



Digital Interface Board IS200BPIRG_A_ _

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.

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Caution

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

Section	Page
Functional Description	1
Application Data.....	2
Renewal/Warranty Replacement.....	5
How to Order a Board	5
Handling Precautions.....	7
Replacement Procedures	7

Note Indicates an essential or important procedure or statement.

Functional Description

The IS200BPIR Digital Interface Board (BPIR) is used in Innovation Series™ Medium Voltage - GP, Type H drives. It provides a 15 V to 5 V digital bus interface between the Medium Voltage Ac Drive Fiber-Optic Hub Board (FOHB) and the IS200BICR Bridge Interface Board (BICR). Bridge cell temperature and the phase reference analog signals pass through the BPIR board.

Basic bridge cell hardware control, protection, and diagnostics are provided on the FOHB board. Connection between the FOHB board and the BPIR board is made through a 50-pin ribbon connector, PLO. The BPIR and BICR boards are mounted in an Innovation Series board rack and connect to the IS200CABP Cable Assembly Backplane Board (CABP) through their P1 connectors. The 15 V logic signals from the FOHB board are level shifted to 5 V on the BPIR board and interfaced to the BICR board through the CABP board.

A serial 1024-bit memory device is provided on the BPIR board. This memory is programmed with board identification and revision information and accessed through a single data line (BRDID) on the P1 connector.

Board power requirements are shown in Table 1. See Figure 1 for a block diagram of the BPIR board.

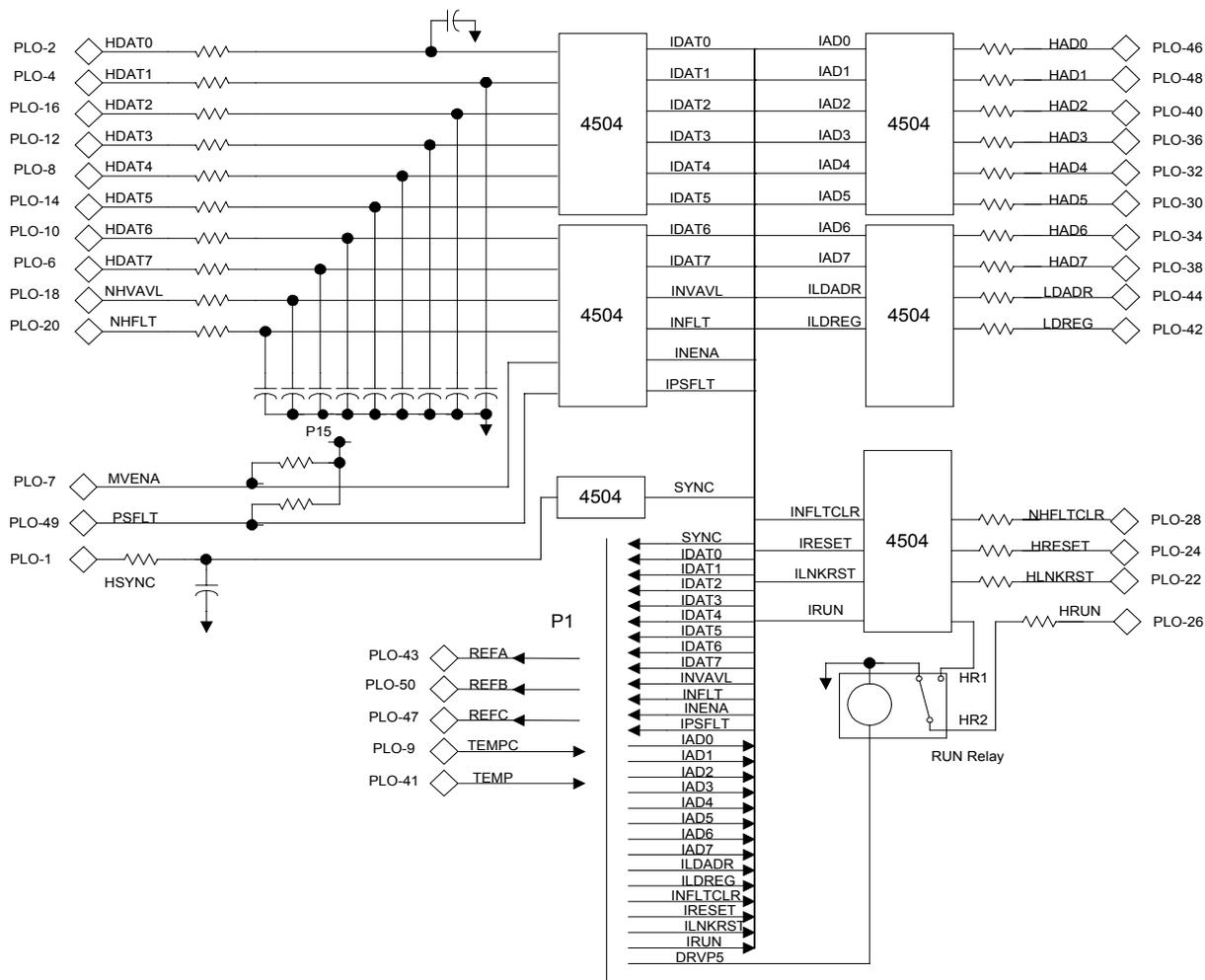


Figure 1. BPIR Board Block Diagram

Table 1. BPIR Board Power Requirements

Voltage	Current	Source
+5 V dc	10 mA	P1
+15 V dc	20 mA	PLO
Isolated 24 V dc	20 mA	P1

Application Data

The BPIR board includes one ribbon cable receptacle (PLO), one backplane connector (P1), and four testpoints. There are no fuses, LED indicators, or adjustable hardware devices on the board. Refer to Figure 2 for component locations. See Table 2 for PLO pin descriptions and Table 3 for testpoint descriptions.

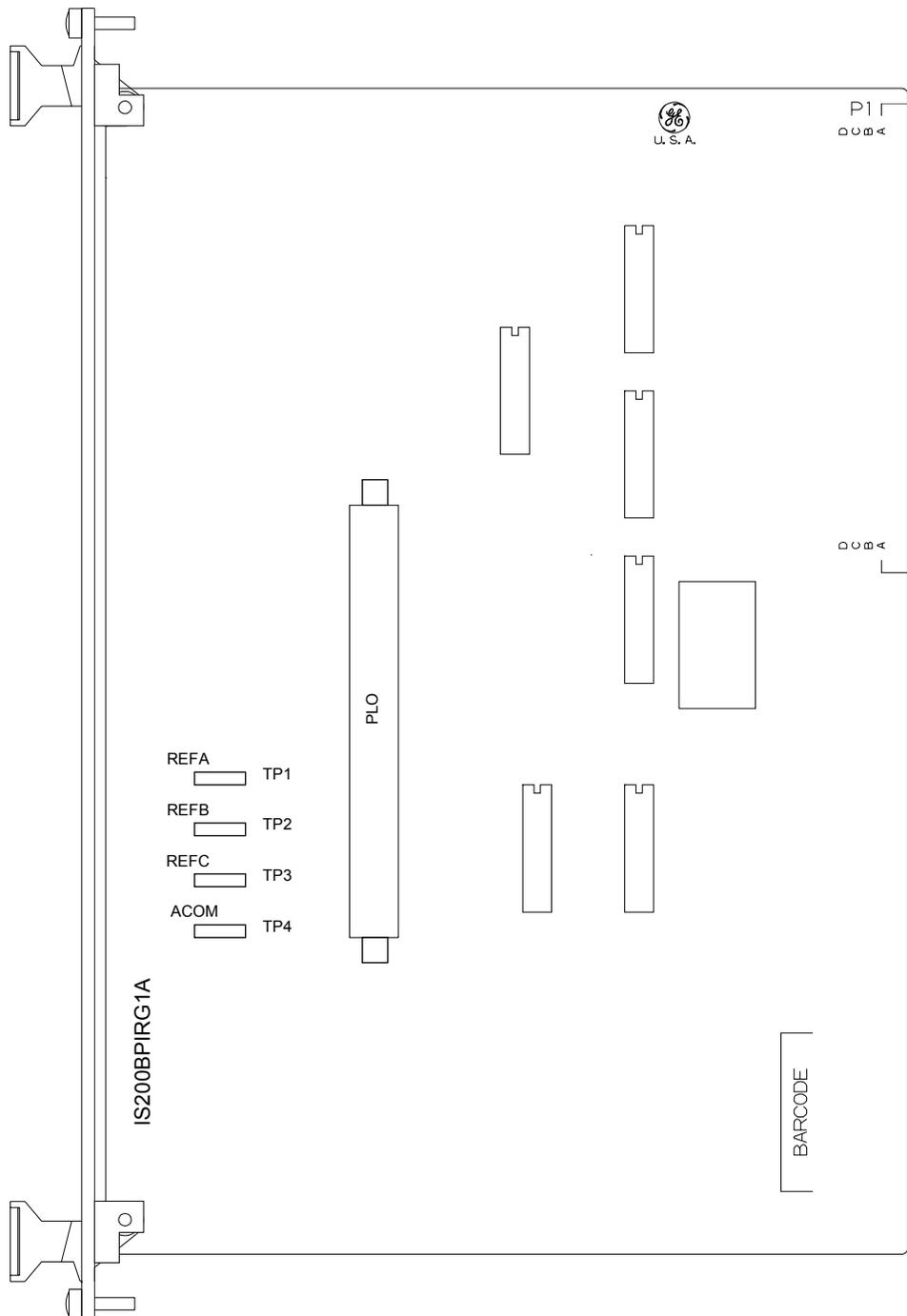


Figure 2. BPIR Board Layout Diagram

Note Backplane connector P1 requires a custom extender board to access individual pin signals. Checking of these signals is not a part of standard in-service testing/troubleshooting procedures and these signals are not described in this publication.

Table 2. PLO (FOHB) 50-Pin Ribbon Connector Pin Descriptions

Pin	Name	Description
1	HSYNC	Modulator Sync Clock from FOHB
2	HDATA0	15 V data 0 from FOHB
3	NC	Not Connected
4	HDATA7	15 V Data 7 from FOHB
5	NC	Not Connected
6	HDATA4	15 V Data 4 from FOHB
7	MVENA	Low = RUN request active
8	HDATA4	15 V Data 4 from FOHB
9	TEMPC	Cell Temperature Signal Common
10	HDATA6	15 V Data 3 from FOHB
11	DCOM	Digital Common
12	HDATA3	15 V Data 3 from FOHB
13	DCOM	Digital Common
14	HDATA5	15 V Data 2 from FOHB
15	DCOM	Digital Common
16	HDATA2	Low = Cell low line voltage
17	DCOM	Digital Common
18	NHVAVL	Low = Cell low line voltage
19	DCOM	Digital Common
20	HHFT	Low = Cell fault
21	DCOM	Digital Common
22	HLNKRST	Communication Reset Pules In Hi Pulse to Reset
23	DCOM	Digital Common
24	HRESET	Cell Reset Pulse In Hi Pulse to Clear
25	DCOM	Digital Common
26	NRUN	Hi = Run if No Faults
27	DCOM	Digital Common
28	NHFLTCLR	Fault Clear Pulse In Low Pulse to Clear
29	DCOM	Digital Common
30	HAD5	15 V Address 5 to FOHB
31	DCOM	Digital Common
32	HAD4	15 V Address 4 to FOHB
33	DCOM	Digital Common
34	HAD6	15 V Address 6 to FOHB
35	DCOM	Digital Common

Table 2. PLO (FOHB) 50-Pin Ribbon Connector Pin Descriptions — Continued

Pin	Name	Description
36	HAD3	15 V Address 3 to FOHB
37	DCOM	Digital Common
38	HAD7	15 V Address 7 to FOHB
39	NC	Not Connected
40	HAD2	15 V Address 2 to FOHB
41	TEMP	Cell Temperature Signal
42	LDREG	Low = Load address to FOHB
43	REFA	Phase A Analog Reference
44	LDADR	15 V Data 4 from FOHB
45	ACOM	Analog Common
46	HAD0	15 V Address 0 to FOHB
47	REFC	Phase C Analog Reference
48	HAD1	15 V Address 1 to FOHB
49	PSFLT	Hi = FOHB Power Supply Fault
50	REFB	Phase B Analog Reference

Table 3. BPIR Board Testpoints

Pin	Name	Description
TP1	REFA	Analog Phase A Reference Signal
TP2	REFB	Analog Phase B Reference Signal
TP3	REFC	Analog Phase C Reference Signal
TP4	ACOM	Analog Reference Common

Renewal/Warranty Replacement

How to Order a Board

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

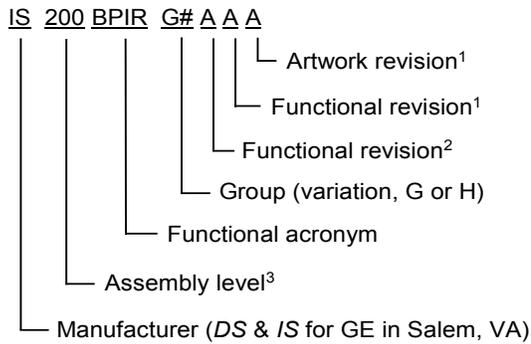
- How to accurately identify the part
- If the part is under warranty
- How to place the order

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 BPIR board is described as the Digital Interface board.



¹Backward compatible

²Not backward compatible

³200 indicates a base-level board; 215 indicates a higher-level assembly or added components (such as PROM)

Figure 3. 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 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 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 remove the BPIR 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's control cabinet door and, using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is off.
3. Remove the protective cover from the right side of the board rack as follows:
 - a. Loosen the four screws in the side of the cover. (It is not necessary to remove these screws because the cover is slotted for removal.)
 - b. Loosen the screws at the top and bottom of the cover. (The screws are captive in the cover front and should not be removed.)
 - c. Slide the protective cover forward and then to the right to remove it from the side screws.
4. Grasp each side of the PLO ribbon cable connector that mates with the board connector and gently pull the cable connector loose.
5. Carefully remove the board from the rack, as follows:
 - a. Loosen the screws at the top and bottom of the board faceplate, near the board ejector tabs. (The screws are captive in the faceplate and should not be removed.)
 - b. Unseat the board by raising the ejector tabs.
 - c. Using both hands, gently pull the board from the rack.

➤ **To install the new replacement BPIR board**

1. Slide the board into the **correct slot** in the rack.



Because boards are keyed for specific rack slots, inserting the BPIR into the wrong slot can damage the electronics.

Caution

2. Begin seating the board by firmly pressing the top and bottom of the board at the same time with your thumbs.
3. Finish seating the board in the slot by starting and then tightening the screws at the top and bottom of the board. **Tighten the screws evenly** to ensure that the board is seated squarely (2 – 4 in. lb. torque).
4. Reconnect the PLO ribbon cable to BPIR board as labeled and ensure that it is properly seated at both ends.
5. Reinstall the protective cover on the right side of the board rack as follows:
 - a. Place the protective cover over the four side screws, then slide it towards the rear of the rack (in the four slots).
 - b. Tighten the screws at the top and bottom of the cover front. (The screws are captive in the cover front.)
 - c. Tighten the four screws in the side of the cover.
6. Close the drive's control cabinet door.



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