GE GE □□□ Series Service Manual

IS200EXHSG3AEC

1. Description

SPECIFICATIONS

2. Specifications

Specification	Value
Original	**Manufacturer GE Industrial Systems**
Product	**Series EX2100**
Functional	**Part Number IS200EXHSG3AEC**
Functional	**Acronym EXHS**
Functional	**Description Exciter H.S. Relay Driver**
PCB	**Coating Normal Coating**
1st	**Functional Revision A**
2nd	**Functional Revision E**
Artwork	**Revision C**
About	**the IS200EXHSG3AEC**
The	**IS200EXHSG3AEC is a GE Industrial Systems PCB (printed circuit board) component designed as part of the EX2100 Excitation Control series. The EX2100 is one of General Electric's most popular turbine management systems. The EX2100 series is a TMR (triple modular redundant) turbine control system offered by GE, and produces the fields excitation current necessary to control AC terminal voltage and reactive volt-amperes. The EX2100 Series is a full static excitation control pattern developed both for generators on both new and retrofit steam turbines as well as gas, and hydro turbine generators.The IS200EXHSG3AEC functions within the EX2100 system as a Static Exciter High-Speed Terminal bo**

3. Product Information

SPECIFICATIONS

Part Number: IS200EXHSG3AEC

Manufacturer: General Electric

Country of Manufacture: United States (USA)

Number of relay channels: 12

Size: 8.26 cm high x 4.19 cm wide x 12.1 cm deep

Technology: Surface-mount

Series: EX2100

Function: Exciter HS Relay Driver Board

Functional Description

IS200EXHSG3AEC is a Exciter HS Relay Driver Board developed by GE. It is part of the GE Speedtronic EX2100 gas turbine control system. The Exciter High-Speed Relay Driver (EXHS) board is an integral component of the EX2100 Excitation Control system, playing a crucial role in providing drivers for various components essential for excitation control in industrial applications.

Features

Excitation Control Functions: The board is primarily responsible for driving the DC contactors (41) and pilot relays required for de-excitation and field flashing within the EX2100 Excitation Control system. These components are vital for controlling the flow of electrical current and ensuring proper operation of the excitation system.

Pilot Relays for Field Flashing: On the board, pilot relays are provided for the flashing relays 53A and 53B, which are essential for field flashing operations. These relays play a crucial role in initiating and controlling the process of establishing the field current in synchronous generators.

Pilot Relays for De-excitation: Additionally, the board includes pilot relays for the de-excitation relay KDEP. These relays are instrumental in the safe and controlled de-energization of the excitation system, preventing excessive voltage buildup and ensuring operational safety.

Signal Conditioning and Transmission: Performs signal conditioning for de-excitation status signals originating from the Exciter De-Excitation Board (EDEX) and crowbar status signals from the De-Excitation Control Board (EXDE). These conditioned signals are then transmitted to the Excitation Monitoring and Instrumentation Output (EMIO) system for further processing and monitoring.

Product Attributes

Power to Relay Coil: The relay coil receives power from J9, providing a nominal voltage of 125 V DC. It is important to note that the voltage supplied to the coil should range between 100 V DC (minimum) and 140 V DC (maximum) to ensure optimal performance.

Power to Relay Contacts: Power for the relay contacts is sourced from the exciter cabinet, delivering a nominal voltage of 24 V DC. This voltage is utilized for controlling the operation of the relay contacts within the system.

Relay Break Characteristics: The characteristics of the relay break are essential for determining its performance under different load conditions:

Resistive Load: The relay can handle a resistive load of up to 2 A at 28 V DC, ensuring reliable operation when switching resistive loads.

Inductive Load: For inductive loads, the relay can manage a current of 1 A at 28 V DC for a duration of 0.007 seconds (L/R). This specification indicates the relay's capability to handle sudden changes in current flow, typical in inductive load scenarios.

Suppression: Suppression for the relay coil is supplied externally, with no suppression provided on the EXHS board itself. This ensures that any voltage spikes or transients generated during the operation of the relay coil are effectively mitigated, preventing potential damage to the system components.

IS200EXHSG3AEC Technical Specifications

Original Manufacturer GE Industrial Systems

Product Series EX2100

Functional Part Number IS200EXHSG3AEC

Functional Acronym EXHS

Functional Description Exciter H.S. Relay Driver

PCB Coating Normal Coating

1st Functional Revision A

2nd Functional Revision E

Artwork Revision C

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The IS200EXHSG3AEC is a GE Industrial Systems PCB (printed circuit board) component designed as part of the EX2100 Excitation Control series. The EX2100 is one of General Electric’s most popular turbine management systems. The EX2100 series is a TMR (triple modular redundant) turbine control system offered by GE, and produces the fields excitation current necessary to control AC terminal voltage and reactive volt-amperes. The EX2100 Series is a full static excitation control pattern developed both for generators on both new and retrofit steam turbines as well as gas, and hydro turbine generators.The IS200EXHSG3AEC functions within the EX2100 system as a Static Exciter High-Speed Terminal board. This IS200EXHSG3AEC Exciter H.S. Relay Driver Board product's greater Mark VI Turbine Control System Series is additionally highly-sought for purchase and repair online given its nature as one of the final-developed GE Mark product series to incorporate the Speedtronic control system technology patented by GE into a number of relevant product offerings.

Hardware Tips and Specifications

The IS200EXHSG3AEC has been designed to include a solid-state relay driver, and is typically paired with a high-speed contactor. Other board components on the IS200EXHSG3AEC include a heat sink component, seven relays, integrated circuits, transistors, capacitors, and resistors made from metal film and carbon composite materials. This EXHS-abbreviated board includes three d-shell vertical pin connectors and eight plug connectors of various sizes. Additionally, the board has several wire jumpers in place. These jumpers, while non-customizable by nature, were added by the original manufacturer factory with initial voltage testing in mind. A visual inspection of the IS200EXHSG3AEC Board reveals all of its PCB edges have been drilled, with of these drillings having been ringed with a conductive material. Two corners of the board are clipped away, and the front edge of the board has four small notches cut into its surface. All of these additions can be classified as installation-minded, as the series of notches and drilled holes are for mounting purposes within the greater drive assembly.

While something of a misunderstood part shrouded in mystery following its initial release, this EXHS printed circuit board is befitted with a series of labels that should shed some light on its functionality and compatibility. For example, each of the sizable relays found on the base board of this model is labeled by the industry-standard "K" relay nomenclature, followed by a specific relay code. With this in mind, relays such as K53B_C and K53A_M1 both exist in the configuration of this product. Relays aren't the only labeled component part to the IS200EXHSG3AEC, of course. This Exciter H.S. Relay Driver makes use of a series of capacitors for energy storage purposes, over fifty in total, along with over one hundred total resistors. All of the aforementioned hardware is securely protected, behind a thick traditional layer of normal-style PCB coating. While not completely exhaustive in its coverage as special conformal-style PCB coating is, the IS200EXHSG3AEC's normal PCB coating provides a solid base protective layer that will suit your specialized automated needs conveniently. Additional information regarding the functionality or proper installation of the IS200EXHSG3AEC can be found in GE Industrial Systems manuals or user guides that should have been issued with the original product.