GE Aviation

INDUSTRIAL REMOTE INTERFACE UNIT (IRIU-220)

The IRIU-220 is the first in a new range of Industrial Remote Interface Units (IRIUs) from GE Aviation.

Remote Interface Units (RIUs) are line replaceable modules designed for remote locations, away from main control rooms but in the vicinity of subsystems and plant machinery.

Their primary role is to provide a serial digital interface between subsystems, plant machinery and a higher-level computing resource. In addition to operating as a data gathering slave to another RIU, control module, or other computing resource, they also perform local control, decision making and message filtering. Some variants of IRIU also offer low latency closed loop control for high precision and safety critical applications.

The modular software and hardware ethos of the IRIU provides significant flexibility to the user. This enables common IRIUs to be used throughout the control system with units taking on a different interfacing role in each location, whilst maintaining one hardware part number.

The IRIU configuration process utilises an aerospace qualified tool chain that enables the user to pick from a catalogue of pre-tested and approved interface/sensor definition and local control functions. This level of configurability and flexibility allows the IRIU to differentiate itself significantly from traditional industrial Input/Output (I/O) control offerings.

The IRIU has been developed to provide a flexible processing capability with minimal cost of change in line with GE Aviation's aerospace product family.

Key Features

- Rugged design
- Configurable using Control ST
- Designed to interface with a wide range of sensors
- Dedicated over-speed detection and annunciation circuitry - SIL rated 3
- ATEX Group II, category 3 [1]
- Two PROFINET interfaces [2]
- RS-422 serial bus can be configured for Modbus RTU master or slave communication

Interface Types

- Discrete Inputs
- Discrete Outputs (5V/Open)
- Tachometers/Speed Probe Inputs
- Thermocouple Inputs
- 4-20 mA Inputs
- Resistive Temperature Device Inputs
- General Purpose Voltage Inputs
- Current Outputs +/-200mA
- Current Outputs +/-20 mA
- Variable Differential Transformer Excitation and Return
- Potentiometers

IRIU Functionality

- Capture many channels of sensitive and specialised inputs
- Filter, precondition, and convert input signals into the digital domain
- Excite sensors
- Transmit the preconditioned input values via data bus or data link
- Continuously monitor the health of the controller and associated I/O interfaces (wiring and sensors)
- Provide continuous indication of operational health to upper level system

The IRIU's flexibility reduces the cost of future requirements change and enables a single part number to support multiple applications.
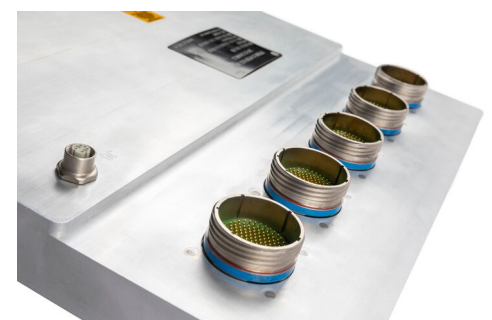
[1] Application for ATEX Group II, category 3 compliance in progress

[2] TBase-10/100 Ethernet ports with the first application being PROFINET (compliance in progress). Software supporting other protocols available soon.

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Configurations & Quantities of Generic I/O

Interface Type	Quantity
Inputs	
Speed/frequency input	4
Thermocouple	23
VDT	6 [2]
Voltage Inputs	57
Differential Voltage Inputs	32 [3]
Frequency or Discrete Inputs	18
Optically Isolated Voltage Inputs	28
Outputs	
Current Output +/- 200 mA	3
Open/5 V Discrete Output	22
VDT Excitation	3
Current Output +/-20 mA	4
Overspeed Outputs	2
Speed Repeaters	4
Serial Bus	
RS-422 [4]	1
CAN ISO11898 & CiA102 [5]	2
10/100 BaseT Ethernet [6]	2
Miscellaneous	
24 VDC Power Input	2
Configuration	9
Excitation +15 VDC via 1.85 kOhm	14
Excitation +15 VDC via 1.35 kOhm	7
Excitation +15 VDC via 2.7 kOhm	4
Excitation +15 VDC via 8.2 kOhm	1
Current Input Excitation	21
Contact Excitation (Isolated)	28
220 Ohm Ground Shunt	21
Ground	156

Specifications

Temperature range (operating):
-40 °C to + 90 °C ambient [1]

Temperature range (non-operating):
- 40 °C to +120 °C ambient

Mechanical Dimensions

411mm

391mm

39mm Depth

Mass: 5kg

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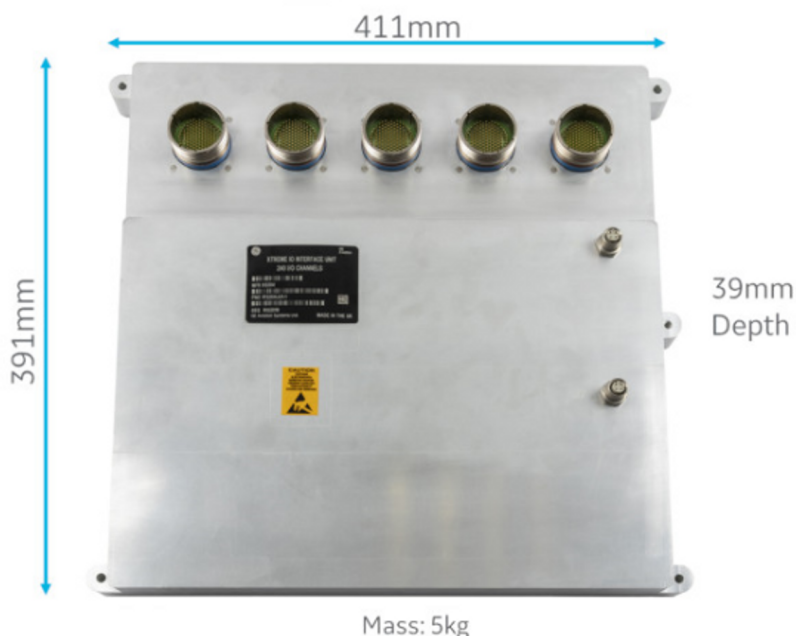
[1] +80°C with excursions to 90 °C for up to 30 mins
[2] Supports 3 differential pairs for Ratiometric measurement
[3] 16 differential pairs
[4] Supports GE Aviation VMS Open protocol. A Modbus RTU Slave/master is in development
[5] CANOpen stack in development
[6] Supports PROFINET IO RT and IO IRT as standard. Ethernet/IP, POWERLINK CN, EtherCAT Slave, Sercos Slave, and Modbus/TCP Client Server available on enquiry