GE GE □□□ Series Service Manual

IS420YDIAS1B

1. Description

SPECIFICATIONS:

3. Product Information

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Part Number: IS420YDIAS1B

Manufacturer: General Electric

Series: Mark VIeS

Function: Discrete Contact I/O Module

Number of relay channels: 24

Input Isolation: 1500 V

Input filter ac voltage rejection: 125 V dc

Technology: Surface Mount

Operating Temperature: -40 to 70°C

Size: 8.26 high x 4.19 wide x 12.1 cm

Repair: 3-5 Days

Availability: In Stock

Country of Manufacture: United States (USA)

Manual: GEH-6855

FUNCTIONAL DESCRIPTION:

IS420YDIAS1B is a Discrete Contact I/O Module manufactured and designed by General Electric as part of the Mark VIeS Series used in GE Distributed Control Systems. The Discrete Input (IS420YDIAS1B) I/O pack provides the electrical interface between one or two I/O Ethernet networks and a discrete input terminal board. The YDIA contains a common processor board and an acquisition board specific to the discrete input function. The YDIA I/O pack accepts up to 24 contact inputs and terminal board-specific feedback signals and supports three different voltage levels. System input to the pack is through dual RJ-45 Ethernet connectors and a three-pin power input. Discrete signal input is through a DC-37 pin connector that connects directly with the associated terminal board connector. Visual diagnostics are provided through indicator LEDs.

FEATURES:

The discrete input acquisition board provides the second stage of signal conditioning and level shifting to interface the terminal board inputs to the control logic. Initial signal conditioning is provided on the terminal board.

The discrete input acquisition input circuit is a comparator with a variable threshold. Each input is isolated from the control logic through an opto-coupler and an isolated power supply. The inputs are not isolated from each other.

Each of the twenty-four inputs has filtering, hysteresis, and a yellow status LED, which indicates when an input is picked up. The LED will be OFF when the input is dropped out.

The input threshold is derived from the contact wetting voltage input terminal. In most applications, this voltage is scaled to provide a 50% input threshold. This threshold is clamped to 13% to prevent an indeterminate state if the contact-wetting voltage drops to zero.

If the contact wetting voltage drops below 40% of the nominal voltage, the under-voltage detector annunciates this condition to the control. A special test mode is provided to force the inputs from the control pack.

Every four seconds, the threshold is pulsed high and then low and the response of the opto-couplers is checked. Non-responding inputs are alarmed.

Contact Input Module

The Mark* VIeS Functional Safety Contact Input module provides an interface between discrete contact process sensors (24 discrete inputs) and Mark VIeS Safety control logic.

The Contact Input module consists of two orderable parts: the contact input I/Opack and the contact input terminal board. All safety contact input modules use the same I/Opack, IS420YDIAS1B. Multiple DIN-rail mounted terminal boards are available to provide the necessary contact voltages, redundancy, and terminal block styles.

The Contact Input module is available in both Simplex and Triple Modular Redundant (TMR) configurations. Users can select the configuration that best addresses their needs for availability and SIL level. This document discusses the Simplex Contact Input (STCI) terminal board and the Contact Input (TBCI) terminal board. The TBCI terminal board offers TMR capability but it can also be used in a Simplex configuration with a single YDIA I/Opack. In a TMR I/Oconfiguration, the controller performs 2-out-of-3 voting on the discrete inputs. In a Dual I/Oconfiguration, the controllers listen to the first reporting YDIA I/Opack (no voting