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GE Industrial Systems

Control Assembly Backplane
IS200CABPG_A_ _

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 IS200CABP Control Assembly Backplane (CABP) board is a multi-layer printed wiring board that provides the interconnections for the printed wiring boards inserted into it and interfaces to external signals. The boards inserted will vary with the power level and application of the Innovation Series™ drive that the CABP board is part of. These boards are:

- IS200BAIA Bridge Interface Board (BAIA)
- IS215GBIA Auxiliary Genius Interface Module (GBIA), IS215PBIA Auxiliary Profibus Interface Module (PBIA), or IS200ACL_ Application Control Layer Board (ACL_)
- IS200DSPX Digital Signal Process Control Board (DSPX) (Optional)

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- IS200RAPA Rack Power Supply Board (RAPA)
- IS200BIC_ Bridge Interface Board (BIC_)
- IS200BPI_ Drive Bridge Personality Interface Board (BPI_) or IS200FOSA Bridge Interface Board (FOSA)

Connectors are also provided for various external interfaces such as user control inputs/outputs (I/O), four front panel meters, diagnostic/configuration tools, a front panel keypad, four ISBus™ ports, and power supply inputs. The CABP board is mounted to the Innovation Series board rack that provides the mounting points for the individual boards. See Figure 1 for a CABP board block diagram.

The CABP board is powered from a single IS200HFPA High Frequency Ac/Fan Power Supply Board (HFPA). Power connections are via a twisted/shielded pair cable for the 48 V ac power and a separate isolated twisted pair cable for the 17 V ac power. Isolation for these cables is 1000 V dc.

The CABP board connects the isolated power returns to the control cabinet common (CCOM) either through an impedance (resistor/capacitor) or directly. It also connects DCOM to CCOM. Provisions are available to tie cable shields (when applicable) to the chassis directly.

ACL_ Board, GBIA Module, or PBIA Module Determination

The CABP board is designed to accommodate insertion of either an ACL_ board or a GBIA/PBIA module into board slot three. The ACL_ board and GBIA/PBIA modules share the same pin configuration for the CABP board connector. Appropriate memory maps and protocols prevent any signal contentions on the data bus and control lines. The BAIA board monitors two sensing lines to determine which device is present in this board slot. The drive's software determines the operation of the DSPX board and the

There are two application-specific stab-on connectors each for CCOM and for Chassis Ground (GND). GND is tied to the board rack chassis through the mounting screws. CCOM and GND are tied together through a capacitor. The CABP board CCOM is connected to the control cabinet CCOM via the stab-on connectors.

All fault string logic operations are performed on the BIC_ board.

Hardware Features

The terminal boards associated with the CABP board for user I/O are located near the application cable entry into the cabinet. Connection to these terminal boards is via two multi-conductor cables segregated into low voltage (less than 50 volts) and high voltage (greater than 50 volts) applications.

The CABP board is designed so that all non-board connectors are incapable of being inserted incorrectly. This is done by either using different connector types for each function, by keying each connector differently, or by spacing like connectors with sufficient separation that they cannot be inserted incorrectly.

Board connectors are either individually keyed, use different connectors (96 pin versus 128 pin) for similar modules, or maintain common pin assignments so that modules can be interchanged without damage. Normal board locations are as follows:

- Slot One BAIA board
- Slot Two DSPX board
- Slot Three ACL_ board or GBIA/PBIA mod.
- Slot Four BIC_ board
- Slot Five BPI_ or FOSA board

device that is inserted into this board slot (ACL_ board, GBIA module, or PBIA module).

- When an ACL_ board is present in board slot three, some functionality of the DSPX board is transferred to the ACL_ board by the BAIA board.
- When a GBIA or PBIA module is present in board slot three, pull-up resistors on the BAIA board set the logic levels on the sensing lines.

CABP Board Connectors

The CABP board includes stab-on connectors, plug connectors for external signal interfacing, and board (backplane) connectors.

Stab-on Connectors: E1 – E4 are the stab-on connectors for GND and CCOM.

- **E1, E2** GND Connectors
- **E3, E4** CCOM Connectors

Backplane Connectors: J13 – J21 are the board backplane connectors that the individual boards plug into. Connections are as follows (respectively):

- **J13, J17** BAIA board P1, P2
- **J14** RAPA board
- **J18** DSPX board
- **J19** ACL_ board or GBIA/PBIA mod.
- **J15, J20** BIC_ board P1, P2
- **J16, J21** BPI_ or FOSA board's P1, P2

External Interface Connectors: J1 – J12 are the external interface connectors for the CABP board.

J1: Main Contactor Pilot Relay and Feedback Sense Input and the Charge Contactor Pilot Relay

Warranty Replacement

How to Order a Board

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

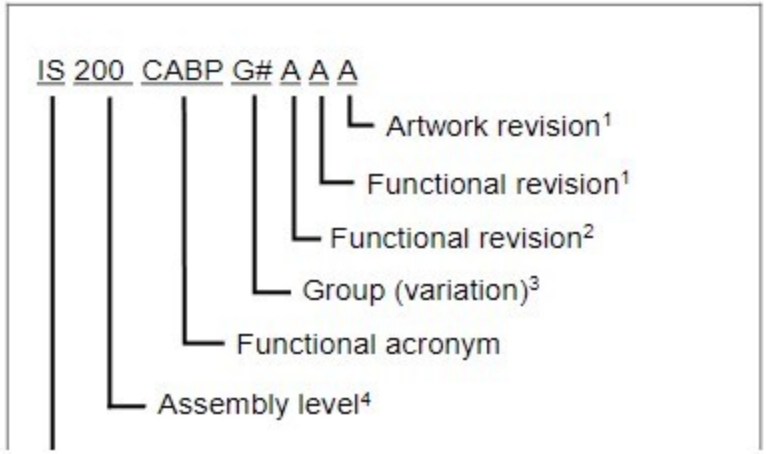
- How to accurately identify the part
- If the part is under warranty
- How to place the order

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, normally is based on the **board description**, or name. For example, the CABP board is described as the Control Assembly Backplane 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 also 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 en-

└ Manufacturer (*DS* & *IS* for GE in Salem, VA)

[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 3. Board Part Number Conventions

boards based on availability and design enhancements. However, GE Industrial Systems ensures backward compatibility of replacement boards.

How to Replace the Board

Handling Precautions

CAUTION

To prevent component damage caused by static electricity, treat all boards with static sensitive handling techniques.

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

3. Disconnect any connections from the individual boards mounted in the board rack. (Note/mark the locations of all connections to simplify reassembly.)

4. Loosen the screws at the top and bottom of each board, near the board ejector tabs. (The screws are captive in the board front and should not be removed.)

5. Unseat each board by raising its ejector tabs.

6. Using both hands, gently pull each board from its slot in the board rack.

when handling boards:

- Store boards in antistatic bags or boxes.
- Use a grounding strap when handling boards or board components.

Replacement Procedures

WARNING

To prevent electric shock, turn off power to the board, and 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.

Replacing a CABP board requires removing the CABP board, and the Innovation Series board rack it is mounted to, from the control cabinet. The following paragraphs outline the complete procedure. Follow them in the sequence presented.

Remove All Boards From The Board Rack

1. Make sure that the drive where the CABP board to be replaced is located has been deenergized.

2. Open the drive's cabinet door, and using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is off.

   - Note the slot that the board was in to simplify reassembly.
   - Set each board aside in a safe location until reassembly.

Remove/Reinstall The Board Rack and Install New CABP Board

1. Disconnect all external interface connectors from J1 – J12 connectors from the CABP board. (Note/mark the locations of all connections to simplify reassembly.)

2. Disconnect the wiring from the cooling fan located at the bottom of the board rack (note orientation of wires to simplify reconnection).

3. Loosen and remove the four screws that secure the board rack with the CABP board to the control cabinet.

   - Support this assembly when removing the final screws to avoid having it fall.

4. Place the board rack face down on a clean flat surface to access the screws securing the CABP board to it.

5. Remove the 26 screws securing the CABP board to the board rack and remove the CABP board.

6. Orient the new (replacement) CABP board into the same position as the one removed and attach it to the board rack with the 26 screws removed in step 5 and fully tighten all screws

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