GE GE □□□ Series Service Manual

IS220PPRAH1A

1. Description

SPECIFICATIONS:

2. Specifications

Specification	Value
Manufacturer	**General Electric**
Series	**Mark VIe & VIeS**
Functional	**Part Number IS220PPRAH1A**
Functional	**Description IS220PPRAH1A I/O Protection Module**
Processes	**Input and Output**
Terminal	**Board IS200TREA**
Daughter	**Board IS200WREA**
HazLoc	**Certification HazLoc Certified**
About	**the IS220PPRAH1A**
The	**IS220PPRAH1A I/O Protection Module device that features so heavily on this personalized product page is central to the functioning of device within the greater Mark VIe or Mark VIeS product series automated drive assembly that it was originally manufactured for. With this being the case, it is no surprise to see that it culminates in a modular assembly style. This IS220PPRAH1A I/O Protection Module device's Mark VIe & VIeS Turbine Control System Series, as it is known in full title, is not actually considered a legacy product series, and it additionally makes use of potential wind turbine product applications well.**

3. Product Information

SPECIFICATIONS:

Part Number: IS220PPRAH1A

Manufacturer: General Electric

Series: Mark VIeS

Board Type: Emergency Turbine Backup Protection I/O Module

Input Power Supply Voltage: 24 V DC

Number of Transducers: 2

Pressure wave frequency range: 1.5 Hz

Power Consumption: ≤ 15 W

Number of Input Channels: 16

Input Voltage: 0-5 V

Maximum lead Resistance: 15 maximum

MPU Pulse Rate Range: 2 Hz

Protocols Supported: MODBUS TCP/IP

Dimensions: 33.0 cm wide x 17.08 cm high

Mounting Type: Surface-mount

Operating Temperature: -20°C to +70°C

Repair: 3-7 Day

Availability: In Stock

Country of Origin: United States

Weight: 1.2 kg

FUNCTIONAL DESCRIPTION:

IS220PPRAH1A is an Emergency Turbine Backup Protection I/O Module manufactured and designed by General Electric as part of the Mark VIeS Series used in GE Distributed Turbine Control Systems. The Emergency Turbine Protection (PPRA) I/O packs and associated TREA terminal board provide an independent backup overspeed protection system. They also provide an independent watchdog function for the primary control and isolated trip contact inputs. A protection system consists of three triple modular redundant (TMR) PPRA I/O packs mounted to a TREA terminal board with the WREA option board included. PPRA is a derivative of the standard Mark VIe PPRO Emergency Turbine Protection I/O pack. It adds hardware and uses altered firmware to support six-speed inputs in applications where dual-speed sensors per shaft are fanned to three protection I/O packs. The majority of the configuration, variables, and behavior of the PPRA are identical to those found in the PPRO. PPRA is specific to the TREA terminal board equipped with the WREA option board.

COMPATIBILITY:

PPRA is available in a IEC 61508 certified version for use in IEC 61511 certified safety loops. PPRAS1A with TREAS1A and WREAS1A are the certified versions of the PPRA module. PPRA mounts directly on TREA, and with TREA it is required to have the WREA option board mounted on the PPRA application-specific circuit board Option Header connector. PPRA mounted on TREA with WREA will only function correctly with three PPRA I/O packs. Single and dual-pack operation is not possible.

In systems with a single controller, the controller R network should be connected to the PPRA on the JX1 connector, the S network should be connected to PPRA on the JY1 connector, and the T network should be connected to the PPRA on the JZ1 connector. All three networks are coming from the single controller. In systems with dual controllers, the controller R network should be connected to the PPRA on the JX1 connector, the S network should be connected to PPRA on the JY1 connector, and both the R and S networks should be connected to the PPRA on the JZ1 connector. In systems with three controllers, the R network should be connected to the PPRA on the JX1 connector, the S network should be connected to PPRA on the JY1 connector, and the T network should be connected to the PPRA on the JZ1 connector.

INSTALLATION:

Securely mount the TREA terminal board.

Directly plug three PPRA I/O packs into the TREA.

Slide the threaded posts on PPRA, located on each side of the Ethernet ports, into the slots on the terminal board mounting bracket. Adjust the bracket location so the DC-62 pin connector on PPRA and the terminal board fit together securely. Tighten the mounting bracket. The adjustment should only be required once in the life of the product.

Securely tighten the nuts on the threaded posts locking PPRA in place. Plug in one or two Ethernet cables depending on the system configuration.

PPRA is not sensitive to Ethernet connections and selects the proper operation over either port.

Apply power by plugging in the power connector on the side of the module. The I/O module has inherent soft-start capability that controls current levels upon application.

OPERATIONS:

High-speed processor with RAM and flash memory

Two fully independent 10/100 Ethernet ports with connectors

Hardware watchdog timer and reset circuit

Internal temperature sensor

Status-indication LEDs

Electronic ID and the ability to read IDs on other boards

Input power connector with soft start/current limiter

Local power supplies, including sequencing and monitoring

PROTECTIVE FUNCTIONS

Signal names that end with (SS) are created within PPRA and the data flow is out to the controller through signal space.

Signal names that end with SS are created in the controller and the data flow is into PPRA through signal space.

Signal names that end with (IO) are created within PPRA and the data flow is out to the hardware.

Signal names that end with IO indicate the signal is a hardware input into PPRA.

Signal names that end with anything containing CFG are part of the PPRA configuration. In this case, an attempt has been made to indicate what area of the PPRA configuration contains the variable.

When J3 is referenced in a CFG, it refers to the connection point for the trip relay board, TREA, and the corresponding configuration values.

The combination IO (SS) indicates a signal that comes from the hardware inputs to PPRA and is then sent out to the controller as part of signal space.

IS220PPRAH1A Technical Specifications

Manufacturer General Electric

Series Mark VIe & VIeS

Functional Part Number IS220PPRAH1A

Functional Description IS220PPRAH1A I/O Protection Module

Processes Input and Output

Terminal Board IS200TREA

Daughter Board IS200WREA

HazLoc Certification HazLoc Certified

About the IS220PPRAH1A

The IS220PPRAH1A I/O Protection Module device that features so heavily on this personalized product page is central to the functioning of device within the greater Mark VIe or Mark VIeS product series automated drive assembly that it was originally manufactured for. With this being the case, it is no surprise to see that it culminates in a modular assembly style. This IS220PPRAH1A I/O Protection Module device's Mark VIe & VIeS Turbine Control System Series, as it is known in full title, is not actually considered a legacy product series, and it additionally makes use of potential wind turbine product applications well.

IS220PPRAH1A Product Number Breakdown

The IS220PPRAH1A I/O Protection Module functional product number becomes a natural source for IS220PPRAH1A modular assembly hardware component and component specification information, given the fact that it was specially designed alongside the IS220PPRAH1A I/O Protection Module device at the factory. For instance, this unique product number delegates the IS220PPRAH1A I/O Protection Module product offering's modular assembly status itself, as the initial IS220 series delegates it as a pack-style modular assembly in specific. Some other interesting qualities indicated in this fashion are the:

PPRA functional acronym

Group one Mark VIe/VIeS product series grouping

Conformal PCB coating

A-rated functional revision

3.11 PPRA Emergency Turbine Protection Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

Turbine protection I/O pack IS220PPRAH1A

with terminal board (accessory) IS200TREAH1A and daughter board (accessory) IS200WREAH1A

Turbine protection I/O pack IS220PPRAS1A or IS220PPRAS1B

with terminal board (accessory) IS200TREAS1A and daughter board (accessory) IS200WREAS1A

3.11.1 Electrical Ratings

Item Min Nominal Max Units

Power Supply

Voltage 27.4 28.0 28.6 V dc

Current — — 0.5 A dc

Contact Inputs (TREA)

Voltage 0 — 32 V dc

Voltage Detection Inputs (TREA)

Voltage 16 — 140 V dc

E-stop Input (TREA)

Voltage 18 — 140 V dc

Speed Inputs (TREA, WREA)

Voltage -15 — 15 V dc

Contact Outs 1-2 (TREA)

Voltage — — 28 V dc

Current — — 7 A dc

Contact Out 3 (WREA)

Voltage — — 28 V dc

Current — — 5 A dc

Contact Wetting Outputs (WREA)

Voltage — — 32 V dc

Current — — 13.2 mA dc