GE GE □□□ Series Service Manual

IS200LSGIH1A

1. Description

SPECIFICATIONS

2. Specifications

Specification	Value
Manufacturer	**General Electric (GE)**
Model	**Number IS200LSGIH1A**
Part	**Type Static Starter Control Gating Interface**
Voltage	**Received 28 V DC**
Manufacturing	**Location Salem, VA, USA**
About	**the IS200LSGIH1A**
Providing	**bridge instantaneous overcurrent protection independent of the controller, the General Electric IS200LSGIH1A is a Static Starter Control Gating Interface. The board functions as an interface between the UCSB (Universal Version B Standalone Controller) controller and the power conversion bridges, analog outputs, contact input of pretrigger, and the analog input cooling returns. In the case that an instantaneous overcurrent transpires, the LSGI can open the 52SS and remove input power from the bridges, shielding the unit from damage. The LSGI works with the three FGPA boards to control the six thyristors on each bridge.**

3. Product Information

SPECIFICATIONS

Part Number: IS200LSGIH1A

Manufacturer: General Electric

Series: EX2100e

Function: Static Starter Control Gating Interface

Manual: GEH-6373

Product Type: PCB

Voltage Received 28 V DC

Power Transfer: ±24 VDC from main supply

Collaboration: Works with three FGPA boards

Power Supply: 28 V DC

Seismic Code section: 2312 Zone 4

Availability: In Stock

Country of Manufacture: United States (USA)

Functional Description

IS200LSGIH1A is a Gating Interface Card developed by GE. It is a part of EX2100e excitation system. It serves as a crucial interface that links the UCSB controller and the power conversion bridges, as well as manages analog outputs (ranging from 0 to 10 V) and other functionalities. Its primary role is to provide instantaneous overcurrent protection independent of the controller, making it a critical component as a Static Starter Control Gating Interface.

Product Attributes

The component functions as a interface between the UCSB and various components, including power conversion bridges, analog outputs, pretrigger contact input, and analog input cooling returns. In the event of an instantaneous overcurrent event, the LSGI is capable of promptly opening the 52SS (a protection relay) to cut off input power to the bridges, effectively safeguarding the entire system from potential damage.

Additionally, it collaborates with three FGPA (Field-Programmable Gate Array) boards to exercise control over six thyristors on each bridge. LSGI is powered by a 28 V DC supply derived from the main power source, and it efficiently distributes this power throughout the control cabinet. This power not only energizes itself but also powers the UCSB controller, LSTB board, and the 8-port switch. It facilitates the passage of ±24 VDC from the main power supply to the FCSA board, which, in turn, powers the LEMs (Local Equipment Modules). To enable communication between the board and the LSGI, a copper wire is used, connected to a 12-pin plug housed on the LSGI.

In addition to its other functionalities, the LSGI receives important data from the FGPA, which collects SCR voltage information from the FHVA card. This data exchange plays a crucial role in the overall operation and coordination of the system.

Features

The board features several notable characteristics and functionalities. The model is designed with two distinct sections, each equipped with four standoffs. These standoffs serve as connection points for additional daughterboards, allowing for expanded functionality and communication capabilities. By linking the daughterboards, they can establish communication with any of the primary boards, enhancing the system's flexibility and versatility.

To ensure reliable connections, the board incorporates three vertical pin connectors. These connectors are equipped with attached clips that securely maintain the connections, preventing unintended disconnections and ensuring continuous communication between components.

It includes four Augat connectors positioned directly behind the vertical pins. These connectors house numerous integrated circuits and other essential components. Each Augat connector is uniquely sized to accommodate specific components, contributing to the efficient integration of the board's functionalities. Within these connectors, various components such as diodes, resistors, capacitors, and other necessary elements are integrated, ensuring the proper functioning of the board and its associated systems.

Primarily designed as a static, adjustable frequency drive system model, the component operates in conjunction with a microprocessor and application-specific software. This combination enables precise control over the speed of a synchronous motor or generator. The microprocessor, along with the dedicated software, ensures accurate and dynamic adjustments to meet the desired motor or generator speed requirements.

When utilizing the board, the GEH-6373 Load Commutated Inverter User's Manual is the recommended reference guide. This manual provides comprehensive information and instructions regarding the usage of the board, including details on potential daughterboard attachments. By following the guidelines outlined in this manual, users can effectively utilize the board and take advantage of its full capabilities.

Interface: Connects UCSB controller to power conversion bridges, analog outputs, contact input of pretrigger, and analog input cooling returns

Protection: Can open 52SS during overcurrent to shield unit from damage

Distribution: Distributes power through control cabinet to LSGI board, UCSB controller, LSTB board, and 8-port switch

Signal Transfer: FCSA board sends signals to LSGI via copper wire attached to 12-pin plug Data

Reception: Receives data from FGPA (Trigger Pulse Amplifier) for SCR voltage info from FHVA (High Voltage Gate Interface) card

Control Software

The EX2100e control software provides high performance while also assisting customers and field engineers in understanding, installing, commissioning, tuning, and maintaining the excitation control system. The exciter software is configured and loaded in the controllers using the ToolboxST application.

On the ToolboxST Component Editor screen, the software is represented by control blocks that are linked together to display the signal flow. The control signals required by the automatic (generator terminal voltage) regulator, most limiters, and protection functions are generated by the generator voltages and currents from the PTs and CTs.

They are connected to the ESYS, which serves as a signal conditioner, isolating and scaling the signals. The controller receives the conditioned signals. The system samples the ac waveform at high speed while also employing advanced mathematical algorithms to digitally generate the required variables.

System Overview

The EX2100e Excitation Control Regulator system is GE's most recent cutting-edge control system for new and retrofit steam, gas, or hydro generators. To ensure the delivery of a true system solution, GE's system and controls engineering work closely together to design control hardware and software. Excitation Control systems, Turbine Control systems, Static Starter Control systems, Integrated Control Systems (ICS), and the Human-machine Interface are all seamlessly integrated (HMI).

The model works best with daughterboard attachments that communicate with the primary board. The board is primarily used as a static, adjustable frequency drive system model, with the microprocessor and application-specific software controlling the speed of a synchronous motor or generator. With its divided sections and standoffs for daughterboard connections, the board enables expanded communication and functionality.

The vertical pin connectors and Augat connectors ensure secure and reliable connections with integrated circuits and other components. Primarily used as a static, adjustable frequency drive system model, the board, along with a microprocessor and application-specific software, controls the speed of synchronous motors or generators.

The GEH-6373 Load Commutated Inverter User's Manual serves as a valuable resource for operating the board and exploring potential daughterboard attachments.

System Features

The EX2100e system offers several features and options for redundancy and control in various configurations. Here is an expanded explanation of the system features:

Redundant Control, Simplex Bridge Option:

This option provides cost-effective redundancy in the EX2100e system.

It utilizes redundant controls (M1, M2, and C) in combination with a single full-wave SCR bridge.

By using redundant controls and a simplex bridge, it achieves a higher mean time between forced outages (MTBFO) compared to a simplex control with a simplex bridge.

The system allows for bi-directional transfer of active and backup controls, ensuring seamless operation.

EX2100e Control WBU Option:

This option is designed for small to medium-sized static exciters that require power bridge redundancy.

The total power needs of the generator field can be supported within a single Pulse Control Module (PCM).

It employs redundant controls (M1, M2, and C) and two full-wave SCR bridges with shared AC input and DC output circuits.

When N = 1 (N+1 bridge redundancy), this configuration provides a cost-effective solution.

The active power bridge receives gating commands from the active control (M1 or M2), supporting the full field voltage and current needs of the generator field while the backup power bridge's gating circuit is disabled.

The operator can control the activation or deactivation of the redundant power bridges.

Monitoring, Protection, and Transfer:

The system includes sophisticated monitoring and protection circuits to detect active power bridge failures or misoperations.

If necessary to clear SCR leg fuses, a delay in transfer can occur.

The backup power bridge can be automatically activated without operator intervention.

Bidirectional bumpless transfer is a standard feature, allowing seamless transition between active and inactive bridges.

These features ensure reliable and redundant control of the EX2100e system, minimizing downtime and maintaining stable operation.

IS200LSGIH1A Technical Specifications

Manufacturer General Electric (GE)

Model Number IS200LSGIH1A

Part Type Static Starter Control Gating Interface

Voltage Received 28 V DC

Manufacturing Location Salem, VA, USA

About the IS200LSGIH1A

Providing bridge instantaneous overcurrent protection independent of the controller, the General Electric IS200LSGIH1A is a Static Starter Control Gating Interface. The board functions as an interface between the UCSB (Universal Version B Standalone Controller) controller and the power conversion bridges, analog outputs, contact input of pretrigger, and the analog input cooling returns. In the case that an instantaneous overcurrent transpires, the LSGI can open the 52SS and remove input power from the bridges, shielding the unit from damage. The LSGI works with the three FGPA boards to control the six thyristors on each bridge.

The main power supply furnishes the LSGI with 28 V DC; the LSGI can then distribute it through the control cabinet. The current powers not only the LSGI board, but the UCSB controller, LSTB board, and the 8-port switch as well. General Electric's IS200LSGIH1A also passes ±24 VDC from the main power supply to the FCSA, which then powers the LEMs.

The FCSA board sends its signals to the LSGI via a copper wire which is attached to a 12-pin plug housed on the LSGI. The LSGI also receives data from the FGPA (Trigger Pulse Amplifier), which collects SCR voltage information from the FHVA (High Voltage Gate Interface) card.