GE GE □□□ Series Service Manual

IS200DAMAG1BBB

1. Description

SPECIFICATIONS

2. Specifications

Specification	Value
OEM	**GE Industrial Systems**
Series	**Innovation Series**
Part	**Number IS200DAMAG1B**
Product	**Type Gate Drive Amplifier/Interface Board**
Instruction	**Manual GEI-100262**
Abbreviation	**DAMA**
Assembly	**Type Normal Assembly**
Frequently	**Asked Questions about IS200DAMAG1B**
Was	**this IS200DAMAG1B Gate Drive Amplifier Interface Board product domestically-manufactured?**

3. Product Information

SPECIFICATIONS

Part Number: IS200DAMAG1BBB

Manufacturer: General Electric

Series: Drive Control

Function: Inverter card

No.of Gate Driver Power Supply Pins Six

No.of Connectors: 12

DAMA Variants: 6

Frame: 620

No.of Drive Monitors: 4 (UON, UFF, LON, and LFF)

Powerrex IGBT Used: CM1000HA-28H

LEDs: DS1, DS3, DS2 DS4

Availability: In Stock

Manual: GEI-100262

Country of Manufacture: United States (USA)

Functional Description

IS200DAMAG1B is an inverter card developed by General Electrics. It is a part of GE drive control system. It is designed to work with a single IGBT module for the upper phase leg and a single IGBT module for the lower phase leg. These are typically Powerrex CM1000HA-28H IGBTs. This boards are intended to connect directly to the Bridge Personality Interface board as well as the IGBT's gate, emitter, and collector terminals. This is a Gate Drive Amplifier and Interface Board for the Innovation Series 620 frame low voltage drives. General Electric Mark VI Speedtronic systems for the management of gas and steam turbines included innovation drives. The module operates with a single IGBT module for the upper phase leg and a single IGBT module for the lower phase leg. They are typically Powerrex CM1000HA-28H IGBTs. DAMA boards are intended to link directly to the Bridge Personality Interface board as well as the IGBT's gate, emitter, and collector terminals.

Features

It features a dual in-line memory module (DIMM) socket for storing parameters, an Ethernet port for communication, a status indicator LED, and a built-in firmware upgrade function. The inverter card is also equipped with power semiconductors, gate drivers, and protection circuitry for controlling the flow of electrical power in the drive system. The card is designed for use in high-power applications, with a voltage rating of up to 690 volts and a current rating of up to 1700 amperes.

The Gate Driver Amplifier and Interface Board is one of six variants. The Gate Driver Amplifiers and Interface Boards are used to connect power-switching devices (IGBTs) to the main control rack. The drive power rating is the identifier used to determine which variation of the DAM_ it is. The model has a drive power rating of six hundred and twenty frames. This board is used to amplify the current used to issue the culminating gate drive for the main drive's power bridge's on phase leg.

When using this model, a fixed number of boards are used per drive. The board has three boards per drive, but only one board is used per phase leg.

When this board is connected to the emitter, IGBT gate, collector terminals, and the Bridge Personality Interface control rack, it will connect directly to all of these.

The board is modest, with only a few components installed. Four LED indicators are included (DS1 through DS4). These LEDs are either green or yellow and light up in the following patterns: When the higher IGBT is turned on, DS1 (yellow) turns on, while DS3 (green) turns off.

For the bottom IGBT, DS2 (yellow) and DS4 (green) follow the same pattern. A 12-pin vertical connector and a 6-pin vertical connector are also included on the boards.

Product Attributes

Robust Design: Built to withstand harsh industrial environments, with a rugged construction and high resistance to temperature, vibration, and humidity.

Versatile Functionality: The inverter card can be programmed and customized to meet the specific needs of various motor control applications.

Easy Installation: The card is easy to install and can be integrated with other components in the Innovation Series drive, allowing for seamless system configuration and operation.

Advanced Diagnostics: Includes advanced diagnostics features, providing detailed information on motor performance and status, which can be used for maintenance and troubleshooting purposes.

High Compatibility: The inverter card is compatible with various types of AC motors, making it suitable for a wide range of industrial applications.

Application Data

The boards connect directly the IGBT gate, emitter, and collector terminals and to the control rack's BPIA Bridge Personality Interface (BPIA) board. The boards contain no fuses, testpoints, or configurable items.

Powerrex IGBT: CM1000HA-28H

No.of board per drive: 3 (1 per phase leg)

Frame: 620

IGBT per phase leg (3 phase legs per drive): 1 Single IGBT module for upper phase leg, 1 singleIGBT module for lower phase leg.

LED indicators

DS1 (UON - Yellow): This LED indicator, labeled DS1, is used to indicate the state of the upper power switch or upper power circuit. When the upper power switch or circuit is turned on and actively conducting current, the DS1 LED illuminates, emitting a yellow light. It signifies that the upper power section is in an active state and functioning properly.

DS3 (UFF - Green): The DS3 LED indicator, labeled DS3, is used to indicate the state of the upper power switch or upper power circuit when it is turned off. When the upper power switch is in the off state or not conducting current, the DS3 LED lights up, emitting a green light. It provides visual confirmation that the upper power section is inactive and not actively supplying power.

DS2 (LON - Yellow): The DS2 LED indicator, identified as DS2, is used to indicate the state of the lower power switch. When the lower power switch or circuit is turned on and actively conducting current, the DS2 LED illuminates, emitting a yellow light. It signifies that the lower power section is in an active state and functioning properly.

DS4 (LFF - Green): The DS4 LED indicator, labeled DS4, is used to indicate the state of the lower power switch or lower power circuit when it is turned off. When the lower power switch is in the off state or not conducting current, the DS4 LED lights up, emitting a green light. It provides visual confirmation that the lower power section is inactive and not actively supplying power.

Gate Driver Power Supply

P15L: Represents the positive power supply voltage for the lower gate driver. It provides a +15 V direct current (dc) power to the lower gate driver circuit. This voltage level is crucial for enabling the proper operation of the lower gate driver and facilitating the control signals needed to drive the lower power devices effectively.

N7L: Refers to the negative power supply voltage for the lower gate driver. It supplies a -7.5 V dc power to the lower gate driver circuit. This negative voltage is necessary to establish the appropriate biasing and voltage levels required for reliable and efficient gate control of the lower power devices. It ensures the proper functioning of the lower gate driver.

P15U: Signifies the positive power supply voltage for the upper gate driver. It delivers a +15 V dc power to the upper gate driver circuit. Similar to the P15L, this voltage level is vital for facilitating the control signals and gate driving requirements of the upper power devices, ensuring their optimal performance and operation.

N7U: Denotes the negative power supply voltage for the upper gate driver. It supplies a -7.5 V dc power to the upper gate driver circuit. This negative voltage plays a critical role in establishing the necessary biasing and voltage levels for effective gate control of the upper power devices. It enables reliable and efficient operation of the upper gate driver.

Third-Party Connectivity

GSM supports turbine control commands, data and alarms, alarm silence, logical events, and contact input sequence of events records with a resolution of 1 ms. One of three methods can be used to connect the system to the plant's DCS:

Modbus link from the RS-232C port of the HMI Server to the DCS

A high-speed Ethernet link at 10 Mbaud using the Modbus over TCP/IP protocol

A high-speed Ethernet link at 10 Mbaud using the TCP/IP protocol and an application layer known as GEDS Standard Messages (GSM)

Fault Detection

A system with redundancy may be less reliable than a system without redundancy. The system must be capable of detecting and reporting faults so that they can be repaired before a forced outage occurs.

Fault detection is required to ensure that a component or group of components is functioning properly. One or more of the following methods are used to detect faults.

Process operator inspection;

Equipment operator inspection.

Special hardware circuits for operation monitoring

Hardware and software watchdogs

Logic in software

Heartbeats in software There are numerous potential failure points in complex control systems. To create foolproof fault detection, this can be very expensive and time consuming. The failure to control a system's outputs is the most dangerous. To achieve the highest level of reliability, fault detection must be determined as close to the output as possible. The Mark Vle provides a high level of detection and fault masking by voting the outputs of all three controllers and monitoring discrepancies using triple redundant controllers and I/O modules.

Output Processing

The three controllers' signal outputs are divided into three categories:

Outputs are driven from individual I/O networks as single ended non-redundant outputs;

Outputs exist on all three I/O networks and are merged into a single signal by the output hardware.

Outputs exist on all three I/O networks and are output separately to the controlled process. This procedure may include external voting hardware.

The three signals feed a voting relay driver, which operates a single relay per signal for normal relay outputs. For critical protective signals, the three signals feed a voting relay driver, which operates a single relay per signal. Three independent relays are driven by the three signals, with the relay contacts connected in the standard six-contact voting configuration.

IS200DAMAG1B Technical Specifications

OEM GE Industrial Systems

Series Innovation Series

Part Number IS200DAMAG1B

Product Type Gate Drive Amplifier/Interface Board

Instruction Manual GEI-100262

Abbreviation DAMA

Assembly Type Normal Assembly

Frequently Asked Questions about IS200DAMAG1B

Was this IS200DAMAG1B Gate Drive Amplifier Interface Board product domestically-manufactured?

Yes. This IS200DAMAG1B Gate Drive Amplifier Interface Board PCB was manufactured in General Electric's Salem, Virginia factory plant location.

What does this IS200DAMAG1B Gate Drive Amplifier Interface Board's normal PCB coating exist as?

This IS200DAMAG1B Gate Drive Amplifier Interface Board's normal PCB coating is a thick layer of PCB coating made available to this IS200DAMAG1B Gate Drive Amplifier Interface Board's entire base PCB.

About the IS200DAMAG1B

The IS200DAMAG1B is a device known as an inverter card. This is a printed circuit board or PCB which is a component in the 193x series by General Electric or GE. The 193x series consists of many devices which are used to manage the operations of gas and steam turbines for industrial use.

Mark VI Turbine Control System Series

The IS200DAMAG1B is a relatively small rectangular printed circuit board. A variety of small electronic components may be found concentrated mostly in two (2) groups on either side of the PCB. Each of these groups contain the same components. Two (2) tall silver metal components which are labeled with the letter E may be seen in each group. Also featured in each of the groups are two four (4) yellow capacitors. Two (2) resistors which are light blue with a series of multicolored bands have been placed in the center of these capacitors. The bands on these resistors may be blue, gray or silver. At the top of each collection of small components, there are two (2) small LEDs of light-emitting diodes. One (1) of these diodes is yellow in color and the other is blue. At least three (3) other small resistors have been placed on each side of the IS200DAMAG1B. These resistors contain bands that are black, red, or yellow. Two (2) small diodes which are silver are paired together on each side as well as two (2) very small solid yellow capacitors. Placed in the center of the IS200DAMAG1B are two

(2) collections of metal jumper pins. Eight (8) pins can be found in a group at the bottom and another four (4) are placed near the top of the IS200DAMAG1B.

The above-attached IS200DAMAG1B device hardware component and component specification information, as you could probably tell by its droning nature, is almost completely solely reminiscent of a diligent technician-led visual inspection of the IS200DAMAG1B itself, as was encouraged by its greater Mark VI Turbine Control System Series' legacy GE Mark product series nature and its concurrent lack of online-available original instructional manual materials. This IS200DAMAG1B Gate Drive Amplifier Interface Board's IS200DAMAG1B Gate Drive Amplifier Interface Board functional product number was created to exist as a convenient source of DAMA hardware detail, as it codes for a series of important IS200DAMAG1B Gate Drive Amplifier Interface Board qualities through a series of functional naming elements. For instance, this IS200DAMAG1B product number starts off with a rendition of the dual-functional IS200 series tag indicating this IS200DAMAG1B Gate Drive Amplifier Interface Board's normal Mark VI Series assembly as well as its domestic original GE manufacture location. Some of the other IS200DAMAG1B device hardware component and component specification details revealed by way of this medium include this IS200DAMAG1B Gate Drive Amplifier Interface Board's:

DAMA functional product acronym

Group one Mark VI Series grouping

Normal PCB coating style

B-rated single revision