GEI-100464A

GE Energy

Exciter dc Feedback Board IS200EDCFG1A

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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 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.

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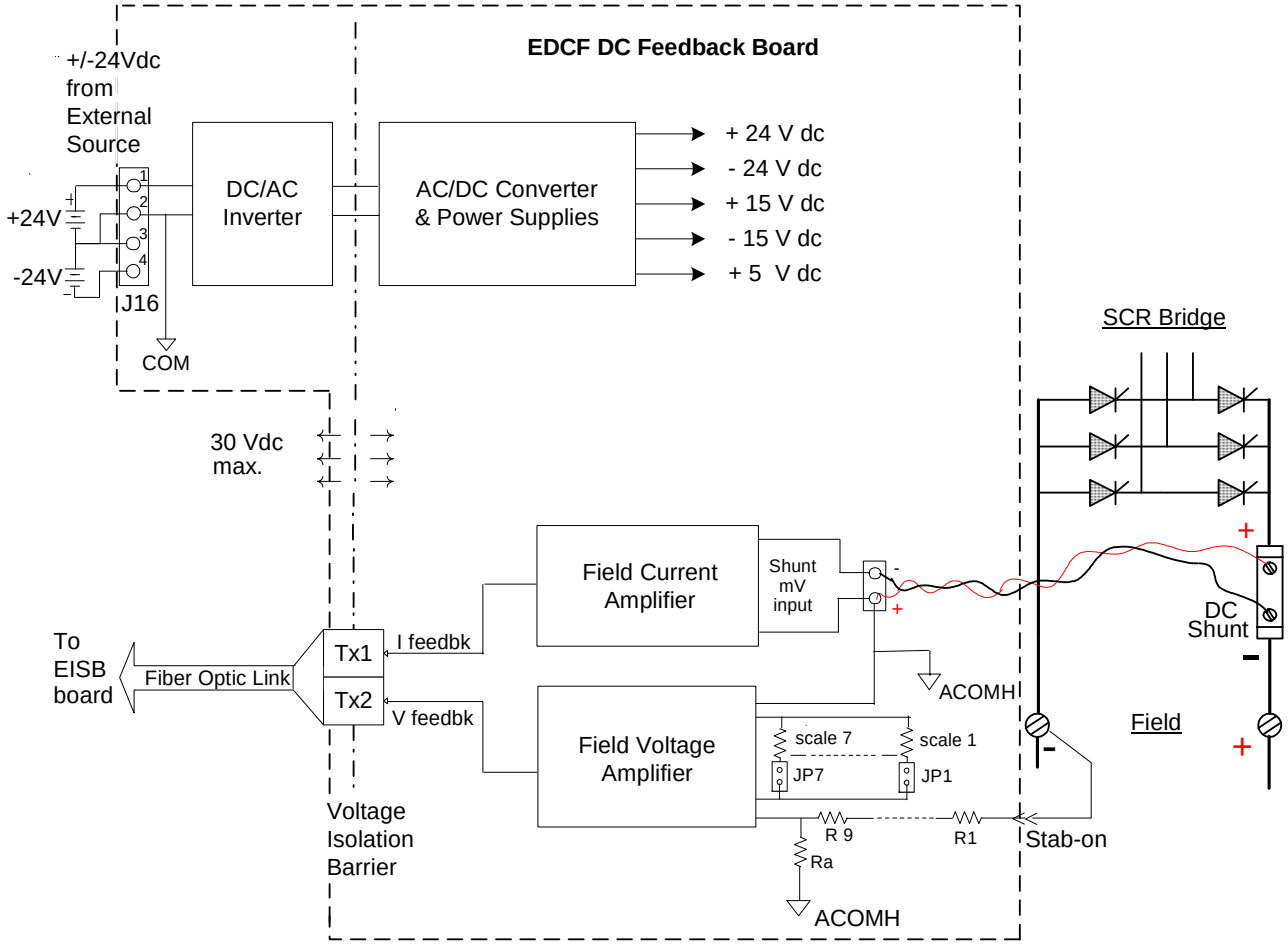
Functional Description

The IS200EDCFG1A Exciter Dc Feedback Board (EDCF) is used in the EX2100 Excitation Control. It measures field current and field voltage at the SCR bridge, and interfaces to the EISB board in the control panel over a high-speed fiber-optic link. The fiber-optics provides voltage isolation between the two boards, and high noise immunity. Two fibers are used, one for each signal. There are two types of fibers which can be used for different distances, as follows:

The minimum bending radius of these cables is 1.5 inch.

- Plastic type fiber for distances up to 10 m
- Hard clad silica type for distances up to 90 m

Refer to the following figure for a circuit block diagram.



EDCF Block Diagram

Field Voltage Feedback

The field voltage feedback circuit provides seven selector settings to scale down the bridge voltage, depending on the type of bridge application.

The field voltage is measured across the negative terminal of the bridge and the positive terminal of the current shunt. After scaling the voltage with the jumpered resistors, the signals are input into a differential amplifier, which controls the voltage controlled oscillator (VCO).

Field Current Feedback

The field current is measured across a dc shunt at the SCR bridge. This generates a low level signal, with a maximum value of 500 mV, which is input to a differential amplifier. The output voltage from the amplifier ranges from –5 V to +5 V into a voltage controlled oscillator.

Power Supply

Power is supplied to EDCF from an external ±24 V dc source. From this, three voltage regulators produce +15 V dc, -15 V dc, and + 5 V dc. The PSOK green LED is driven by the ±15 V dc output voltages.

Application Data

The EDCF has one green LED indicating the power supply is operating (PSOK). Layout of the EDCF board is shown in the following figure *Board Layout.*

Connectors

Connector J16 brings ±24 V dc into the board; connector P1 brings in the voltage across the field current shunt resistance. The field voltage input is a stab-on connection (E1). The current and voltage feedbacks to the control are through fiber-optic connectors.

J16 Connector Descriptions

Pin	Description
1	External power, +24 V dc input to DC-DC Converter
2	External power, 24 V dc common input to DC-DC Converter

P1 Connector Pin Descriptions on EDCF (Field Current Input)

Pin	Description
1	Field Current and Voltage Shunt Feedback Positive connection (Entry side of the DC Shunt is also the SCR Bridge Positive)
2	Field Current Shunt Feedback Return connection (Field positive)

E1 Connector Description

Pin	Description
E1	Field Voltage Feedback negative connection (SCR Bridge negative)

Fiber-optic Connector Descriptions

Connector	Description
CF OF	Field Current Feedback Pulses, HFBR-1528 fiber-optic driver/connector
VF OF	Field Voltage Feedback Pulses, HFBR-1528 fiber-optic driver/connector

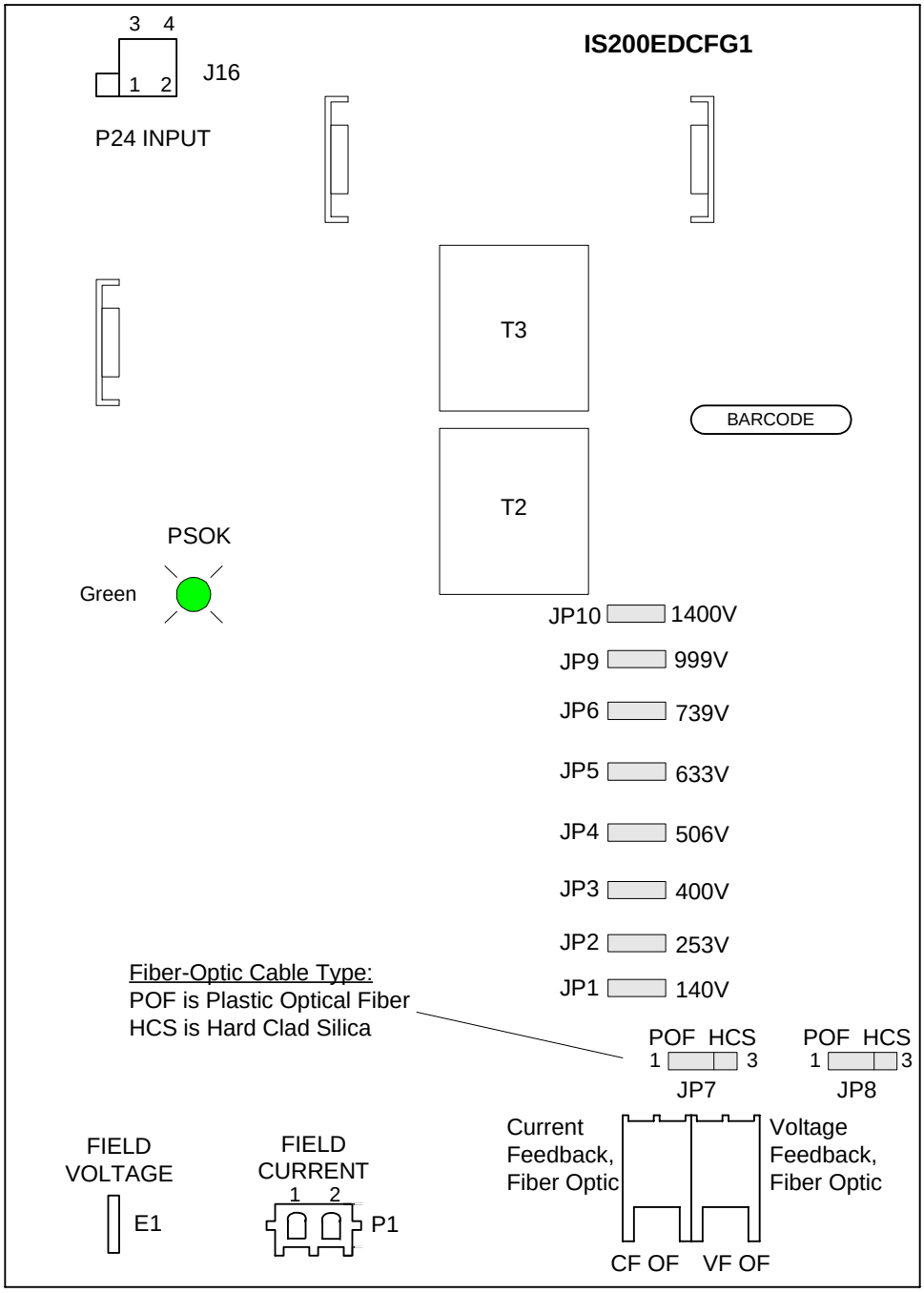
Jumpers

Jumpers JP1 – 6 and JP9 – 10 are set based on the SCR bridge PPT voltage for the application, and JP7 and 8 adjust the input power for the two types of fiber-optic cable which can be used.

Jumper Descriptions

Jumper	Name	Description
JP1	140 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 140 V rms
JP2	253 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 253 V rms
JP3	400 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 400 V rms
JP4	506 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 506 V rms
JP5	633 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 633 V rms
JP6	739 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 739 V rms
JP7	POF HCS	Select type of fiber-optic cable for Current Feedback Output: POF - Plastic Optic Fiber, for 10 m distance HSC - Hard Clad Silica fiber, for 90 m distance
JP8	POF HCS	Select type of fiber-optic cable for Voltage Feedback Output: POF - Plastic Optic Fiber, for 10 m distance HSC - Hard Clad Silica fiber, for 90 m distance
JP9	999 PPT V	Bridge Voltage Scaling Jumper, insert for PPT voltage of 999 V rms
JP10	PPT V 1300	Bridge Voltage Scaling Jumper, insert for PPT voltage of 1300 V rms. Revision IS200EDCFG1BAA and later boards are rated for up to 1400 V rms PPT.

Note In the above table, only **one** voltage setting jumper, JP1– JP6 and JP9 – JP10, is inserted at any time. The fiber-optic setting jumpers, JP7 and JP8, are both set independently.



Board Layout

Board Replacement

Handling Precautions

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).

Note If three redundant EDCF boards are installed, the exciter can continue running with one board failed. Because of high voltages, it is not possible to replace the failed EDCF online.

Replacement Procedures

To prevent electric shock, turn off power to the exciter, then test to verify that no power exists in the board before touching it or any connected circuits.

To prevent equipment damage, do not remove, insert, or adjust board connections while power is applied to the equipment.

➢ To replace the board

Refer to the Installation and Startup Guide, GEH-6631 *for complete de-energizing procedures and follow all local practices of lock-out/tag-out.*

1. Make sure that the panel in which the board resides has been de-energized.
2. Open the auxiliary cabinet door, and using equipment designed for high voltages, test any electrical circuits **before touching them** to ensure that power is off.

3 Carefully disconnect all cables from the EDCF board as follows:
   - **a** Verify all cables are labeled with the correct connector name (as marked on the board) to simplify reconnection.
   - **b** Grasp each side of the stab-on connector that joins with the board's stab terminal E1 and gently pull the stab-on connector loose.
   - **c** Disconnect connectors P1 and J16, and fiber-optic connnectors CF OF and VF OF.

Caution

Avoid dropping any mounting hardware into the equipment as this could cause damage when power is reapplied.

4 Unlock the push lock pins that hold the EDCF board in the top and bottom slides, and remove the board.

5 Check that the jumpers JP1 through JP9 on the new EDCF board are in the same position as the original board.

6 Orient the new EDCF board in the same position as the one removed, install it in the slides, and lock in place.

7 Reconnect all cables to EDCF board as labeled and ensure that cables are properly seated at both ends.

8 Close the auxiliary cabinet door.

Renewal/Warranty Information

How to Order a Board

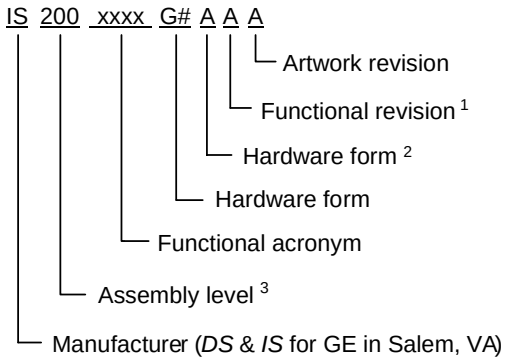
When ordering a replacement board for a GE product, you need to know:

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

Board Identification

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

The board's functional acronym, shown below, is normally based on the **board description**, or name.



[1]Backward compatible
[2]Not backward compatible
[3]*200* = a base-level board
215 = a higher level assembly or added components
220 = pack specific assembly
230 = a higher level module

Board Part Number Conventions

Placing the Order

Renewals/spares (or those not under warranty) should be ordered by contacting the nearest GE Sales or Service Office, or an authorized GE Sales Representative. Be sure to include:

- Complete part number and description
- Serial number
- Material List (ML) number

Note All digits are important when ordering or replacing any board. The factory may substitute later versions of replacement boards based on availability and design enhancements. However, GE Energy ensures backward compatibility of replacement boards.

Notes

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