GE Industrial Systems

High Frequency Power Supply Board IS200HFPRG_A_ _

Safety Symbol Legend

Warning

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

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.

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.

Section **Page**

Functional Description

The IS200HFPR High Frequency Power Supply Board (HFPR) is used in Innovation Series™ Medium Voltage - GP, Type H drives. It operates from a 24 V ac 50/60 Hz square wave input supplied from a constant voltage control power transformer. Isolated input connections are made at TB1-1 (AC1), TB1-2 (ACCOM), and TB1-3 (AC2) as shown in Figure 1. The HFPR board full-wave rectifies the input voltage and outputs voltages as shown in Table 1. All input and output voltages are fuse protected (see Table 1).

A bulk capacitor bank is provided on the board for power loss ride-through. The ride-through time is load-dependent, and can be extended by adding two additional external capacitors.

Two LEDs, *PSOK1* and *PSOK2*, indicate that power supply outputs are normal.

Innovation Series is a trademark of General Electric Company, USA.

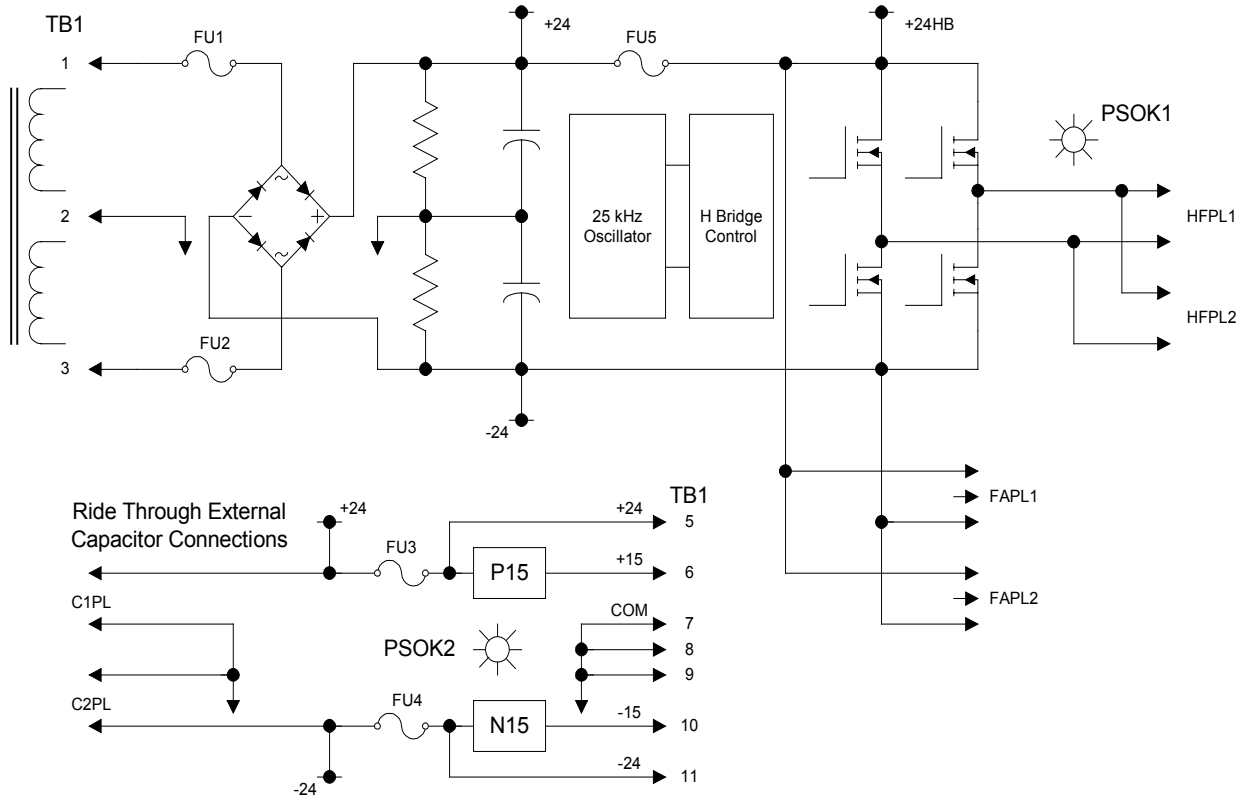


Figure 1. HFPR Board Block Diagram

Table 1. HFPR Board Input and Output Voltages

Voltage	Type	Description	Fuses (Part Number)
24 V ac	Input	50/60 kHz square wave	FU1 & FU2; 32 V, 8 A (323A2396P56)
48 V ac (peak)	Output	Unregulated 25 kHz square wave	FU5; 250 V, 2.5 A (323A2396P51)
48 V dc	Output	Unregulated fan voltage	FU5; 250 V, 2.5 A
±24 V dc	Output	Unregulated bulk supply output	FU3 & FU4; 250 V, 2.5 A (323A2396P51)
±15 V dc (±3%)	Output	Regulated supply output	FU3 & FU4; 250 V, 2.5 A

Application Data

The HFPR board includes one terminal board, six plug connectors, five fuses, and two LED indicators. There are no testpoints or adjustable hardware devices on the board. Refer to Figure 2 for component locations. See Table 1 for fuses and the following tables for connector pin descriptions:

Table	Connectors	Description
2	1TB	Power Connections
3	HFPL1 and HFPL2	48 V ac Power Supplies
4	FAPL1 and FAPL2	48 V dc Fan Power Supplies
5	C1PL and C2PL	External Capacitor Connectors

LED Indicators

Two LED indicators monitor power supply outputs. PSOK1 (DS1) monitors the 48 V ac output and PSOK2 (DS2) monitors the ±15 V dc output.

- If PSOK1 LED is off, verify that fuse FU5 is not open.
- If PSOK2 LED is off, verify that fuses FU3 and/or FU4 are not open.
- If both LEDs are off, verify that the input power is present at TB1, and that fuses FU1 and/or FU2 are not open.

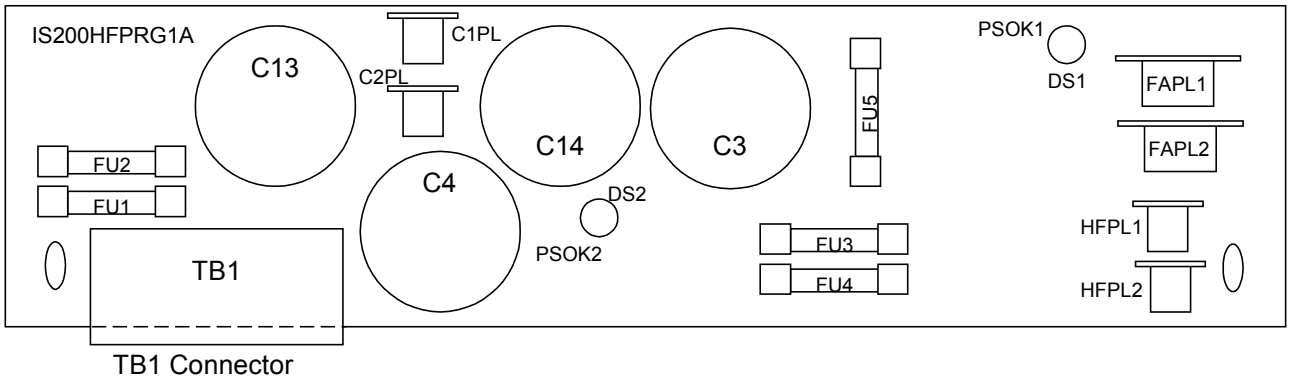


Figure 2. HFPR Board Layout Diagram

Table 2. TB1 Power Connections

Pin	Name	Description
1	AC1	Ac Input 1
2	ACCOM	Ac Input Common
3	AC2	Ac Input 2
4	NC	Not Connected
5	P24	+24 V dc Output
6	P15	+15 V dc Output
7	COM	Dc Output Common
8	COM	Dc Output Common
9	COM	Dc Output Common
10	N15	–15 V dc Output
11	N24	–24 V dc Output
12	NC	Not Connected

Table 3. HFPL1 and HFPL2 48 V ac Power Connections

Pin	Name	Description
1	HFVAC1	48 V ac Supply
2	HFVAC2	48 V ac Supply

Table 4. FAPL1 and FAPL2 48 V dc Fan Power Connections

Pin	Name	Description
1	P24	Fan +48 V dc Supply
2	NC	Not Connected
3	N24	Fan –48 V dc Supply

Table 5. C1PL and C2PL External Ride-Through Capacitor Connections

Pin	Description
C1PL-1	External Ride Through C1 + Connection
C1PL-2	External Ride Through C1 – Connection
C2PL-1	External Ride Through C2 + Connection
C2PL-2	External Ride Through C2 – Connection

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.

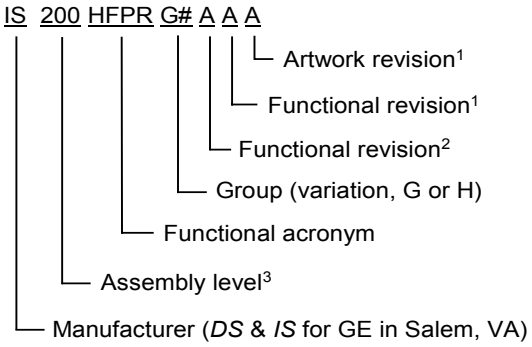
Board Identification

A printed wiring board is identified by an alphanumeric **part (catalog) number** located near its edge. Figure 3 explains the structure of the part number.

The board's functional acronym, shown in Figure 3, is normally based on the **board description**, or name. For example, the HFPR board is described as the High Frequency Power Supply Board.

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.



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

Figure 3. Board Part Number Conventions

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 the following** when ordering any warranty or renewal parts:

- 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

To prevent electric shock, turn off power to the drive, 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 the HFPR board

1. Make sure that the drive in which the board resides has been de-energized. (Refer to the appropriate *User's Manual* for complete de-energizing procedures, *GEH-6131* for air-cooled drives or *GEH-6133* for liquid-cooled drives.)
2. Open the drive control cabinet door, and using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is off.
3. Locate the HFPR board (behind the top of the board rack) and carefully disconnect all cables from the board as follows:
   - Verify cables are labeled with the correct connector name (as marked on the board) to simplify reconnection.
   - Grasp each side of the TB1 connector that joins with the board's TB1 and gently pull the TB1 connector loose (individual wires do not have to be removed from the TB1 connector).
   - For cables with pull tabs, carefully pull the tab.
4. Remove the two screws that hold the HFPR board in the plastic board carrier, and remove the board.
5. Orient the new HFPR board in the same position as the one removed and install it into the board carrier with the two screws removed in step 4.
6. Reconnect all cables to HFPR board as labeled and ensure that cables are properly seated at both ends.
7. Verify that all five fuses are present and good, then close the drive cabinet door.

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