GE GE □□□ Series Service Manual

IS200TTURH1BEC

1. Description

SPECIFICATIONS

2. Specifications

Specification	Value
Manufacturer	**General Electric**
OEM	**General Electric**
Product	**Series Mark VI Speedtronic**
Functional	**Abbreviation TTUR**
Part	**Number IS200TTURH1BEC**
Assembly	**Type Normal Assembly**
Revision	**Total 3 Revisions**
Backwards-Compatibility	**1st two revisions**
About	**the IS200TTURH1BEC**
This	**board is designed to work in conjunction with several other components to help control breaker closure. The IS200TTURH1BEC may work in conjunction with PTUR boards or VTUR boards. Our company works hard to maintain as much on-hand stock of GE replacement boards as we can so we can more efficiently fulfill your order needs. The IS200TTURH1BEC is part of the synchronization system within the turbine system used to energize breaker close coils at the correct time. This system includes a K25P relay for turbine sequence status, a K25A repay, for checking the slip and phase are within the synch window, and a K25 relay, that optimizes for top dead center coordination. This system can be used with either a Simplex or a TMR (tr**

3. Product Information

SPECIFICATIONS

Part No.: IS200TTURH1BEC

Manufacturer: General Electric

Country of Manufacture: United States of America (USA)

Size: 10.16 cm wide x 33.02 cm high

Temperature: -30 to 65oC

Technology: Surface-mount

Product Type: Primary Protection Input Board

Availability: In Stock

Series: Mark VI

Functional Description

IS200TTURH1BEC is a Primary Protection Input Board developed by GE. It is a part of the Mark VI control system. The board serves as an interface within the turbine I/O processor, offering various inputs and outputs crucial for turbine control and monitoring.

Inputs for Turbine Speed Measurement

The Turbine Terminal Unit (TTUR) is equipped with 12 passive pulse rate devices specifically designed to sense the toothed wheel of the turbine, facilitating accurate measurement of its rotational speed. These devices play a critical role by generating electrical pulses in response to the passage of teeth or markings on the wheel as the turbine rotates, providing a reliable means to monitor and determine the turbine's speed.

The collective output of these devices ensures accuracy and redundancy in speed measurement, feeding essential data into the control system for effective monitoring and management of turbine operations.

Voltage Signals Monitoring

The TTUR actively monitors the generator voltage, a key electrical parameter representing the voltage generated by the turbine's generator. This signal provides insights into the voltage output generated by the turbine during its operation.

Alongside generator voltage, the TTUR also monitors the bus voltage signal. Bus voltage refers to the voltage levels present within the electrical bus or distribution system. It provides an overview of the voltage levels across the broader electrical infrastructure connected to the turbine.

These voltage signals are typically obtained through potential transformers, which are devices specifically designed to measure and transform high voltage levels into lower, measurable levels suitable for monitoring and analysis.

The TTUR's role in monitoring these voltage signals is pivotal for ensuring the stability, reliability, and safety of the electrical systems associated with the turbine.

Constant oversight of generator and bus voltages allows for real-time analysis of voltage levels. Deviations from expected or safe voltage ranges can trigger alerts or enable corrective actions to maintain operational stability and prevent potential damage to equipment.

The monitored voltage signals are integrated into the broader control and monitoring systems. This integration enables real-time data analysis, facilitating informed decision-making and prompt responses to voltage-related anomalies or fluctuations.

Signal Connectivity

The speed signal cable designated for VTUR utilization is connected through the JR5 connector.

Other signals, excluding the speed signal, are routed through the JR1 connector.

For Triple Modular Redundancy (TMR) systems, signals are distributed across multiple connectors: JR5, JS5, JT5, JR1, JS1, and JT1, ensuring redundancy and failover capabilities for these critical signals.

Other Features

Output for Main Breaker Control: Provides a 125 V dc output intended for the main breaker coil. This output is utilized for automatic generator synchronization, facilitating synchronized operations.

Shaft Voltage and Current Sensors: Accepts inputs from sensors measuring induced shaft voltage and current, aiding in the measurement and monitoring of these crucial parameters.

Relays for Main Breaker Control (K25, K25P, K25A): Features three relays - K25, K25P, and K25A - all essential for a coordinated operation to supply 125 V dc power necessary to close the main breaker 52G.

Installation Procedure

Component Identification: Gather the necessary components including magnetic pickups, shaft pickups, potential transformers, and breaker relays.

Terminal Blocks: Two I/O terminal blocks, TB1 and TB2, are utilized for wiring. Each block is securely fastened with two screws and features 24 terminals capable of accepting wires up to 12 AWG. Adjacent to each terminal block is a shield termination strip connected to the chassis ground, ensuring proper grounding for the system.

Relay Driver Selection: Jumpers JP1 and JP2 are utilized to select between SMX and TMR options for relay drivers K25 and K25P, providing flexibility based on system requirements.

Optional TTL Connections: TB3 serves as a dedicated terminal block for optional TTL connections to active speed pickups. These connections may require an external power supply for operation.

System Differentiation: Cable connectors JR5 and JR1 are used for simplex systems, while TMR systems utilize all six cable connectors, indicating a distinction in the wiring configuration based on the system's complexity and functionality.

Wiring: Carefully wire the components to their respective terminal blocks, ensuring proper connections according to the system's specifications and requirements. Pay close attention to jumper settings and terminal assignments to avoid errors during installation.

Testing: Once the wiring is complete, conduct thorough testing to verify the functionality of the installed components and ensure they operate as intended. This step is crucial for identifying any potential issues or discrepancies that may require further adjustment or troubleshooting.

IS200TTURH1BCC is a Turbine Termination Board developed by GE. It is a part of Mark VI control system.

The Turbine Terminal Board is a component that interfaces with the turbine I/O processor, facilitating various inputs and outputs essential for turbine operation.

TTUR features three relays K25, K25P, and K25A. The closure of all these relays is necessary to provide 125 V DC power required for closing the main breaker 52G, ensuring seamless operation.

I/O:

1.Pulse Rate Devices: Incorporates 12 passive pulse rate devices that sense a toothed wheel, enabling the measurement of turbine speed.

2.Generator and Bus Voltage Signals: Signals from potential transformers are utilized to monitor generator voltage and bus voltage.

3.125 V DC Output: Provides a 125 V DC output specifically designated for the main breaker coil, essential for automatic generator synchronizing.

4.Shaft Voltage and Current Sensors: Inputs from shaft voltage and current sensors are processed by TTUR to measure induced shaft voltage and current.

IS200TTURH1BEC Technical Specifications

Manufacturer General Electric

OEM General Electric

Product Series Mark VI Speedtronic

Functional Abbreviation TTUR

Part Number IS200TTURH1BEC

Assembly Type Normal Assembly

Revision Total 3 Revisions

Backwards-Compatibility 1st two revisions

About the IS200TTURH1BEC

This board is designed to work in conjunction with several other components to help control breaker closure. The IS200TTURH1BEC may work in conjunction with PTUR boards or VTUR boards. Our company works hard to maintain as much on-hand stock of GE replacement boards as we can so we can more efficiently fulfill your order needs. The IS200TTURH1BEC is part of the synchronization system within the turbine system used to energize breaker close coils at the correct time. This system includes a K25P relay for turbine sequence status, a K25A repay, for checking the slip and phase are within the synch window, and a K25 relay, that optimizes for top dead center coordination. This system can be used with either a Simplex or a TMR (triple modular redundant) turbine system. In a simplex system, voting initiates from <R>.

Meanwhile, in TMR systems, ⅔ logic voting is employed. Jumpers located along one short board edge decide whether the board will be configured for TMR or Simplex systems. Refer to original manuals and other GE documentation before any installation begins for information regarding proper handling, as well as extending safety warnings.

IS200TTURH1BEC Board Revisions and Components

The board also has a number of different connectors, including terminal strips, plug connectors, and d-shell connectors. There are both male and female d-shell connectors on the board’s surface. Any resistor, capacitor, diode, transistor, or integrated circuit included on this IS200TTURH1BEC device's base printed circuit board should exist as part of a greater Mark VI Series-standardized selection of voltage-limiting hardware components seen in most of this series' products. This IS200TTURH1BEC printed circuit board or PCB in abbreviation is a member of a now-obsolete legacy General Electric product series, and as such, is not surrounded by any great amount of originally-printed and pertinent instructional manual documentation. Other board components include:

resistors

variable resistors

capacitors

diodes

transformers

integrated circuits