The Electronic Systems Division PA3800 series of Flight Data Acquisition Units (FDAU) have been specifically designed to meet the CAA/FAA mandatory requirements for Flight Data Recording. The requirements are for nominal 17 or 32 parameter flight data recording systems meeting FAA, CAA, ICAO and EUROCAE specifications.

Developed as a logical progression from the previously successful range of Flight Data Acquisition Units, the PA3800 is small in size and weight and has a low power consumption.

PA3800 FLIGHT DATA ACQUISITION

The Unit samples data from a wide variety of input signals which may be analogue, digital or discrete. The information is sampled in a programmable pre-determined sequence and assembled into a digital data stream in a format compatible with any standard ARINC 573/717/747 Digital Flight Data Recorder.

Additionally, for helicopter applications a mini HUMs is offered by the addition of engine monitoring and rotor track and balance functions.

PA3810

PV1591 Data Entry Panel

- ***Chosen for Bell and Eurocopter helicopters, de Havilland Dash 8, Cessna Citation and Canadair Challenger aircraft***
- ***Compliant with FAA/CAA mandatory requirements for 17/32 parameter Flight Data Recorders***
- ***Minimum size, low weight, low power consumption, high reliability***
- ***Compatible with all ARINC 573/717/747 Digital Flight Data Recorders***
- ***All signal input types can be accepted***
- ***Military standard in production***

PA3800 SERIES

Electronic Systems Division

Expansion Capability

In a typical FDAU, four or five module positions will be available for expansion of the system. This may take the form of extra signal conditioners, or the unit may be expanded into an integrated microprocessor-based monitoring system. This could provide either engine or airframe on both fixed and rotary wing aircraft with integrated health and usage monitoring.

Programmable Flexibility

A Programmable Read Only Memory controls the sample sequence. This permits the user to define the content of all data words in the frame, except frame synchronisation words. Each data word may be individually defined for input pin and signal type.
Up to eight sample sequences can be stored in a unit. Selection of the programme is by means of up to three wire links (jumpers) in the aircraft installation, enabling the same part number Unit to be used in a variety of aircraft types.

Built-In Tests (BIT)

The FDAU provides comprehensive BIT, according to the principles laid down in EUROCAE ED-55. In addition to testing the internal functions of the unit, the FDAU checks that the acquired data is within predetermined limits.

PA3805 Shorter FDAU

Input Capability

1 Analogue Signals

56 input wired in standard configuration for signals of the following types
- Synchro
- DC and AC Voltage Ratio
- High Level DC (0 to 32V)
- Low Level DC (0 to 5V)
- Very Low Level DC (± 400mV)
- Bipolar DC (± 5V or ± 32V)
- Potentiometer (FDAU excited)
- One 300 to 800 ohm thermobulb

2 Discrete Inputs

- Shunt (OV or open circuit)
- Series (open circuit or 28V)
- Marker Beacon
- Latched Shunt
- Latched Series

In the standard configuration, 48 input wires are provided.

3 Digital Inputs

The FDAU provides a wide variety of combinations of digital and frequency inputs. All frequencies are programmable for frequency range typically 7 to 77Hz (Tacho) or 256 to 4352, 8448, or 16640Hz (Pulse Probe).

One or two of the following modules are provided in the standard configuration dependent on the aircraft signal sources.
- Eight ARINC 429 inputs (All programmable high or low speed)
- Eight frequency inputs
- Four ARINC 429 plus four Frequency
- Honeywell Avionics Standard Communications Bus (ASCB), Versions A, B and C
- Collins Commercial Standard Digital Bus (CSDB)
- MIL-STD-1553 A & B

4 Relative Time Counter

The FDAU also provides Frame (Relative Time) Counter.

Output Capability Data Outputs

The PA3800 Flight Data Acquisition Unit provides an output of 64 twelve-bit data words per second in Harvard Bi-phase format to the DFDR. As an option this data rate may be increased to 128 or 256 words per second.
An Auxiliary data output in RZ format is provided for use with an optional Quick Access Recorder at a rate of 64 words per second, with an option to increase the data rate to 128 or 256 words per second.
A Time Synchronisation output in Frequency Shift Key format is provided to synchronise the DFDR to the Cockpit Voice Recorder.

Transducer Supplies

The FDAU provides the following supplies for transducers:
- nominal 5V DC for potentiometers
- nominal 28V DC for accelerometers

Environmental

To RTCA DO-160B	
Temperature	Category B2 (-45 to 70° C)
Temperature option	Category F2 (-55 to 70°C)
Temperature Variation	Category C
Humidity	Category A
Vibration	Category J/Y
Magnetic Effect	Category A
Electromagnetic Compatibility	Category A

Power Input

115V AC or nominal 28V DC to DO-160B	Category A
Maximum Consumption	15W max

Dimensions

The standard PA3810 FDAU is housed in a 3/8 ATR short case to ARINC 404A. Alternatively, the PA3805 unit may be housed in either a 3 MCU case to ARINC 600 or a 'Short short' 3/8 ATR case.

Weight

In a typical configuration the weight of the FDAU is 4.0kg (8.8lb).

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