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GE Industrial Systems

Rack Power Supply Board
IS200RAPAG_ _ _ _

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.

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Safety Symbol Legend

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

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

Note Indicates an essential or important procedure, practice, condition, or statement.

Contents

Functional Description

The IS200RAPA Rack Power Supply Board (RAPA) accepts a 48 V, 25 kHz square wave input and provides the following:

- The dc control voltages required by other boards in the Innovation Series™ board rack (through the P1 connector).
- The "Power ON" and "Master RESET" functions for the control.

Two LED indicators and four testpoints provide diagnostic information on the board (one protective fuse is also provided). The RAPA board is mounted in the Innovation Series board rack. The RAPA board also includes a parallel-style bus host processor. All standard bus signals are interfaced through the P1

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connector. There are two functional revisions of the RAPA board currently in service, the IS200RAPAG1A_ _ and the IS200RAPAG1B_ _. There are minor differences in the output and reference voltage tolerances between them. See Table 1 and Table 2 for board specifications.

Reset Function

The PSEN line on the P1 connector provides a logic supply under Voltage RESET protection and Master RESET functions.

- At **Power Up**, the PSEN line will be low for 100 milliseconds after the input to the 5 V dc regulator is above 9 V dc and the 5 V dc is above 4.6 V dc.

- **At Power Down** (or a power dip), the PSEN line will be asserted low when the 5 V dc regulator input drops below 9 V dc.

The Master RESET button (located on the RAPA board's front panel) will pull PSEN low when the button is depressed and PSEN will remain low for 100 milliseconds after the release of the RESET button.

Pulling PSEN low from an external board for a minimum of 30 microseconds will force a RESET and PSEN will remain low for a minimum of 100 milliseconds or until the PSEN line is released.

Serial Board Identification

A serial 1024-bit memory device is present on the board. This memory is programmed with board identification and revision information. Access to the information is through a single data line, BRDID, on the P1 connector.

Specifications

Refer to Table 1 for IS200RAPAG1A board specifications and to Table 2 for IS200RAPAG1B board specifications.

Table 1. RAPAG1A Board Specifications

48 Volt Ac Input	
Range	48 V dc squarewave, ±10%
Frequency	25 kHz, ±10%
Load	Output load dependent
Dc Output Voltages (DCOM Referenced)	
±18 – 24 V dc	Unregulated bulk, 400 mA maximum
±15 V dc	Regulated ±5%, 400 mA maximum
±5 V dc	Regulated ±5%, 4.75 A maximum
I12COM Referenced Dc Voltage	
±12 V dc	Unregulated, 300 mA maximum
I24COM Referenced Dc Voltages	
+24 V dc	Unregulated, 1.2 A maximum
Reset PSEN Output	
Output	OC 1K pull-up, Low = Reset
Width	100 millisecond minimum

Table 2. RAPAG1B Board Specifications

48 Volt Ac Input	
Range	48 V dc squarewave, ±10%
Frequency	25 kHz, ±10%
Load	Output load dependent
Dc Output Voltages (DCOM Referenced)	
±18 – 24 V dc	Unregulated bulk, 400 mA maximum
±15 V dc	Regulated ±5%, 1.0 A maximum
±5 V dc	Regulated ±5%, 7.0 A maximum
I12COM Referenced Dc Voltage	
±12 V dc	Unregulated, 300 mA maximum
I24COM Referenced Dc Voltages	
+24 V dc	Unregulated, 1.5 A maximum
Reset PSEN Output	
Output	OC 1K pull-up, Low = Reset
Width	100 millisecond minimum

Application Data

The RAPA board plugs into in an Innovation Series board rack via the P1 backplane connector. P1 contains three rows of 32 pins each; see Table 5, Table 6, and Table 7 for pin descriptions of this connector. There are no other connectors on the RAPA board.

The RAPA board includes four testpoints, two LED indicators, and one fuse. The only adjustable hardware device on the board is the RESET switch (see Reset Function paragraph). See Figure 2 for a board faceplate illustration and Figure 3 and Figure 4 for board layout diagrams.

Indicators and Fuse

Two LED indicators are located on the RAPA Front Panel, MPOK and IPOK. See Table 3 for descriptions.

Fuse FU1 is a 1 amp, 250 V fuse that is for protection of the 24 V dc isolated power supply. Check the fuse integrity if LED indicator IPOK is OFF during normal operation.

Testpoints

There are four testpoints for signal measurement that are accessible on the front panel of the RAPA board. See Table 4 for testpoint descriptions.

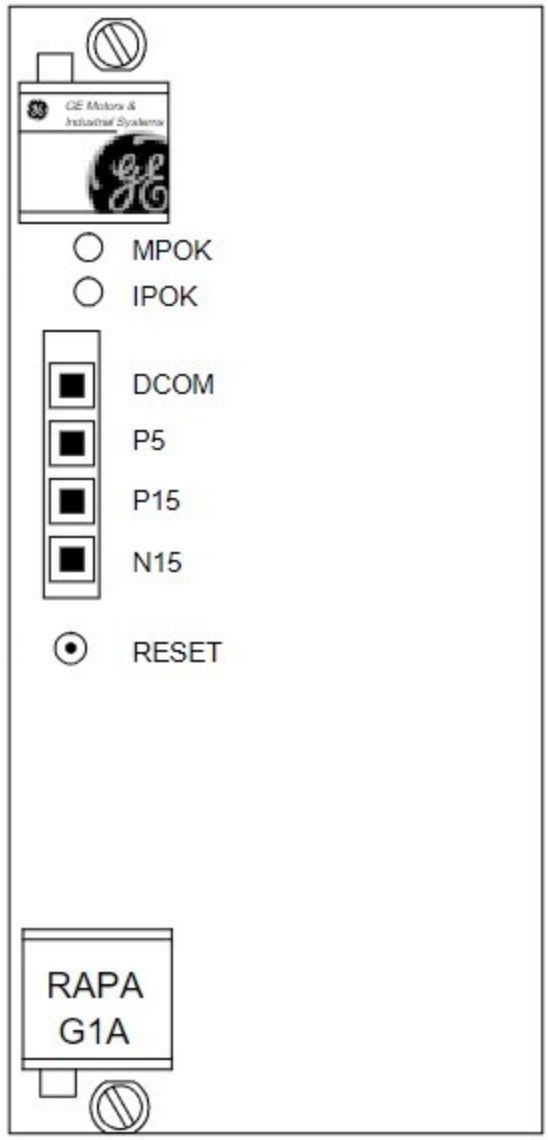


Figure 1. RAPA Board Front Panel

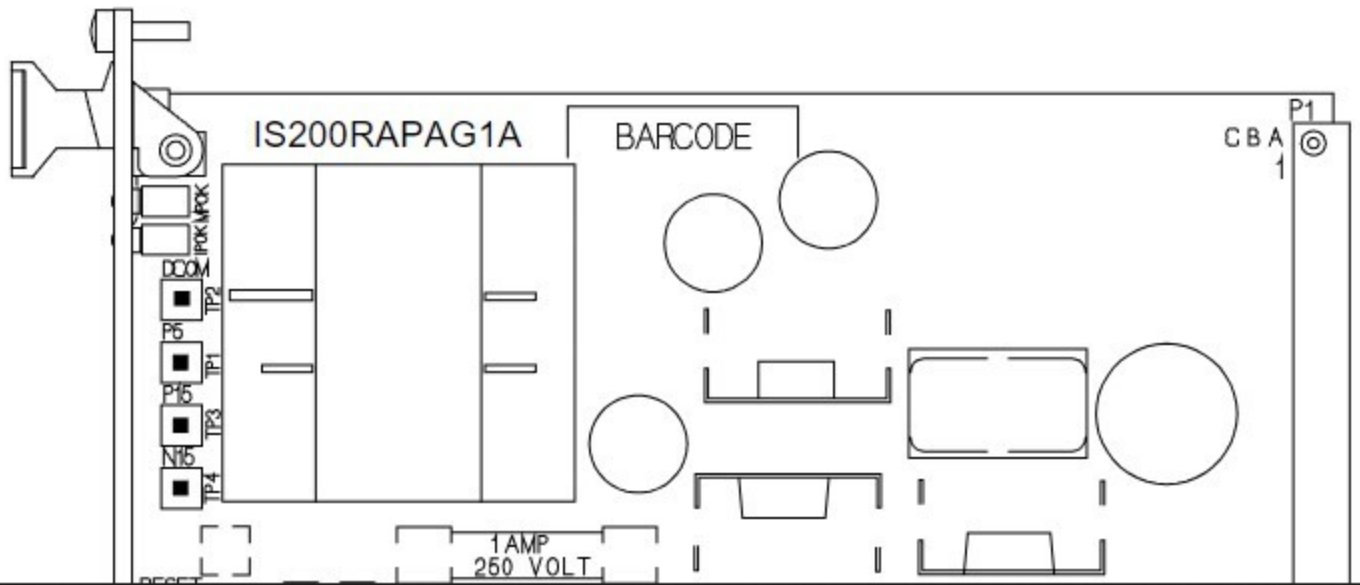
Table 3. RAPA Board LED Indicators

LED	Nomenclature	Color	Description

DS1	MPOK	Green	Monitors the PSEN logic supply line **ON** when PSEN is high such as during normal operation **OFF** when PSEN is low such as during a RESET.
DS2	IPOK	Green	Monitors the isolated 24 V supply **ON** when supply is OK during normal operation **OFF** when supply is not available. Check fuse integrity of FU1 if this LED is OFF.

Table 4. RAPA Board Testpoints

Testpoint	Nomenclature	Description
TP1	P5	Digital +5 V dc (positive)
TP2	DCOM	Digital Common
TP3	P15	Analog +15 V dc (positive)
TP4	N15	Analog –15 V dc (negative)



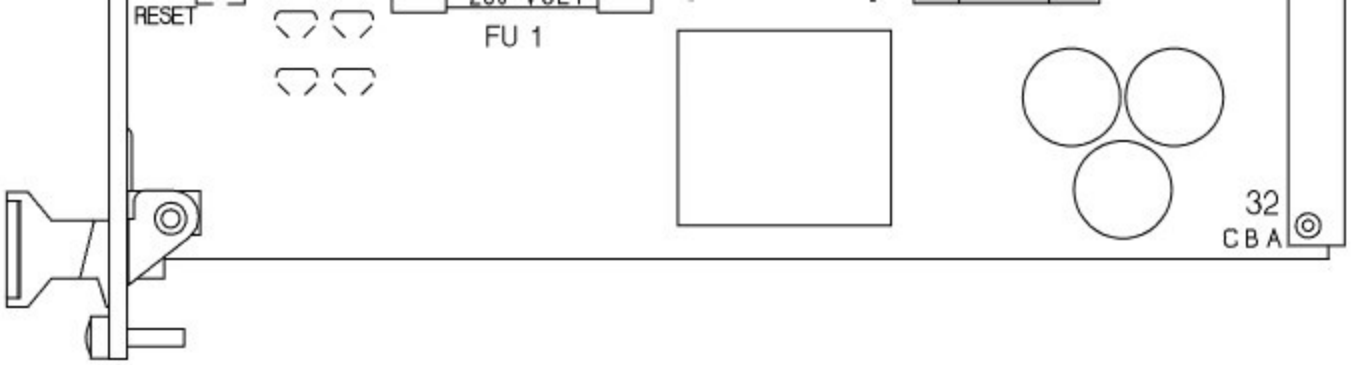


Figure 2. IS200RAPAG1A_ _ Board Layout Diagram

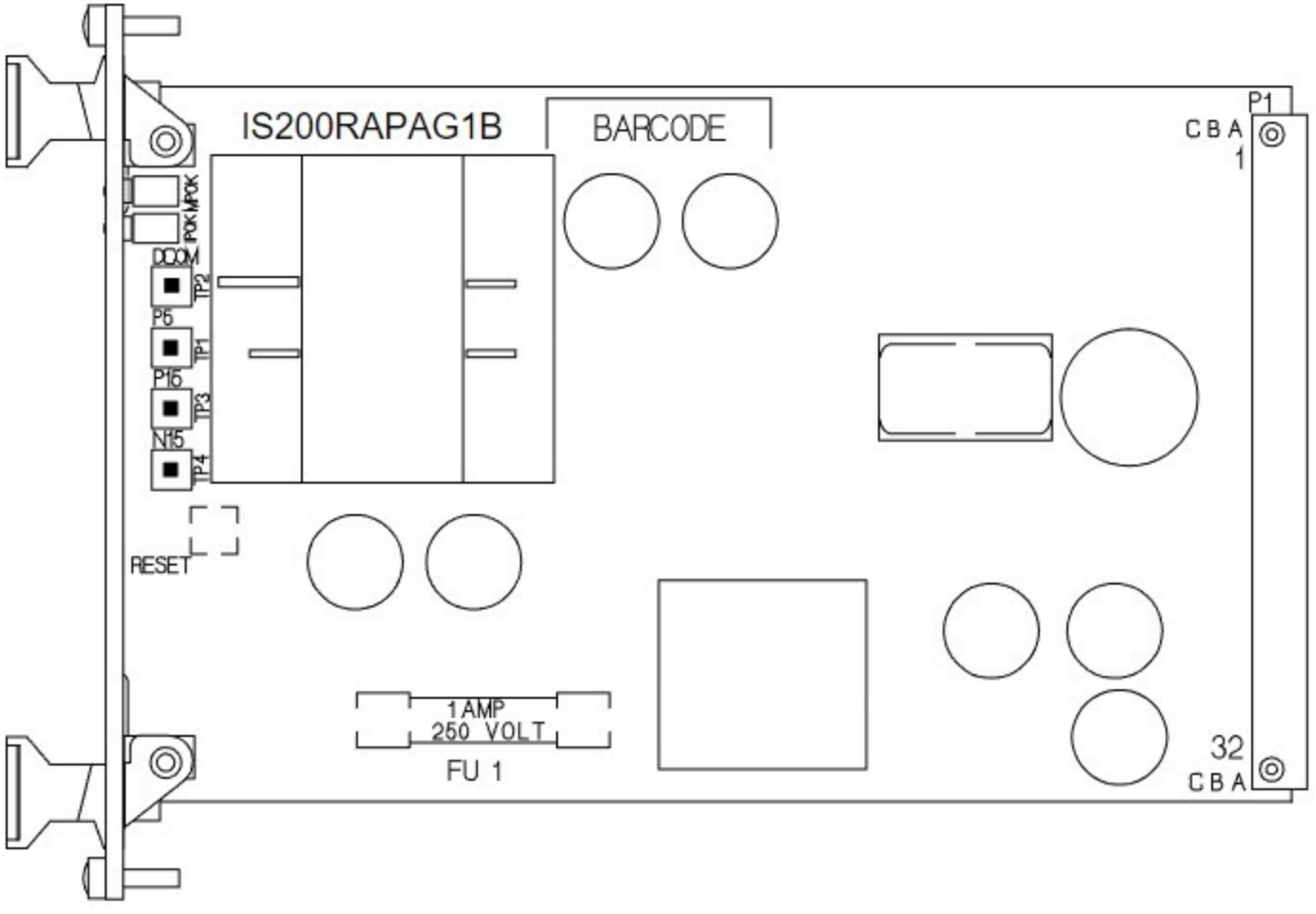


Figure 3. IS200RAPAG1B_ _ Board Layout Diagram

Table 5. RAPA Board P1 Connector, Row A

Pin No.	Nomenclature	Description
P1-A1	SQV48A	48 V Squarewave input
P1-A2	NC	Not Connected
P1-A3	SQV48B	48 V Squarewave input
P1-A4	NC	Not Connected
P1-A5	NC	Not Connected
P1-A6	NC	Not Connected
P1-A7	NC	Not Connected
P1-A8	NC	Not Connected
P1-A9	NC	Not Connected
P1-A10	NC	Not Connected
P1-A11	NC	Not Connected
P1-A12	NC	Not Connected
P1-A13	NC	Not Connected
P1-A14	NC	Not Connected
P1-A15	NC	Not Connected
P1-A16	ACOM	Analog Common
P1-A17	NC	Not Connected
P1-A18	NC	Not Connected
P1-A19	BRDID	Serial board identification line
P1-A20	DCOM	Digital common
P1-A21	NC	Not Connected
P1-A22	P5	Digital +5 V
P1-A23	DCOM	Digital common
P1-A24	NC	Not Connected
P1-A25	P5	Digital +5 V

P1-A26	DCOM	Digital common
P1-A27	NC	Not Connected
P1-A28	NC	Not Connected
P1-A29	NC	Not Connected
P1-A30	NC	Not Connected
P1-A31	IP12	Isolated +12 V
P1-A32	I12COM	Isolated 12 V common

Table 6. RAPA Board P1 Connector, Row B

Pin No.	Nomenclature	Description
P1-B1	SQV48A	48 V Squarewave input
P1-B2	NC	Not Connected
P1-B3	SQV48B	48 V Squarewave input
P1-B4	NC	Not Connected
P1-B5	NC	Not Connected
P1-B6	NC	Not Connected
P1-B7	NC	Not Connected
P1-B8	NC	Not Connected

P1-B9	NC	Not Connected
P1-B10	NC	Not Connected
P1-B11	NC	Not Connected
P1-B12	NC	Not Connected
P1-B13	NC	Not Connected
P1-B14	N15	Analog –15 V
P1-B15	P15	Analog +15 V
P1-B16	ACOM	Analog common
P1-B17	NC	Not Connected
P1-B18	N18	Bulk –18 V
P1-B19	P18	Bulk +18 V
P1-B20	DCOM	Digital common
P1-B21	PSEN	Power Supply Enable, Reset = Low
P1-B22	P5	Digital +5 V
P1-B23	DCOM	Digital common
P1-B24	NC	Not Connected
P1-B25	P5	Digital +5 V
P1-B26	DCOM	Digital common
P1-B27	NC	Not Connected
P1-B28	IP24	Isolated +24 V
P1-B29	I24COM	Isolated 24 V common
P1-B30	NC	Not Connected
P1-B31	IN12	Isolated –12 V
P1-B32	I12COM	Isolated 12 V common

Table 7. RAPA Board P1 Connector, Row C

Pin No.	Nomenclature	Definition
P1-C1	SQV48A	48 V Squarewave input
P1-C2	NC	Not Connected
P1-C3	SQV48B	48 V Squarewave input
P1-C4	NC	Not Connected
P1-C5	NC	Not Connected
P1-C6	NC	Not Connected
P1-C7	NC	Not Connected
P1-C8	NC	Not Connected
P1-C9	NC	Not Connected
P1-C10	NC	Not Connected
P1-C11	NC	Not Connected
P1-C12	NC	Not Connected
P1-C13	NC	Not Connected
P1-C14	N15	Analog –15 V
P1-C15	P15	Analog +15 V
P1-C16	ACOM	Analog common
P1-C17	NC	Not Connected
P1-C18	N18	Bulk –18 V
P1-C19	P18	Bulk +18 V
P1-C20	DCOM	Digital common
P1-C21	NC	Not Connected
P1-C22	P5	Digital +5 V
P1-C23	DCOM	Digital common
P1-C24	NC	Not Connected
P1-C25	P5	Digital +5 V

P1-C26	DCOM	Digital common
P1-C27	NC	Not Connected
P1-C28	IP24	Isolated +24 V
P1-C29	I24COM	Isolated 24 V common
P1-C30	NC	Not Connected
P1-C31	NC	Not Connected
P1-C32	NC	Not Connected

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.

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.

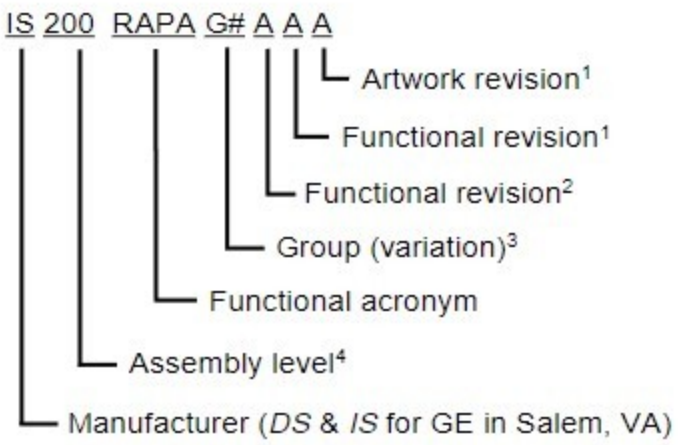
Placing the Order

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

Board Identification

A printed wiring board is identified by an alpha-numeric **part (catalog) number** located near its edge. Figure 4 explains the structure of the part number.

The board's functional acronym, shown in Figure 4, normally is based on the **board description**, or name. For example, the IS200RAPA board is described as the Rack Power Supply board.



[1]Backward compatible
[2]Not backward compatible
[3]*G* = normal coating; *H* = conformal coating
[4]*200* indicates a base-level board; *215* indicates a higher-level assembly or added components (such as PROM)

Figure 4. Board Part Number Conventions

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.

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