GE Aviation

Increase your performance and flexibility with the highly configurable RIU-70.

The GE Aviation RIU-70 is a highly flexible and configurable Remote Interface Unit (RIU). Forming an integral part of GE's successful RIU Product Family, the RIU-70 offers a near "off-the-shelf" solution to a wide range of applications including:

- Distributed Input/Output (I/O)
- Centralised I/O
- Sub-system control (embedded or as a stand-alone unit)

In a compact package measuring only 6 x 6 x 1.1 inches, the RIU-70 provides 70 interface channels combined with either:

- a dual redundant MIL-STD-1553B Remote Terminal, or
- an ARINC 429 (2 Tx and 4 Rx channels) databus interface

Flexibility and configurability

A micro-controller based I/O core forms the heart of the system that provides a range of highly flexible generic interface channels designed to suit most common vehicle systems applications. Each interface can be configured for different applications by the use of data tables; specifically developed for each new application, these data tables invoke built-in generic software and hardware functionality.

Low cost

The unit's inherent flexibility allows:

- development costs and timescales to be minimised
- design changes to be quickly and easily implemented

With the capability to accommodate multiple data tables selectable through external configuration pins, a single part number can be used to cover multiple applications, thus reducing cost of ownership.

High reliability and maintainability

The robust and ruggedised RIU Product Family offers a high-level of reliability, with a typical Mean Time Between Failures (MTBF) of 100,000 hours. Incorporating a comprehensive built-in-test capability, RIUs can detect internal unit faults, and additionally detect faults within the sensors and wiring to which they are connected. Maintenance improvements are realised through the ability to utilise a single part to perform multiple applications, simplifying maintenance procedures and reducing spares inventories.

Optimised design approach

By embracing a technology re-use philosophy, the RIU-70, like all products within the RIU Product Family, utilises a common set of technology building blocks. This approach enables 'mature' and 'de-risked' solutions. A further key innovation that reduces GE's development timescales is the Requirement Capture Tool (RCT), specifically developed by GE to support its development activities for the RIU Product Family. This provides the capability to capture the specific interfacing requirements of the customer and to efficiently transpose these onto the highly flexible software architecture.

Customisation

The unit is designed with a pre-defined set of generic interfaces, chosen to suit a wide range of common aircraft sensors and effectors. Bespoke solutions with more specialised or a different mix of interfaces that provide a cost effective and weight optimised solution can be developed from the library of solutions already available and within the timescales associated with the development of the applications configuration data.

Key Features

- Provides 70 channels of flexible I/O
- Low lifecycle cost
- Low weight, volume and power consumption
- Ruggedised for harsh/remote environments
- Voltage/current/resistance/frequency/pulse-width modulation (PWM)/discrete input and output capability
- Configurable by PC downloadable data tables without requiring software re-design
- Available with either:
  - a dual redundant MIL-STD-1553B Remote Terminal, or
  - an ARINC 429 (2 Tx and 4 Rx channels) databus interface
- Can perform local control loop closure
- Optimised for control/monitoring of VMS sub-systems, including electrical, fuel, hydraulics, environmental control, brakes, health monitoring, etc.
- Designed to interface, as standard to a wide range of aircraft sensors and effectors including:
  - micro-switches
  - active sensors, low voltage d.c., frequency or pulse-width modulated signals
  - resistive sensors, e.g., PRT, thermistor etc.
  - thermocouples
  - L/RVDT
  - d.c. bus voltage monitors
  - potentiometers
  - strain gauges
  - tachometers
  - synchro/resolver
  - solenoid valves
  - relays and contactors
  - solid-state power controllers
  - active servos
- Can be easily adapted for more specialised interfaces
- CAN bus available on request

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Specifications - RIU-70

Test	Specification
Temperature	MIL-STD-810F, method 520.2, proc. III, (-45 to +71 °C operating)
Altitude	MIL-STD-810F, method 520.2, proc. III, (3.14 – 15.67 psia)
Shock	MIL-STD-810F, method 516.5, proc. I and V, (40 g peak for 11 ms, crash safety)
Vibration	MIL-STD-810F, method 514.5, proc. I
Humidity	MIL-STD-810F, method 507.4
Salt fog	MIL-STD-810F, method 509.4 and RTCA/DO-160D, sect. 14, cat S (35 °C 48 hrs exposure, 48 hrs drying)
Sand and dust	MIL-STD-810F, method 510.4, procedure I (blowing dust)
Fungus	MIL-STD-810F, method 508.5
Waterproof-ness	MIL-STD-810F, method 506.2, procedure I (driving rain)
Fluid susceptibility	MIL-STD-810F, method 504 and RTCA/DO-160D
EMC	MIL-STD-461E, CE101, CE102, CS101, CS114, CS115, CS116, RS103, RE102, RTCA/DO-160D Section 22 change 3 and Section 21

Power	28 V d.c. to RTCA/DO-160D, sect. 16, change 2, cat. B
Consumption	3 W
Dimensions	6 x 6 x 1.1 in (216 x 216 x 28 mm, excluding connectors)
Weight	1.4 lb (0.64 kg)

Note: Qualification by similarity to the RIU-200.

I/O configurations and quantities

Interface type	I/O	Quantity
Frequency/PWM/ discrete	I	28
Frequency/speed	I	3
Voltage/discrete	I	7
(Diff.) Voltage/ discrete	I	14
Synchro/resolver/ L/RVDT	I	1
Line switch 0.5A discrete	O	4
Ground switch 0.5A discrete	O	2
Ground switch 0.5A discrete/frequency/ PWM	O	2
Voltage 0-10 V	O	3
RS-485	I/O	1

Available with either:

ARINC 429 Tx/Rx	I	4
	O	2
MIL-STD-1553B dual redundant remote terminal	I/O	1

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