GE Industrial Systems

IGBT Passive Interface Board
IS200IGEHG_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.

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 IS200IGEHG_A_ _ IGBT Passive Interface Board (IGEH) provides the passive output stage interface components required at the IGBT gate terminals for Innovation Series™ drives. The IGEH board is used with dual IGBT modules (manufactured by Eupec). The IGEH board includes axial gating resistors that are sized to act as fuse elements. It performs a normalizing function relative to the IS200PICH Phase Interface and Control Board (PICH).

The IGEH board includes transient voltage suppression diodes to limit maximum gate voltage. A diode clamp (+15 V) is also provided. The IGEH board also includes a high voltage diode required by the desaturation detection circuit. Separate gate ON and gate OFF resistors are supplied per the IGBT manufacturer's recommendations. A bleed resistor is provided in parallel with the IGBT gate.

The board includes two yellow LEDs (DS1 and DS2) that light when the IGBTs are gated ON. Connections to the PICH board gate driver are via two shielded cables (one per IGBT).

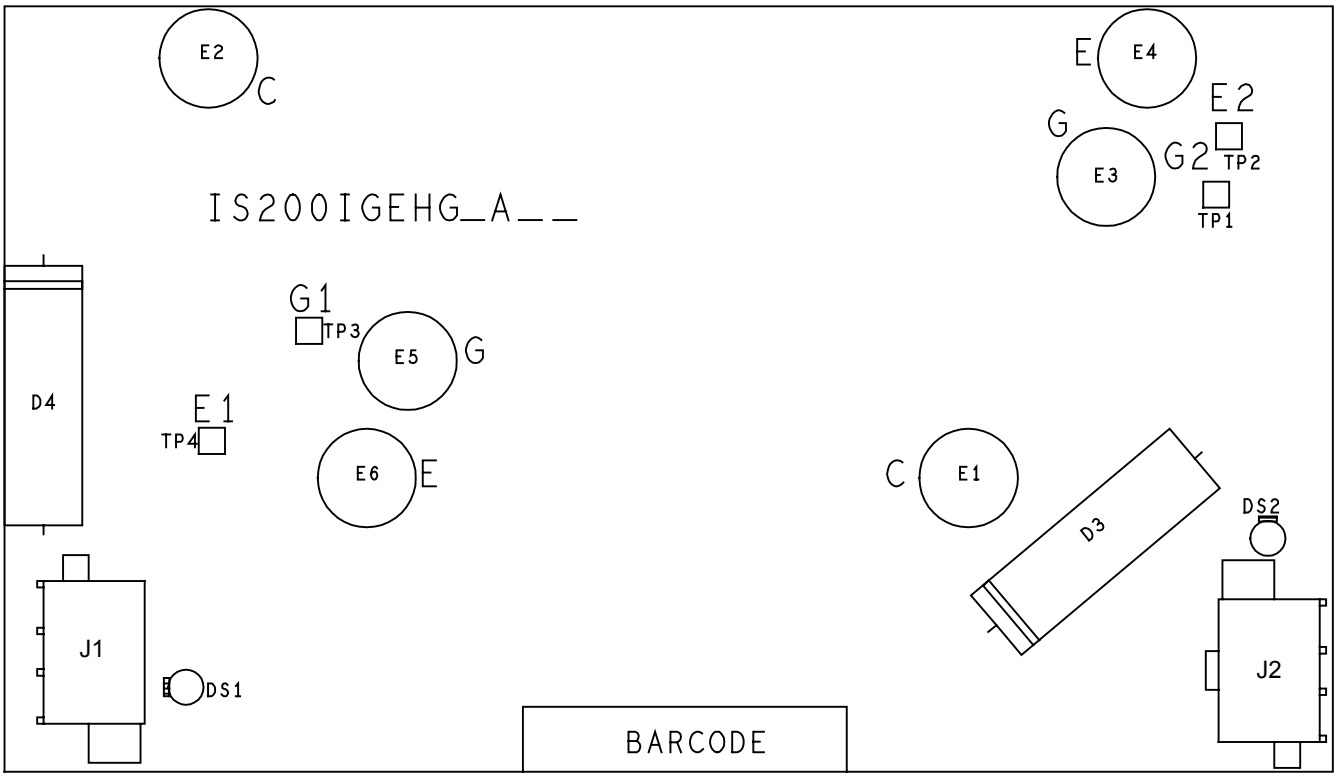


Figure 1. IGEH Board Layout Diagram

Warning

Bridge cabinet doors should not be opened when drive power is ON. Test-points TP1 – TP4 are for factory use only and not intended for user access.

Application Data

The IGEH board has no fuses, user adjustable hardware, or user testpoints. The IGEH board has two plug connectors and six eyelet connections. It also has two LED indicators. See Figure 1 for an IGEH board layout diagram, which shows the locations of these components and the following tables for descriptions:

Table	Description
1	LED1 and LED2 indicators
2	J1 and J2 plug connectors
3	E1 – E6 IGBT eyelet connections

Note

Testpoints TP1 – TP4 are for factory use only and not defined in this publication.

Table 1. IGEH Board LED Indicator Descriptions

Indicator	Nomenclature	Color	Description
LED1	DS1	Yellow	Lights when IGBT1 is Gated ON
LED2	DS2	Yellow	Lights when IGBT2 is Gated ON

Table 2. IGEH/IGPH Board Connector J1 and J2 Pin Signal Descriptions

Pin No.	Nomenclature*	Description
1	GON_	Gate driver ON command
2	ICOM_	Emitter connection
3	GOFF_	Gate driver OFF command
4	CV_	Collector voltage feedback
5	I_P15	Positive 15 V clamp
6	ISHCOM_	Transformer/cable shield connection

* The underscore character (_) signifies the J connector number (1 or 2).

Table 3. IGEH Board Eyelet Connections E1 – E6 Signal Descriptions

Eyelet	Nomenclature	Description
E1	C2	IGBT2 Collector
E2	C1	IGBT1 Collector
E3	G2	IGBT2 Gate
E4	E2	IGBT2 Emitter
E5	G1	IGBT1 Gate
E6	E1	IGBT1 Emitter

Renewal/Warranty Replacement

How to Order a Board

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

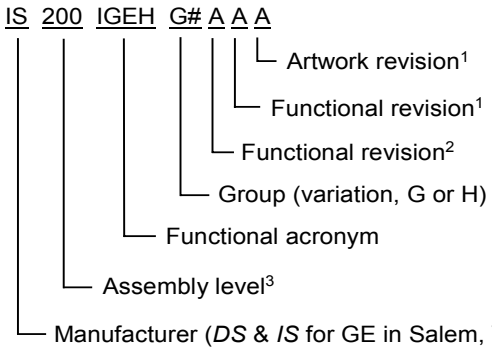
- How to accurately identify the part
- If the part is under warranty
- How to place the order

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, shown in Figure 2, normally is based on the **board description**, or name. For example, the IGEH board is described as the IGBT Passive Interface Board.



[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 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
(Replace + with the international access code.)

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.

How to Replace the Board

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 above *Caution* criteria).

Replacement Procedures

Warning

Bridge cabinet doors should not be opened when drive power is ON.

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.

Replace the IGEH board as follows:

1. Make sure that the drive in which the board resides has been de-energized and follow all local safety practices of Lock-Out/Tag-Out.
2. Open the bridge cabinet doors and verify that the neon lamps on the IS200CVMB Capacitor Voltage Monitoring Board have gone out, indicating that voltage is below 50 V dc.
3. Install safety grounds (see Figure 3) and, using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is OFF and has dissipated.
4. Carefully disconnect all cables from the IGEH board to be replaced as follows:
   - Verify cables are labeled with the correct connector name (as marked on the board) to simplify reconnection.
   - For cables with pull-tabs, carefully pull the tab.

Caution

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

5. Remove the Phillips-head screws, with lockwashers and washers, at the eyelet connections that secure the IGEH board to the IGBT module. See Figure 1 for IGEH board's six eyelet connection/screw locations (E1 – E6).
6. Remove the old IGEH board from the IGBT module.
7. Orient the new IGEH board in the same position as the one removed and position it onto the IGBTs.
8. Secure with it to the IGBTs with the six screws, lockwashers, and washers removed in step 4 (fully tighten all screws).
9. Reconnect all cables to the new IGEH board as labeled and ensure that all cables are properly seated at both ends.
10. Remove the safety grounds that were installed in step 3, then close the bridge cabinet doors.

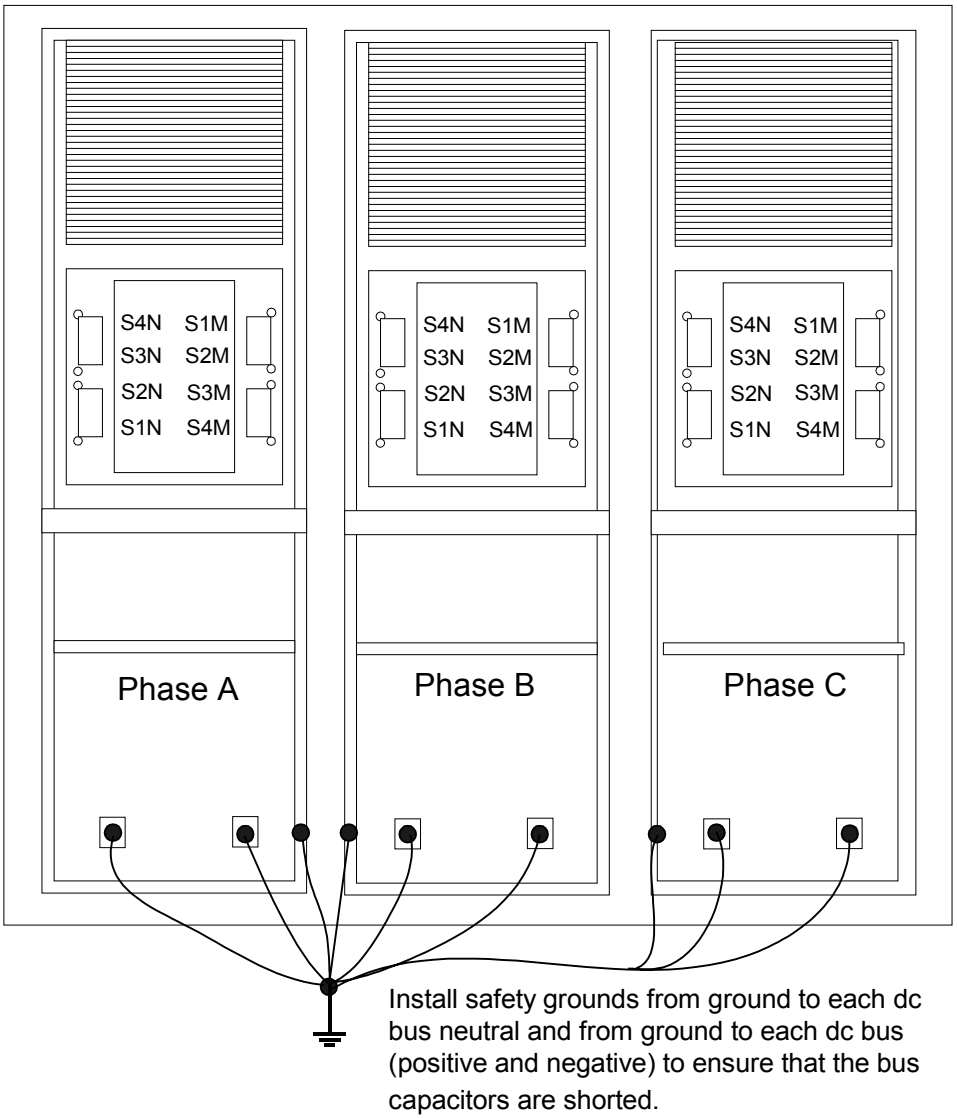


Figure 3. Dc Bus Safety Grounding

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