

Sentinel™ Instrument System Data Acquisition Unit

DESCRIPTION

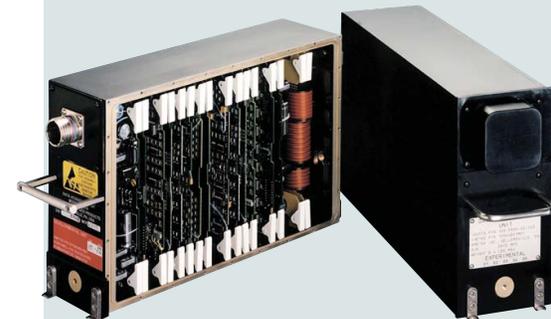
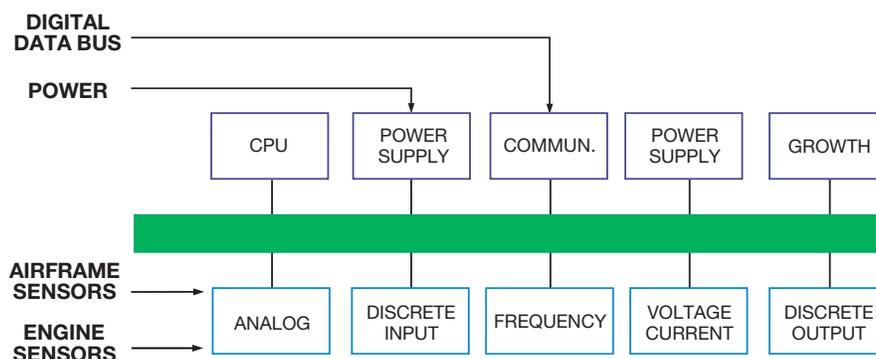
The Data Acquisition Unit (DAU) is a state-of-the-art, off-the-shelf data acquisition system for analog or digital processing applications where large amounts of data need to be processed or consolidated. The system can be configured as a single or dual channel unit. A dual channel configuration provides complete hardware redundancy for all parameters. The standard DAU architecture is shown below.

The DAU is designed using a modular approach with motherboard and plug-in function boards, which can be added as required to accommodate any aircraft sensor or communication bus. Custom boards can be designed to handle specialized sensors or communications.

The system utilizes state of the art technology to process analog, digital and discrete engine and airframe signals. Typical signals are filtered, converted to digital data, scaled and formatted for cockpit display or use by other aircraft systems.

In addition to analog inputs, each DAU channel includes two ARINC 429 inputs and a RS232 interface for communications with AMETEK's SENTINEL Displays, or other aircraft systems such as the flight management system and the FADECs.

All processed or stored information is transmitted via the standard ARINC 429 output bus. Optional data busses or buffered analog and discrete outputs can be incorporated into the DAU. The built-in RS422 port can be used to output real time data or as an access point for maintenance interrogation.



FEATURES

- ✓ Automatic reversion from FADEC to analog inputs
- ✓ Over 150 analog and digital inputs
- ✓ Over 25 power driver outputs
- ✓ Fully dual redundant
- ✓ Integrates with SENTINEL displays to provide real time data to pilots
- ✓ Logs exceedances, faults, power assurance, time history, and cumulative data
- ✓ Vibration monitoring
- ✓ Operates in high HIRF and vibration environments

Sentinel™ Instrument System

SPECIFICATIONS

Typical System Configuration: 30 analog (varied); 8 digital buses; 120 discrete

Input Power: 28 VDC (10 to 32 V) or 115 VAC, 400 Hz

Power Consumption: 7 watts typical per channel

Weight: 9.0 pounds (4.08 kg)

Operating Temperature Range: -40° to 158°F (-40° to 70° C)

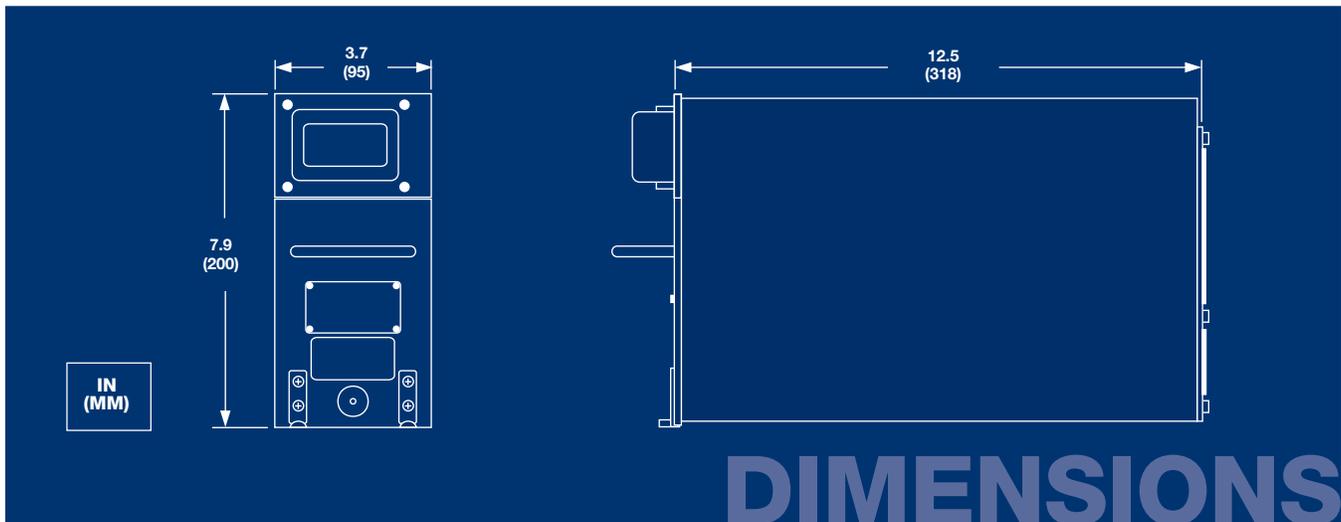
Cooling: No cooling required

Standard Inputs: ITT/TOT/TGT; Torque; Oil Pressure; Oil Temperature; Vibration; Control Position; N1/N2/NR; Mass Fuel Flow; Voltage/Current; Hydraulic Pressure; OAT; Discretes

Communications: ARINC 429; RS422; RS232; ARINC 615 Data Loader

Options: ARINC 629 Data Bus; MIL-STD-1553 Remote Terminal; Audio output drivers; Single channel configuration for less critical applications

TSOs: C43c



SOFTWARE

The software is also based on a modular design for transportability and ease of maintenance. Core software is combined with drivers for each of the function boards, to accommodate the required parameters. Application specific software is added as needed to process the data.

To facilitate fast upgrades, new software is loaded via the rear connector. With its generous program memory capacity, software for several different versions of an aircraft, and options, can be included in a single DAU. Pin strapping in the rear connector informs the processor which version or options are present.

In addition to the normal tasks of conditioning and processing signals, the DAU can also perform a variety of maintenance functions. Health monitoring, exceedance recording, and trending algorithms can

be run in a background mode while the processor would normally be idling.

Extensive built-in-test capabilities isolate problems to a faulty sensor or circuit. Self test is run continuously, with results stored in non-volatile memory for evaluation by a maintenance crew. Cross channel communications are used to verify channel integrity.

MECHANICAL

The DAU circuit boards are housed in a 3 MCU - ARINC 600 aluminum case, which acts as the card cage. The internal assembly consists of a motherboard and plug-in function cards. For high reliability, all connections to the rear filter pin connector are made via a flex circuit. Sealing is accomplished with a gasket for the cover and O-ring for the rear connector. Once fully assembled, the unit can withstand the typical requirements of DO-160C.

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