GE GE □□□ Series Service Manual

IS200TREAH2A

1. Description

SPECIFICATIONS

3. Product Information

SPECIFICATIONS

Part No.: IS200TREAH2A

Manufacturer: General Electric

Country of Manufacture: United States of America (USA)

Size: 33.0 cm high x 17.8 cm, wide

Technology: Surface mount

Temperature: -30 to 65oC

Product Type: Turbine Emergency Trip Terminal Board

Availability: In Stock

Series: Mark VIe

Functional Description

IS200TREAH2A is a Turbine Emergency Trip Terminal Board developed by GE. It is a part of Mark VIe control system. The turbine emergency trip terminal board, is an integral component within the Mark VIe system, specifically designed to collaborate with PPRO turbine I/O packs.

Features

Customer Input Terminals: Accessible through two 24-point pluggable barrier terminal blocks (H1A, H2A) or 48 pluggable Euro-style box terminals (H3A, H4A), these terminals facilitate customer inputs.

Passive Pulse Rate Devices: Nine passive pulse rate devices, distributed across three per X/Y/Z section, are employed to sense a toothed wheel, effectively measuring the turbine speed.

Jumper Blocks: These blocks enable the fanning of one set of three speed inputs to all three PPRO I/O packs, ensuring synchronization and redundancy.

Output Contacts: Two sets of output contacts are provided: one set operating at 24 V dc (H1A, H3A), and the other at 125 V dc (H2A, H4A), offering TMR voted output contacts to trip the system in case of emergencies.

Voltage Detection Circuits: Four circuits designed for 24-125 V dc voltage detection are incorporated to monitor the trip string, ensuring system integrity and safety.

Daughterboard Connectors: Additional expansion capabilities are facilitated through daughterboard connectors, offering the potential for optional feature expansion as required.

Voltage Monitors

The trip relays integrated into the board offer flexible placement within a trip string, allowing them to be positioned anywhere along the circuit. To facilitate monitoring and ensure system integrity, incorporates three general-purpose isolated voltage sensor inputs. These inputs serve the purpose of monitoring various points within the trip system and transmitting voltage status information to the system controller, enabling appropriate action to be taken as needed.

Common applications for these voltage sensor inputs include:

Power Supply Voltage Monitoring (PWR): One typical use is to sense the power supply voltage for the two trip strings. Monitoring the voltage levels ensures that the power supply remains within acceptable ranges, crucial for the reliable operation of the trip system.

Solenoid Voltage Monitoring (SOL1, SOL2): Another common application is to monitor the solenoid voltage of the device being controlled by the relays. By monitoring solenoid voltage, the system can ensure that the correct voltage levels are being applied to activate the devices effectively.

While the board symbol may suggest these specific applications, it's important to note that the sensors are versatile and can be applied to various scenarios based on the specific requirements of the application. This flexibility allows for optimal utilization of the voltage sensor inputs to meet the unique needs of the trip system.

Trip Relays

The trip relays incorporated into the TREA board are constructed using sets of six individual form devices arranged in a specific voting pattern. In this pattern, if any two controllers simultaneously vote to close a relay, it establishes a conduction path through the set, activating the relay. This design ensures redundancy and reliability in tripping operations.

Given the critical nature of trip relay functionality, it's imperative to detect any instances of relay shorting promptly to maintain tripping reliability. To achieve this, a sensing circuit is applied to each set of relays. When the relays are commanded to open, and voltage remains present across them, the sensing circuit detects if one or more relays are shorted. If a shorted relay is detected, the circuit generates a signal that is sent to the associated PPRO I/O pack, triggering an alarm to alert operators of the issue.

To prevent false indications, especially in scenarios where one PPRO I/O pack votes to close a relay while the other two vote to open, the TREA sensing circuit employs inputs from all three packs. This comprehensive approach ensures accurate detection of relay status, even in complex voting scenarios, enhancing the reliability and integrity of the trip system. The voting arrangement and sensing circuitry are illustrated in the TREA symbol, providing a clear representation of the system's functionality.