



# 1800/1000 Frame RC Snubber Board IS200RCSAG1A

**Safety Symbol Legend**



**Warning**

**Indicates a procedure or condition that, if not strictly observed, could result in personal injury or death.**

*These instructions do not purport to cover all details or variations in equipment, nor to provide every possible contingency to be met during installation, operation, and maintenance. If further information is desired or if particular problems arise that are not covered sufficiently for the purchaser's purpose, the matter should be referred to GE Industrial Systems.*

*This document contains proprietary information of General Electric Company, USA, and is furnished to its customer solely to assist that customer in the installation, testing, operation, and/or maintenance of the equipment described. This document shall not be reproduced in whole or in part, nor shall its contents be disclosed to any third party without the written approval of GE Industrial Systems.*



**Caution**

**Indicates a procedure or condition that, if not strictly observed, could result in damage to or destruction of equipment.**

**Note** Indicates an essential or important procedure or statement.

**Section**

**Page**

|                                    |   |
|------------------------------------|---|
| Functional Description .....       | 1 |
| Snubber Circuit .....              | 2 |
| Application Data.....              | 2 |
| Renewal/Warranty Replacement ..... | 3 |
| How to Order a Board .....         | 3 |
| Board Identification .....         | 3 |
| Warranty Terms .....               | 4 |
| Placing the Order .....            | 4 |
| Handling Precautions.....          | 5 |
| Replacement Procedures .....       | 5 |

## Functional Description

*A separate ac line filter is also used and is mounted outside of the bridge cabinet.*

The IS200RCSA 1800/1000 Frame RC Snubber Board (RCSA) provides the snubber circuitry for the SCR/diode modules in 1800 or 1000 Innovation Series™ non-regenerative sources. There are three RCSA boards (one per phase) in each non-regenerative source and they are mounted directly on the power devices.

During commutation, the RCSA board protects the SCR/diode modules from voltage overshoots from one device to another. The board also isolates the gate drive circuit from unwanted noise.

Two sets of SCR (cathode) and diode (anode) connections are provided on each board to accommodate the physical layout differences between the 1800 and 1000 frame units. The RCSA board can be used with ac inputs up to 660 VLL rms.

## Snubber Circuit

There are two identical resistor/capacitor (R/C) snubber circuits per board, one for the SCR and one for the diode. Each snubber circuit is connected across the power device (anode to cathode). See Table 1 for board specifications.



### Caution

**For the RCSA board to be used at its full power rating (20 W), forced air cooling must be provided to keep the board temperature rise at or below 50 °C when used in a 50 °C ambient. If forced air cooling is not provided, the board should be derated to 15 W to keep the board temperature below 100 °C in a 50 °C ambient.**

Table 1. RCSA Board Specifications

| Measurement                                   | Values (peak, pulse width, and frequency)                                      |
|---|--|
| Resistance                                    | 25.0 ohms (four 100 ohm resistors in parallel – inductance approx. 17 $\mu$ H) |
| Maximum Current Through Snubber Circuit*      | 3.7 A, approx. 5 $\mu$ s, 120 Hz frequency                                     |
| Maximum Voltage Across Snubber Circuit*       | 375 V, approx. 5 $\mu$ s, 120 Hz frequency                                     |
| Maximum Power Dissipation in Snubber Circuit* | 1.39 kW, approx. 5 $\mu$ s, 120 Hz frequency                                   |
| Capacitance                                   | 0.136 $\mu$ F (two 0.068 $\mu$ F capacitors in parallel)                       |
| Maximum Current Through Snubber Circuit*      | 7.4 A, approx. 5 $\mu$ s, 120 Hz frequency                                     |
| Maximum Voltage Across Snubber Circuit*       | 530 V, approx. 5 $\mu$ s, 120 Hz frequency                                     |
| Maximum Snubber Terminal Voltage (clamping)   | 616 V  |

\*Each resistor or capacitor of circuit (two circuits per board)

## Application Data

The RCSA board has no fuses, testpoints, LED indicators, or adjustable hardware. It mounts directly to the SCR/diode module for each phase and is held in place by these connections. Four holes are located at the corners of the board and are used to secure the board with wire ties. A cutout for the SCR gate and cathode connector (labeled SCRPL) is also provided. See Figure 1 for component/connection locations and Table 2 for connection point descriptions.

Table 2. RCSA Board Connections

| Name | Description                            |
|------|--|
| E1   | Diode anode connection                 |
| E3   | SCR anode and diode cathode connection |
| E4   | SCR cathode connection                 |

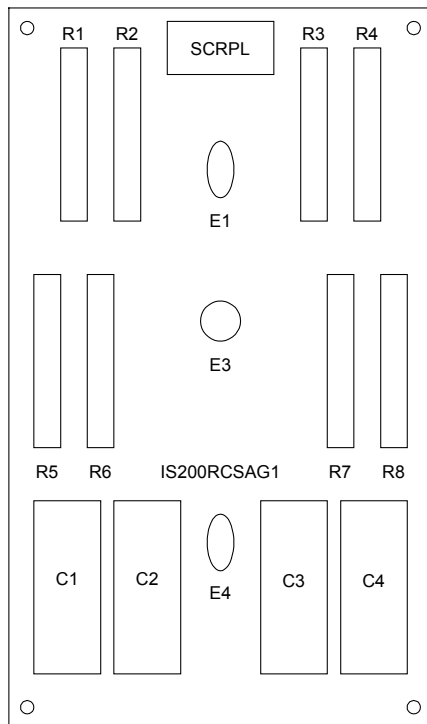


Figure 1. RCSA Board Layout Diagram

## Renewal/Warranty Replacement

### How to Order a Board

When ordering a replacement board for a GE drive, you need to know:

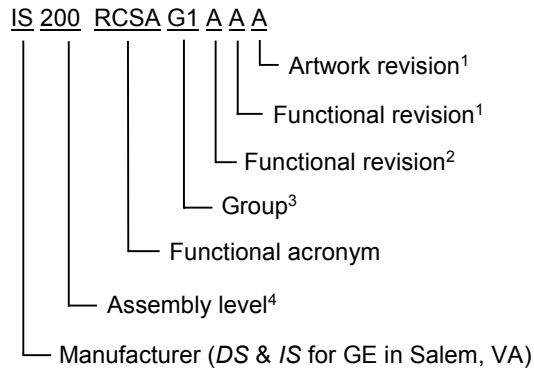
- How to accurately identify the part
- If the part is under warranty
- How to place the order

This information helps ensure that GE can process the order accurately and as soon as possible.

### Board Identification

A printed wiring board is identified by an alphanumeric **part (catalog) number** located near its edge. Figure 2 explains the structure of the part number.

The board's functional acronym is normally based on the **board description**, or name. For example, the RCSA board is described as the 1800/1000A Frame RC Snubber Board.



<sup>1</sup>Backward compatible

<sup>2</sup>Not backward compatible

<sup>3</sup>G or H = group variation

<sup>4</sup>200 indicates a base-level board; 215 indicates a higher-level assembly or added components (such as PROM)

Figure 2. Board Part Number Conventions

## Warranty Terms

The GE *Terms and Conditions* brochure details product warranty information, including **warranty period** and **parts and service coverage**. The brochure is included with customer documentation. It may be obtained separately from the nearest GE Sales Office or authorized GE Sales Representative.

## Placing the Order

Parts still under **warranty** may be obtained directly from the factory:

GE Industrial Systems  
 Product Service Engineering  
 1501 Roanoke Blvd.  
 Salem, VA 24153-6492 USA  
 Phone: + 1 540 387 7595  
 Fax: + 1 540 387 8606

("+" indicates the international access code required when calling from outside of the USA.)

**Renewals** (spares or those not under warranty) should be ordered by contacting the nearest GE Sales or Service Office. Be sure to include:

- Complete part number and description
- Drive serial number
- Drive Material List (ML) number

---

**Note** All digits are important when ordering or replacing any board. The factory may substitute later versions of boards based on availability and design enhancements. However, GE Industrial Systems ensures backward compatibility of replacement boards.

---

## Handling Precautions

---



### Caution

To prevent component damage caused by static electricity, treat all boards with static sensitive handling techniques. Wear a wrist grounding strap when handling boards or components, but only after boards or components have been removed from potentially energized equipment and are at a normally grounded workstation.

---

Printed wiring boards may contain static-sensitive components. Therefore, GE ships all replacement boards in antistatic bags.

Use the following guidelines when handling boards:

- Store boards in antistatic bags or boxes.
- Use a grounding strap when handling boards or board components (per previous *Caution* criteria).

## Replacement Procedures

---



### Warning

Bridge cabinet doors should not be opened when drive power is ON. To prevent electric shock, turn off power to the board, then test to verify that no power exists in the board before touching it or any connected circuits.

---



### Caution

To prevent equipment damage, do not remove, insert, or adjust board connections while power is applied to the equipment.

---

#### ➤ To replace an RCSA board

1. Make sure the drive that the board is in has been de-energized and follow all local safety practices of Lock-Out/Tag-Out.
  2. Open the bridge cabinet doors and, using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is OFF and has dissipated.
  3. Cut and remove any wire ties that secure wires to the holes located at the corners of the board.
  4. Remove the four nuts with washers at the eyelet connections that secure the RCSA board to the SCR/diode module terminals. (See Figure 1 for the four board eyelet connection/nut locations).
- 



### Caution

Avoid dropping mounting hardware into the unit, which could cause damage.

---

5. Remove the old RCSA board from the SCR/diode module terminals.

6. Orient the new RCSA board in the same position as the one removed, install it onto the SCR/diode module terminals
  - Secure the new RCSA board to the terminals with the three nuts and washers removed in step 4 and torque them to 13 in/lb.
  - Resecure any wires that were cut loose from the board's corner holes in step 3 with new wire ties.
7. Close the bridge cabinet doors.



***GE Industrial Systems***