GE GE □□□ Series Service Manual

IS200TAMBH1ACB

1. Description

SPECIFICATIONS

3. Product Information

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Part No.: IS200TAMBH1ACB

Manufacturer: General Electric

Country of Manufacture: United States of America (USA)

Temperature Operating: -30 to 65 o C

Product Type: Acoustic Monitoring Terminal Board

Availability: In Stock

Series: Mark VI

Functional Description

IS200TAMBH1ACB is an acoustic Monitoring Terminal Board developed by GE. It is a part of Mark VI series. The Acoustic Monitoring Terminal Board (TAMB) is designed to support nine channels, each providing essential functionalities for signal processing within the acoustic monitoring system. The board's ability to manage power outputs, select input types, configure return lines, and detect open connections contributes significantly to the efficiency, accuracy, and diagnostic capabilities of the acoustic monitoring system, ensuring precise data acquisition and monitoring.

Power Supply Outputs

The Power Supply Outputs of the Acoustic Monitoring Terminal Board (TAMB) play a crucial role in ensuring consistent power availability for associated components.

Each of the nine channels on the TAMB board is equipped with dual power supply outputs:

Current-Limited +24 V DC Output: This output provides a regulated +24 V DC power supply with current-limiting capabilities. It ensures that the connected components receive a stable voltage within the specified limits, preventing overloading or damage to the devices.

+24 V DC Power Supply Output: In addition to the current-limited output, each channel also delivers a standard +24 V DC power supply output. This output serves as an alternative power source and ensures redundancy in case of failure or overload in the current-limited supply.

Signal Handling and Constant Current Source

Constant Current Source: The board incorporates a constant current source that is specifically linked to the SIGx line for the PCB sensors. This constant current source ensures a consistent and stable current supply to the sensors, regardless of variations in the input signal or environmental conditions. By providing a constant current, the maintains the accuracy and reliability of the sensor readings, enabling precise monitoring and analysis of acoustic signals.

Input Signal Control (CCSELx): The input signal control, denoted as CCSELx, determines the activation or deactivation of the constant current source for a specific channel (x). When the CCSELx input signal is False (logic-level low), it indicates that the constant current output is not selected or activated. This control signal is typically managed by an output signal from the Vibration Acoustic Monitoring Board (VAMB), which governs the operation of the TAMB board.

Initialization Sequence: During the power-up sequence of the acoustic monitoring system, it is crucial to ensure that the constant current output remains deselected until the configuration parameters are fully loaded and initialized. By maintaining the CCSELx signal as False during this initialization phase, the TAMB board ensures that the constant current source remains inactive initially. Once the configuration parameters are loaded and verified, the appropriate signals can be set to activate the constant current output as needed.

Current and Voltage Input Selection

Hardware Jumper (JPx): Equipped with a hardware jumper, denoted as JPx, where 'x' represents an even number. This jumper serves as a configuration switch that allows users to select between two input modes: current input (I_IN) or voltage input (V_IN). By adjusting the position of the jumper, users can specify the type of input signal that the channel will accept.

Current Input Configuration: When configured for current input mode, the TAMB channel includes a 250 ohm burden resistor in the circuit path. This resistor is essential for converting the current signal into a voltage signal that can be accurately measured and processed by the monitoring system. The current input mode is typically used for applications where the input signal represents a 4-20 mA current loop, commonly found in industrial instrumentation and control systems.

Voltage Input Mode: Conversely, when configured for voltage input mode, the TAMB channel accepts voltage signals directly without the need for additional resistance elements. This mode is suitable for applications where the input signal is already in voltage form or where the monitoring system requires direct voltage measurements from sensors or transducers.

Flexibility and Adaptability: The ability to switch between current and voltage input modes provides users with flexibility and adaptability to accommodate various types of sensors, transducers, and signal sources in acoustic monitoring applications. This feature allows the TAMB board to interface seamlessly with different types of sensors and adapt to specific measurement requirements.

Return Line Configuration

Hardware Jumper (JPx): Each channel on the TAMB board is equipped with a hardware jumper denoted as JPx, where 'x' represents an odd number. This jumper serves as a configuration switch that determines the connection state of the return line, RETx.

Connection Options: The JPx jumper provides two possible connection options for the return line:

Connected to PCOM (JPx set to PCOM): When the JPx jumper is set to PCOM, the return line RETx is electrically connected or tied to the terminal board's power common, PCOM. This configuration establishes a direct electrical pathway between the return line and the power common, ensuring a common reference point for signal returns.

Disconnected from PCOM (JPx set to OPEN): Conversely, when the JPx jumper is set to OPEN, the return line RETx remains untied or disconnected from the terminal board's power common, PCOM. In this configuration, the return line is isolated from the power common, allowing for independent signal return paths and potential isolation of noise or ground loops.

Flexibility and Application: The ability to configure the return line connection provides users with flexibility in adapting the TAMB board to different system configurations and signal routing requirements. By selecting the appropriate JPx jumper setting, users can tailor the return line configuration to optimize signal integrity, minimize interference, and meet specific application needs.

Diagnostic and Troubleshooting: The return line configuration feature also facilitates diagnostic and troubleshooting efforts by enabling users to isolate and test signal paths independently. By adjusting the JPx jumper setting, users can quickly determine whether issues stem from return line connectivity or other factors within the system.

Detection of Open Connections

High-Impedance DC Bias: Within the Vibration Analysis Monitoring Board system, a high-impedance direct current (DC) bias is established. This DC bias is characterized by its high resistance to electrical current flow, which allows it to maintain a stable voltage across the circuit components without significantly affecting their operation.

Open Circuit Detection: The high-impedance DC bias serves a critical function in detecting open circuits within the acoustic monitoring system. An open circuit refers to a condition

where there is a break or discontinuity in the electrical path, preventing the flow of current. In such cases, the voltage across the open circuit tends to remain unchanged or at a high impedance level.

Identification by VAMB: The system, which interfaces with the TAMB and other components of the acoustic monitoring system, actively monitors the voltage levels and impedance characteristics of the signal paths. When an open circuit occurs between the charge amplifier or sensor and the TAMB, the VAMB detects the lack of continuity in the electrical path.

Enhanced Monitoring and Diagnostics: Upon detecting an open connection, the VAMB system can initiate diagnostic procedures to identify the precise location and nature of the fault. By alerting operators or triggering diagnostic routines, the system ensures prompt identification and resolution of open circuit issues.