GE GE □□□ Series Service Manual

DS200FCGDH1BAA

1. Description

SPECIFICATIONS

2. Specifications

Specification	Value
Model	**Number DS200FCGDH1BAA**
Revision	**BAA**
Product	**Type Gating and LCI Control Board**
Acronym	**FCGD**
Manufacturer	**(OEM) GE Industrial Control Systems**
Weight	**12 ounces**
Assembly	**Type Normal Assembly**
About	**the DS200FCGDH1BAA**
The	**DS200FCGDH1BAA circuit board functions as a gate distribution status card. This board was developed by GE (General Electric) for the company's Speedtronic Mark V series. Like other Speedtronic systems, the Mark V is designed for the control and management of industrial gas and steam turbines.**

3. Product Information

SPECIFICATIONS

Part No.: DS200FCGDH1BAA

Manufacturer: General Electric

Country of Manufacture: United States of America (USA)

Product Type: Gate Distribution and Status Card

Availability: In Stock

Series: LCI

Functional Description

DS200FCGDH1BAA is a Gate Distribution and Status Card developed by GE. It is a part of its LCI (Load Commutated Inverter) series. This interface board plays a crucial role in managing the operation of 6-pulse, phase-controlled, non-reversing bridges. It integrates advanced functionality to ensure precise control, monitoring, and diagnostics in industrial applications.

Key Functions

SCR Firing Management: The FCGD receives Silicon-Controlled Rectifier (SCR) firing information from the DS200DSPC (Digital Signal Processor Card). It ensures accurate control of gating signals for each bridge leg.

Cell Status Monitoring: Collects multiplexed cell status signals from each leg of the bridge. Decodes and interprets this data to monitor system health and performance.

Bridge Feedback Processing: Receives and scales bridge feedback signals, including Voltage, Frequency, Current Sends the processed feedback to the DSPC board for further analysis and control.

Diagnostic Information: Returns diagnostic information via the VME backplane, aiding in system troubleshooting and optimization.

Design and Construction

The FCGD board conforms to the 6U VME size standard, measuring 9.2 x 6.3 inches. It is designed to fit seamlessly into a VME rack alongside other boards, such as the DSPC.

Features a six-layer structure with surface-mounted devices (SMDs) on both sides, ensuring high-density circuitry and efficient use of space.

Mounts in the same VME rack as the Digital Signal Processing Card (DSPC), allowing streamlined communication and minimizing latency.

Operational Workflow

The board generates SCR firing instructions and sends them to the FCGD. The FCGD decodes these signals and distributes gating signals to control the operation of each bridge leg.

Feedback signals such as voltage, frequency, and current are received from the bridge. Multiplexed status signals from the bridge legs are processed and sent to the DSPC board for system analysis.

Diagnostic information and feedback data are transmitted back to the DSPC via the VME backplane for centralized monitoring and troubleshooting.

System Reset

The system reset signal plays a vital role in initializing the board's operation. During power-up or a hardware reset, this signal resets all registers on the board to their default initial values. By doing so, the system ensures it starts from a known, stable state, avoiding potential issues caused by residual data or errors from prior operations. This feature is crucial for maintaining reliability and consistency in industrial environments where the board operates as part of a critical system.

System Heartbeat

The system heartbeat serves as a periodic signal generated by an electronic component to confirm its operational status. This functionality is supported by the heartbeat register on the FCGD board.

When the VME host CPU writes to the heartbeat register for the first time, the board-level heartbeat begins counting at the same rate as the system clock.

A green LED labeled "IMOK" (I am okay) lights up on the board's front, visually indicating the component’s health.

If the count in the heartbeat register exceeds its design limit (typically 8 milliseconds), the system triggers a safety response:

The IMOK light turns off.

The gating is disabled, halting the board’s operations.

A hard reset is required to clear this condition, ensuring system integrity before resuming functionality.

Firing Commands

The FCGD board uses fiber-optic firing signal transmitters to control the gating of six cell strings in a bridge. This process is governed by the firing mask register, which contains six entries corresponding to the six cell strings.

Operational Workflow: The VME host CPU writes data directly into the firing mask register over the VME bus connection. The FCGD board can activate up to six fiber-optic transmitters simultaneously, ensuring precise control over the bridge’s firing mechanism.

Flexibility: This design enables efficient management of firing signals and allows real-time adjustments by the host CPU for system optimization. These features ensure that the FCGD board operates with high precision, reliability, and responsiveness, critical for managing 6-pulse phase-controlled bridges in industrial applications.

DS200FCGDH1BAA Technical Specifications

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Revision BAA

Product Type Gating and LCI Control Board

Acronym FCGD

Manufacturer (OEM) GE Industrial Control Systems

Weight 12 ounces

Assembly Type Normal Assembly

About the DS200FCGDH1BAA

The DS200FCGDH1BAA circuit board functions as a gate distribution status card. This board was developed by GE (General Electric) for the company’s Speedtronic Mark V series. Like other Speedtronic systems, the Mark V is designed for the control and management of industrial gas and steam turbines.

This DS200FCGDH1BAA PCB's Mark V Series is still very much a desirable product series on the greater automated industrial marketplace, given its stated Speedtronic control system

technology and its specific turbine-minded applications.

Hardware Tips and Specifications

The DS200FCGDH1BAA functions as a gate distribution board. When it has been installed into a drive system, the board offers an interface system for phase-controlled non-reversing bridge systems. A connecting DSPC board relays information to this board, which is then deciphered and fed back out of the drive’s VME backplane. The DS200FCGDH1BAA includes an attached front faceplate. This has two clip components that will hold the module in place after it has been inserted into the drive. The faceplate includes multiple LED indicators along its lower surface. The top includes openings to connector ports.

The DS200FCGDH1BAA is populated with multiple integrated circuits, including a Xilinx FPGA. The rear surface of the board is taken up by two horizontal male connectors. More information about the board, how it should be installed and maintained, and how it should be handled, can be found through original documentation like GE manuals and user guides.

Given this DS200FCGDH1BAA printed circuit board product offering's initial attribution to a now-obsolete legacy product series, many of its originally-printed instructional manual materials and documentation has been lost or removed online for the research purposes of this DS200FCGDH1BAA personalized product page. With this being true, the DS200FCGDH1BAA functional product number itself can be considered a primary source of this DS200FCGDH1BAA PCB's hardware component and component information; coding for specific details in a series of consecutive functional naming segments. For example, the DS200FCGDH1BAA functional product number begins with:

The dual-functional DS200 series tag delegating this DS200FCGDH1BAA PCB's normal Mark V Series assembly as well as its domestic original manufacture location.

This dual-functional tag is followed in the DS200FCGDH1BAA functional product number by the FCGD functional product abbreviation, an abbreviation created to exist as a convenient conversational and promotional shorthand alternative to the DS200FCGDH1 parent printed circuit board.

The DS200FCGDH1BAA functional product number is continued through another dual-functional component inclusion in the H1 series grouping tag delegating this DS200FCGDH1BAA PCB's conformal PCB coating style as well as its group one Mark V Series product grouping.

The final three alphanumeric digits in the DS200FCGDH1BAA functional product number are telling of this DS200FCGDH1BAA Device's possession of a full range of three total product revisions, including two functional revisions rated B and A and an artwork configuration revision rated at an A grade.