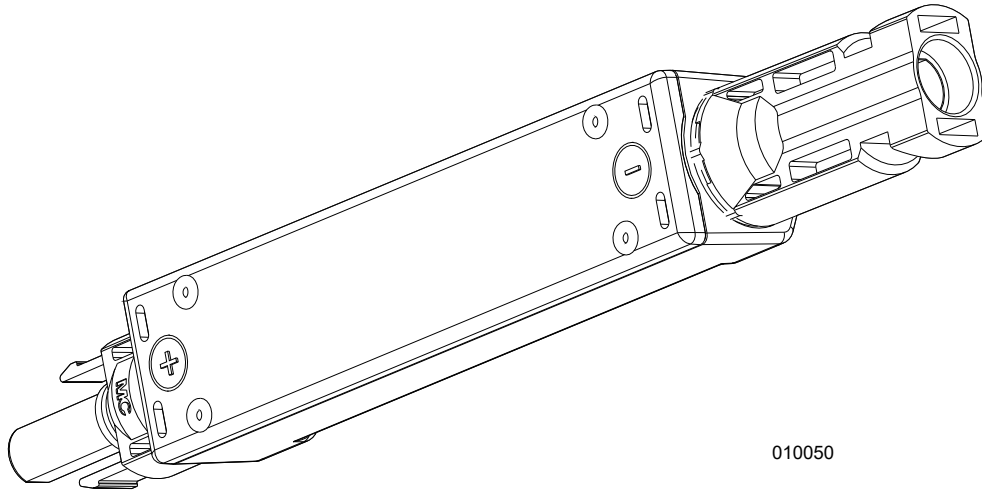


## Installation Manual

### Generac SnapRS™



010050



#### **WARNING**

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury.

(000209b)

Register your Generac product at:

<https://register.generac.com/>

1-888-GENERAC  
(888-436-3722)

Para español, visita: <http://www.generac.com/service-support/product-support-lookup>

Pour le français, visiter: <http://www.generac.com/service-support/product-support-lookup>

**SAVE THIS MANUAL FOR FUTURE REFERENCE**

---

 **WARNING**

**CANCER AND REPRODUCTIVE HARM**

[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

(000393a)

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# Section 1: Introduction and Safety

## Introduction

Thank you for purchasing Generac SnapRS™. SnapRS devices are solid-state switches designed to safely interrupt a circuit of solar photovoltaic (PV) modules in the event of a rapid shutdown command from a Generac PWRcell™ Inverter.

This manual provides instructions for installing SnapRS. Commissioning instructions are provided in the Generac PV Link™ Installation Manual. Consult the installation and operation manuals for other Generac PWRcell system components, as applicable.

The information in this manual is accurate based on products produced at the time of publication. The manufacturer reserves the right to make technical updates, corrections, and product revisions at any time without notice.

## Read This Manual Thoroughly



Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (000100a)

If any section of this manual is not understood, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or visit [www.generac.com](http://www.generac.com) for assistance. The owner is responsible for correct maintenance and safe use of the unit.

This manual must be used in conjunction with all other supporting product documentation supplied with the product.

SAVE THESE INSTRUCTIONS for future reference. This manual contains important instructions that must be followed during placement, operation, and maintenance of the unit and its components. Always supply this manual to any individual that will use this unit, and instruct them on how to correctly start, operate, and stop the unit in case of emergency.

## Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The alerts in this manual, and on tags and decals affixed to the unit, are not all inclusive. If using a procedure, work method, or operating technique that the manufacturer does not specifically recommend, verify that it is safe for others and does not render the equipment unsafe.

Throughout this publication, and on tags and decals affixed to the unit, DANGER, WARNING, CAUTION, and NOTE blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Alert definitions are as follows:

### DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(000001)

### WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

(000002)

### CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(000003)

**NOTE:** Notes contain additional information important to a procedure and will be found within the regular text of this manual.

These safety alerts cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

## How to Obtain Service

For assistance, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-GENERAC (1-888-436-3722), or visit [www.generac.com](http://www.generac.com).

When contacting Generac Customer Service about parts and service, always supply the complete model and serial number of the unit as given on its data decal located on the unit.

## General Hazards

### DANGER

Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury.

(000191)

### WARNING

Risk of injury. Do not operate or service this machine if not fully alert. Fatigue can impair the ability to service this equipment and could result in death or serious injury.

(000215)



### WARNING

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury.

(000209b)

### WARNING

Electric Shock. Consult installation documentation for all other REbus™ devices on the system. Failure to do so could result in death, serious injury, and equipment or property damage.

(000662)

### WARNING

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage.

(000182a)



### WARNING

Risk of Burn. Use protective gloves when handling hot parts. Failure to do so could result in serious injury.

(000386)

### CAUTION

Equipment damage. Never open a Generac SnapRS device. Generac SnapRS devices are factory-sealed and contain no field-servicable parts. Opening a Generac SnapRS device could result in equipment damage.

(000667)

### CAUTION

Equipment damage. Connect to REbus-compatible PV optimizers only. Generac SnapRS devices are for use with ungrounded PV arrays only. Connecting to other equipment could result in equipment damage.

(000665)

- Connecting Generac PWRcell to the electric utility grid must only be done after receiving prior approval from the utility company.
- Only competent, qualified personnel should install, operate, and service this equipment. Strictly comply to local, state, and national electrical and building codes. When using this equipment, comply with regulations established by the National Electrical Code (NEC), CSA Standard; the Occupational Safety and Health Administration (OSHA), or the local agency for workplace health and safety.
- Protection against lightning surges in accordance with local electric codes is the responsibility of the installer.
- If working on this equipment while standing on metal or concrete, place insulative mats over a dry wood platform. Work on this equipment only while standing on such insulative mats.
- Never work on this equipment while physically or mentally fatigued.
- Any voltage measurements should be performed with a meter that meets UL3111 safety standards, and meets or exceeds overvoltage class CAT III.

## PVRSE Warning

This Photovoltaic Rapid Shutdown Equipment (PVRSE) does not perform all of the functions of a complete Photovoltaic Rapid Shutdown System (PVRSS). This PVRSE must be installed with other equipment to form a complete PVRSS that meets the requirements of NEC (NFPA 70) section 690.12 for controlled conductors within and outside the array. SnapRS devices are for conductors within the array. Other equipment installed in or on this PV system may adversely affect the operation of the PVRSS. It is the responsibility of the installer to ensure that the completed PV system meets the rapid shutdown functional requirements.

This equipment must be installed according to the manufacturer's installation instructions.

## Electrical Hazards



**⚠ DANGER**

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury.

(000104)



**⚠ DANGER**

Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury.

(000145)



**⚠ DANGER**

Electrocution. Turn battery disconnect OFF and de-energize REbus before touching terminals. Failure to do so will result in death, serious injury, equipment and property damage.

(000599)



**⚠ DANGER**

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(000188)



**⚠ WARNING**

Electrocution. Potentially lethal voltages are generated by this equipment. Render the equipment safe before attempting repairs or maintenance. Failure to do so could result in death or serious injury.

(000187)

**⚠ WARNING**

Electric Shock. Cover PV modules in opaque material before connecting or disconnecting the Generac SnapRS devices. Failure to do so could result in death or serious injury.

(000668)

**⚠ WARNING**

Electric shock. Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage.

(000155a)

**⚠ WARNING**

Electric Shock. Avoid contact with DC conductors. DC conductors of this photovoltaic system are ungrounded and may be energized regardless of sun exposure. Contact with conductors could result in death or serious injury.

(000666)

## Safety Shutdown



**⚠ DANGER**

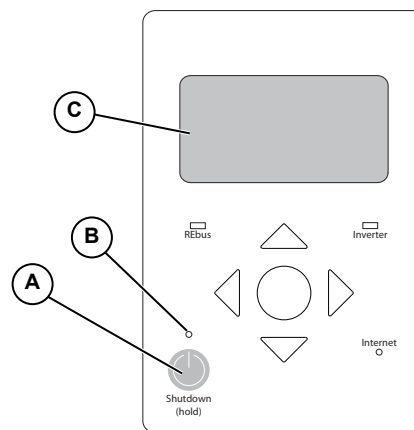
Electrocution. Initiate a system-wide safety shutdown and turn PWRcell Disconnect Switch OFF on all connected batteries before performing service. Failure to do so will result in death, serious injury, equipment and property damage.

(000600)

**NOTE:** A loss of grid power will not de-energize REbus in a system configured to island or provide backup power.

See [Figure 1-1](#). Shutdown button (A) on the Generac PWRcell Inverter control panel activates Safety Shutdown. Safety Shutdown signals connected devices to shutdown and limit output voltage to a safe level. An external shutdown button may also be installed, given appropriate labeling. See the Generac PWRcell Inverter Installation Manual for more information.

To enter Safety Shutdown, press and hold Shutdown (A). Safety shutdown LED (B) will illuminate and LCD screen (C) will indicate Safety Shutdown has been initiated.



009918

**Figure 1-1. Safety Shutdown Button (Located on Inverter Control Panel)**

Upon entering Safety Shutdown, a shutdown signal will be transmitted to all devices connected to REbus. In Safety Shutdown:

- Generac PWRcell Inverter will disconnect from the grid.
- Generac PWRcell Inverter will stop sourcing power to REbus, and immediately disable all sources on REbus by sending a global shutdown signal.
- All Generac PV Link Optimizers will disconnect their output.
- Safety Shutdown LED (B) will be illuminated to show that the inverter has entered safety shutdown. REbus DC bus voltage will be displayed on the inverter screen.

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# Section 2: General Information

## Specifications

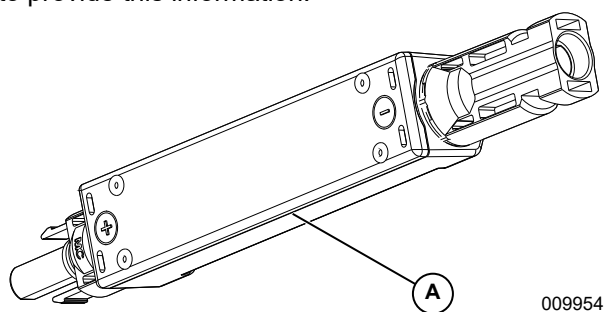
Description	Units	RS801
PV module maximum VOC	V	75
Maximum PV Modules per String	-	10
Efficiency	%	99.8*
Maximum input current	A	13
Shutdown time	sec	< 10
Enclosure rating	-	NEMA 6P
Operating temperature range	°F (°C)	-40 (-40) to 158 (70)
Certifications	-	UL 1741
Weight	oz (g)	3.5 (100)

\*Used with a 50 V PV Panel

Specifications are subject to change without notice. Refer to the product specification sheet for complete list.

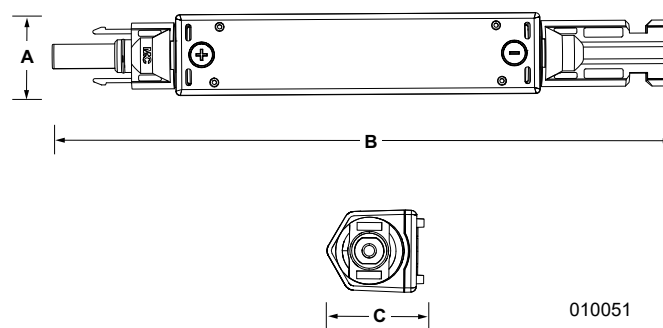
## Serial Number Location

Refer to **Figure 2-1** to locate the unit serial number and date of manufacture (A). Record the information from this tag in the PV Link Important Information table located on the inside front cover of the Generac PV Link Installation Manual. When requesting assistance, you may be asked to provide this information.



**Figure 2-1. Serial Number Location**

## Unit Dimensions



**Figure 2-2. Unit Dimensions**

<b>A</b>	1 in (25.4 mm)
<b>B</b>	7 in (152.4 mm)
<b>C</b>	1 in (25.4 mm)

## About PV Link Optimizer

Generac SnapRS devices are designed to connect PV modules within a string array to achieve 2017 and 2020 NEC 690.12 compliance with PV rapid shutdown system (PVRSS) requirements. When used with Generac PV Link™, Generac SnapRS devices allow all controlled conductors within an array's 1 ft (305 mm) boundary to be limited to 80 VDC or less within 30 seconds of rapid shutdown initiation.

SnapRS devices install to the negative (-) whip of each PV module in the array using MC4 PV connectors. Each PV module must have exactly one SnapRS device. During a shutdown event, SnapRS devices isolate PV modules to satisfy NEC 2017/2020 array conductor

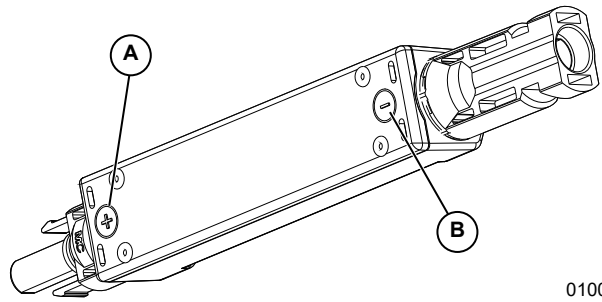
voltage requirements.

**NOTE:** Generac SnapRS devices are not compatible with existing Pika S2501 PV Links. If an existing PV array must be brought into 2017 or 2020 NEC compliance, Generac S2502 or newer model PV Links are required.

## PVRSS Information

PVRSS requirements have evolved over time and are defined by the National Electrical Code (NEC) in conjunction with UL 1741. The 2017 and 2020 NEC added to the PVRSS requirement by mandating the need to reduce voltages of controlled conductors to less than 80 VDC within the array. NEC Article 690.12(C) contains all of the requirements for the type and location of the PVRSS initiation device. SnapRS is a PV rapid shutdown system equipment (PVRSE) component within a PVRSS.

## Component Locations



010050

**Figure 2-3. Component Locations**

**TABLE 1. Component Locations**

- A** Positive PV Connector
- B** Negative PV Connector

# Section 3: Installation and Enabling Instructions

## Installing SnapRS Devices

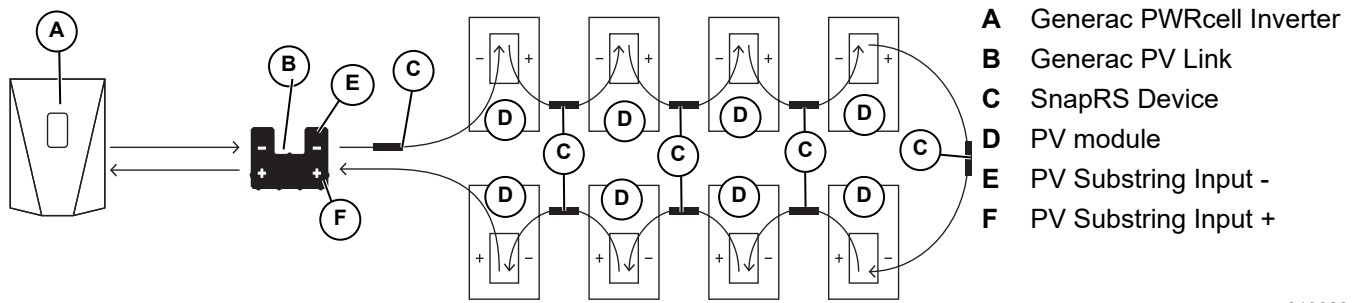
**NOTE:** Before installing SnapRS devices, consult the Generac PV Link Installation Manual for information on installing and grounding the PV Link.

When installing SnapRS devices consider the following:

- Each PV Link can control a series-connected string of two to nine standard PV modules of 60–420 VDC.
- One (1) SnapRS device must be installed to the negative (-) lead of each PV module in the array.
- PV modules require Staubli (Multi-Contact) MC4 connectors. Brands other than Staubli (Multi-Contact) MC4 connectors are not recommended.
- See **Figure 3-1**. PV modules are installed in series with SnapRS devices connected inline between each module.
- See **Figure 3-2**. High-voltage modules can be configured in parallel strings. See the Generac PV Link Installation Manual for details.

To install SnapRS devices:

1. See **Figure 3-1**. Connect one SnapRS device (C) to the negative (-) whip of each PV module (D).
2. Connect the modules in series with the SnapRS devices installed inline between modules by connecting the positive lead of each module to the SnapRS device already installed on the negative lead of the next PV module in the series.
3. Connect the PV string positive lead to PV Link (B) at the location marked PV Substring Input + (F). See the Generac PV Link Installation Manual for more information.
4. Connect the PV string negative lead with its connected SnapRS device to PV Link (B) at the location marked PV Substring Input - (E). See the Generac PV Link Installation Manual for more information.
5. Secure the SnapRS devices to the racking or module frame using zip ties or similar fasteners

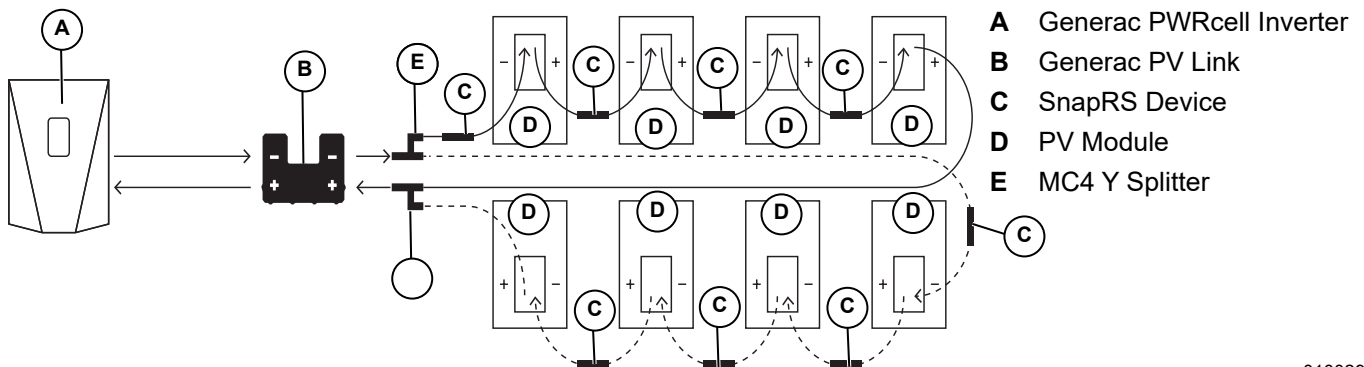


**Figure 3-1. Single-String PV Array with Generac SnapRS™ Devices**

010028

**NOTE:** **Figure 3-2**. If dual strings are connected in parallel, each string must have the same number of the same

type of PV modules, and there must be one SnapRS device for each module in each array.



**Figure 3-2. Parallel-Input PV Array with Generac SnapRS™ Devices**

010029

## **Enabling Generac SnapRS Devices**

Generac SnapRS devices are controlled by Generac PV Link. See the Generac PV Link Installation Manual for information on commissioning Generac SnapRS devices.

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## Section 4: Troubleshooting

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Equipment damage. Never open a Generac SnapRS device. Generac SnapRS devices are factory-sealed and contain no field-servicable parts. Opening a Generac SnapRS device could result in equipment damage. (000667)

---

There are no functional tests that can be performed on SnapRS devices in the field. However, some simple digital multimeter (DMM) checks can confirm the general health of a SnapRS device.

### **DMM Red to SnapRS +, DMM Black to SnapRS –**

Resistance reads ~ 300 k $\Omega$  to 350 k $\Omega$

Diode check reads ~ 0.50 V to 0.55 V

### **DMM Red to SnapRS –, DMM Black to SnapRS +**

Resistance reads ~ 12 M $\Omega$

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