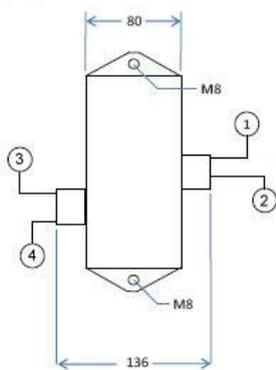
MAX PANELS PER GROUP : 2

TOTAL PANELS SERVICED : 6

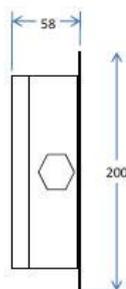
PANEL ORIENTATION : PORTRAIT



Dimensions



Top View



Side View

* Box dimensions in millimetres

Legend

All connectors are genuine MC4.
(male/female indicates shroud not pin)

Design and specifications are subject to change without notice. Remate Solar Isolator is a registered trademark. All other trademarks are property of their respective owners

APPENDIX : RSIA2-60-2-8

(Panel Orientation: Portrait shown)

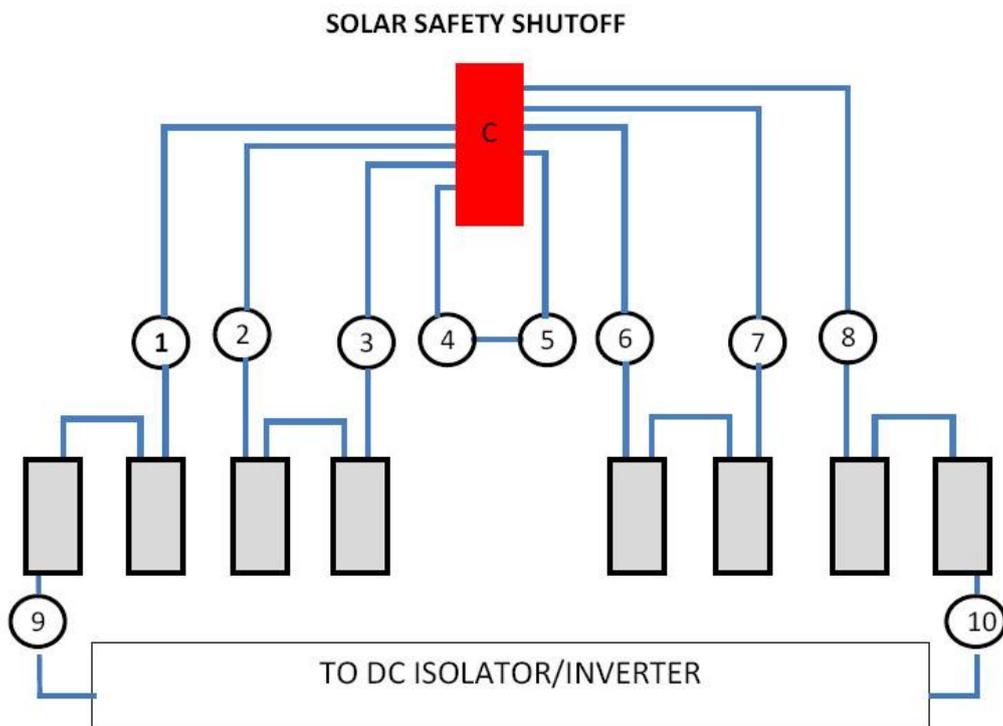
MODEL : RSIA2-60-2-8-P

MAX SINGLE PANEL VOLTAGE (Voc) : 60

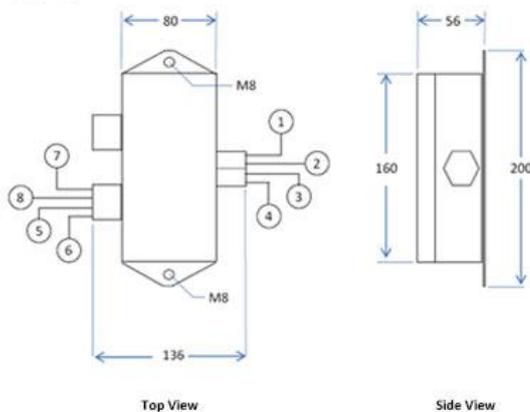
MAX PANELS PER GROUP : 2

TOTAL PANELS SERVICED : 8

PANEL ORIENTATION : PORTRAIT



Dimensions



* Box dimensions in millimetres

Legend

All connectors are genuine MC4.
(male/female indicates shroud not pin)

Design and specifications are subject to change without notice. Remote Solar Isolator is a registered trademark. All other trademarks are property of their respective owners

APPENDIX : RSIA2-60-2-10

(Panel Orientation: Portrait shown)

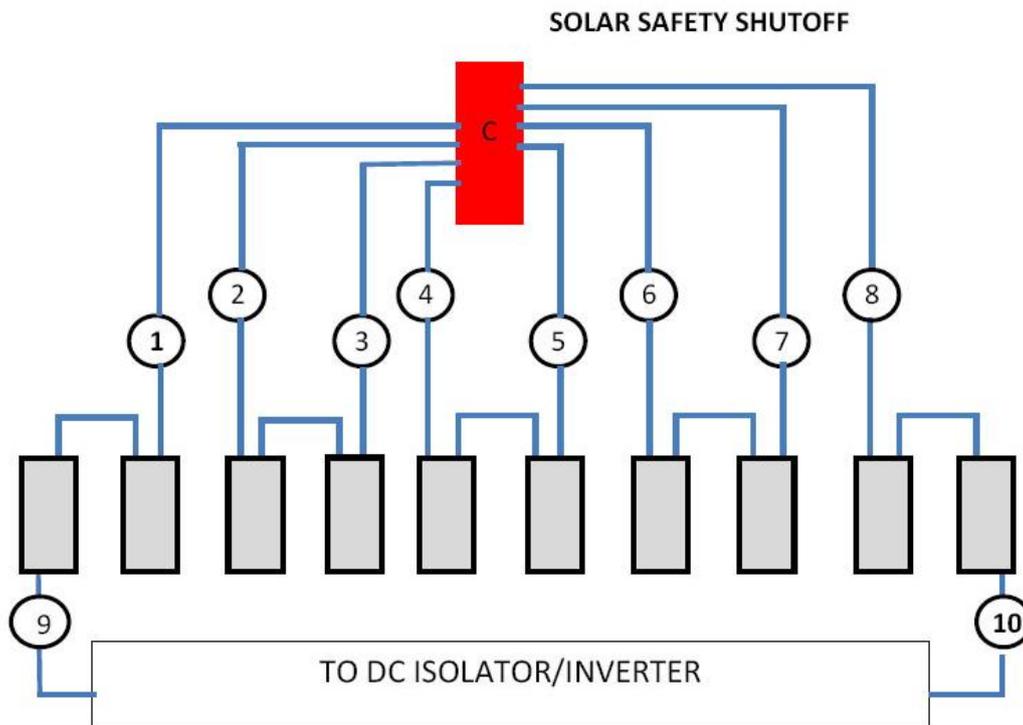
MODEL : RSIA2-60-2-10-P

MAX SINGLE PANEL VOLTAGE (Voc) : 60

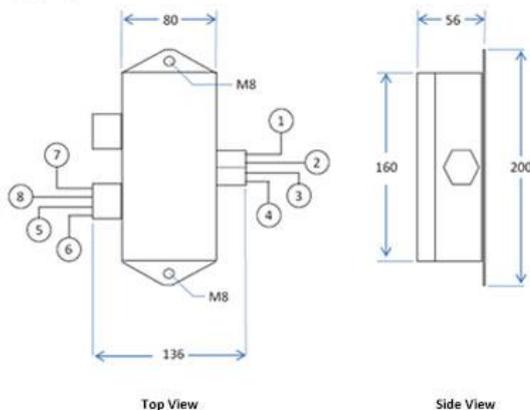
MAX PANELS PER GROUP : 2

TOTAL PANELS SERVICED : 10

PANEL ORIENTATION : PORTRAIT



Dimensions



* Box dimensions in millimetres

Legend

All connectors are genuine MC4.
(male/female indicates shroud not pin)

Design and specifications are subject to change without notice. Remote Solar Isolator is a registered trademark. All other trademarks are property of their respective owners

APPENDIX : RSIA2-40-3-9

(Panel Orientation: Portrait shown)

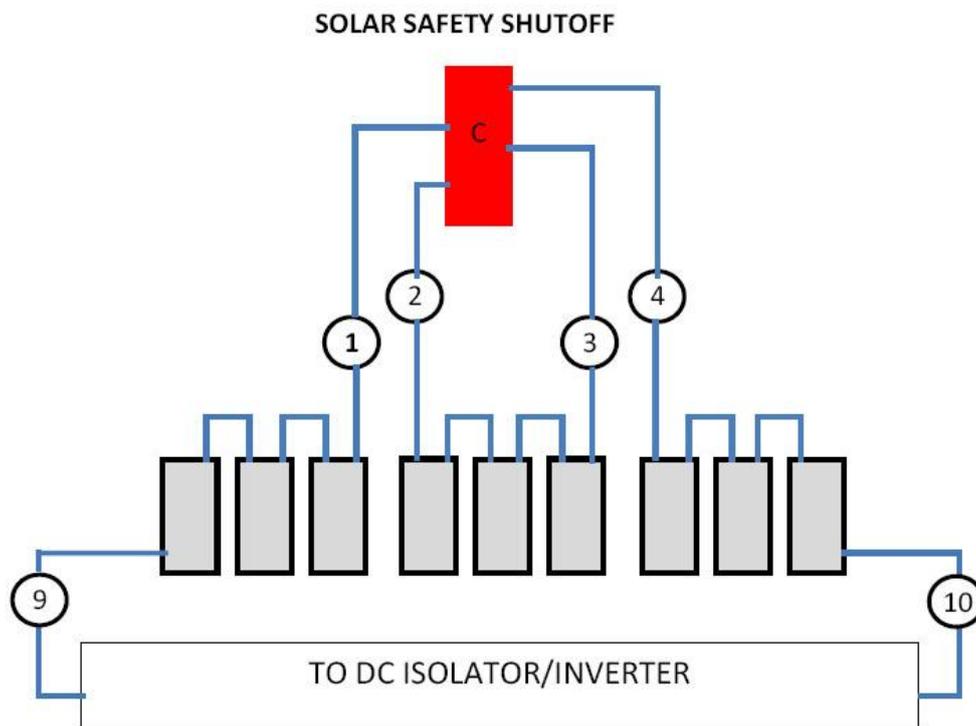
MODEL : RSIA2-40-3-9-P

MAX SINGLE PANEL VOLTAGE (Voc) : 40

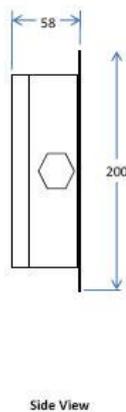
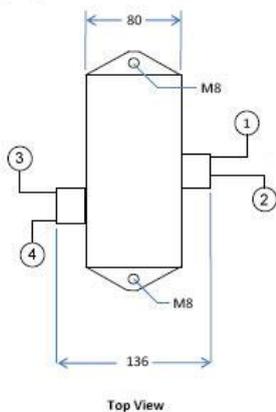
MAX PANELS PER GROUP : 3

TOTAL PANELS SERVICED : 9

PANEL ORIENTATION : PORTRAIT



Dimensions



* Box dimensions in millimetres

Legend

All connectors are genuine MC4.
(male/female indicates shroud not pin)

Design and specifications are subject to change without notice. Remote Solar Isolator is a registered trademark. All other trademarks are property of their respective owners

APPENDIX : RSIA2-40-3-12

(Panel Orientation: Portrait shown)

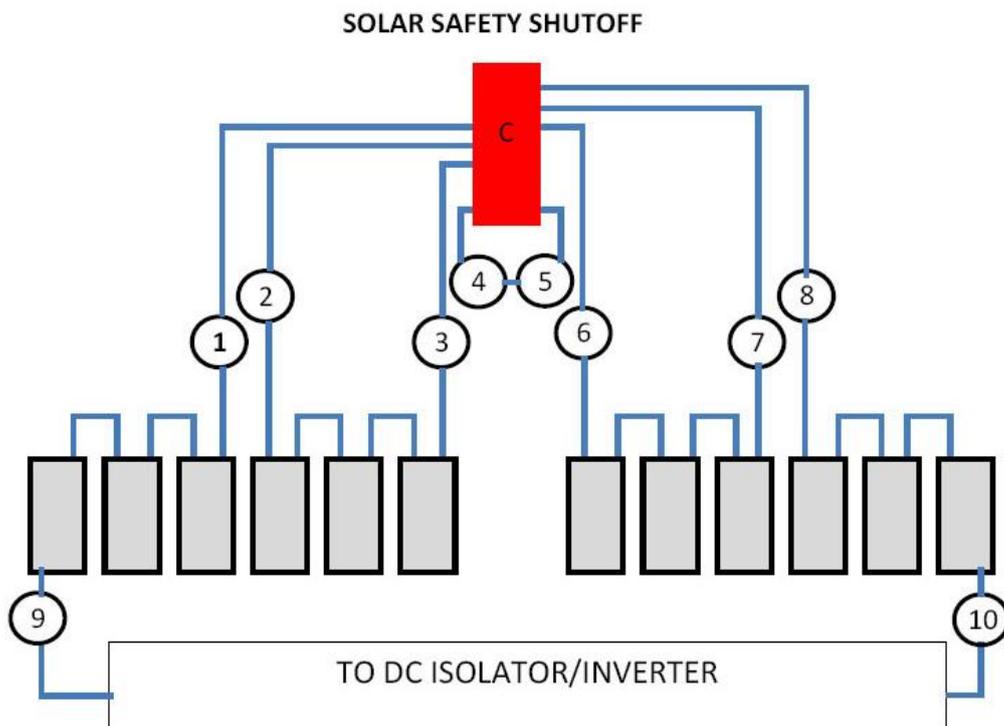
MODEL : RSIA2-40-3-12-P

MAX SINGLE PANEL VOLTAGE (Voc) : 40

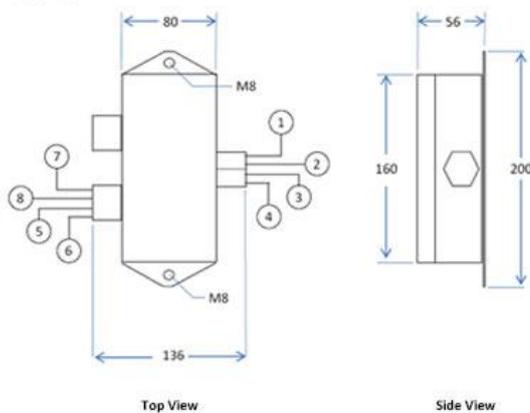
MAX PANELS PER GROUP : 3

TOTAL PANELS SERVICED : 12

PANEL ORIENTATION : PORTRAIT



Dimensions



* Box dimensions in millimetres

Legend

*All connectors are genuine MC4.
(male/female indicates shroud not pin)*

Design and specifications are subject to change without notice. Remote Solar Isolator is a registered trademark. All other trademarks are property of their respective owners

APPENDIX : RSIA2-40-3-15

(Panel Orientation: Portrait shown)

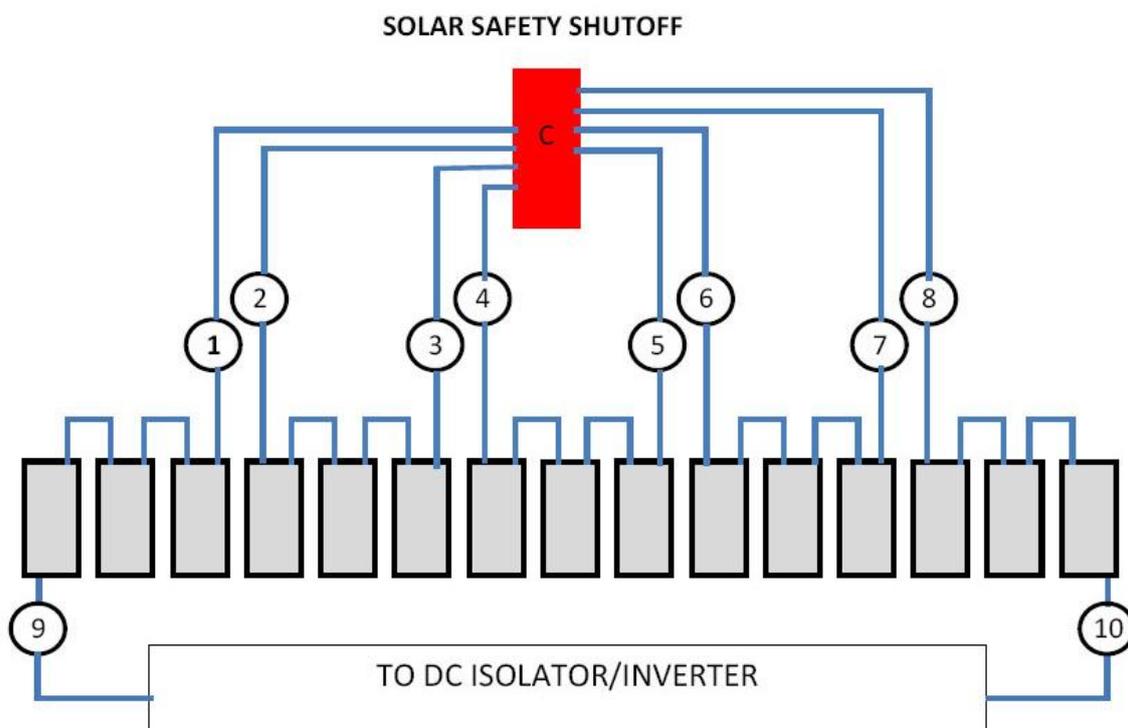
MODEL : RSIA2-40-3-15-P

MAX SINGLE PANEL VOLTAGE (Voc) : 40

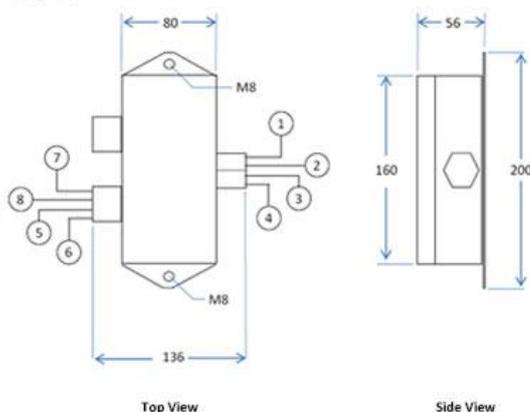
MAX PANELS PER GROUP : 3

TOTAL PANELS SERVICED : 15

PANEL ORIENTATION : PORTRAIT



Dimensions



* Box dimensions in millimetres

Legend

All connectors are genuine MC4.
(male/female indicates shroud not pin)

Design and specifications are subject to change without notice. Remote Solar Isolator is a registered trademark. All other trademarks are property of their respective owners