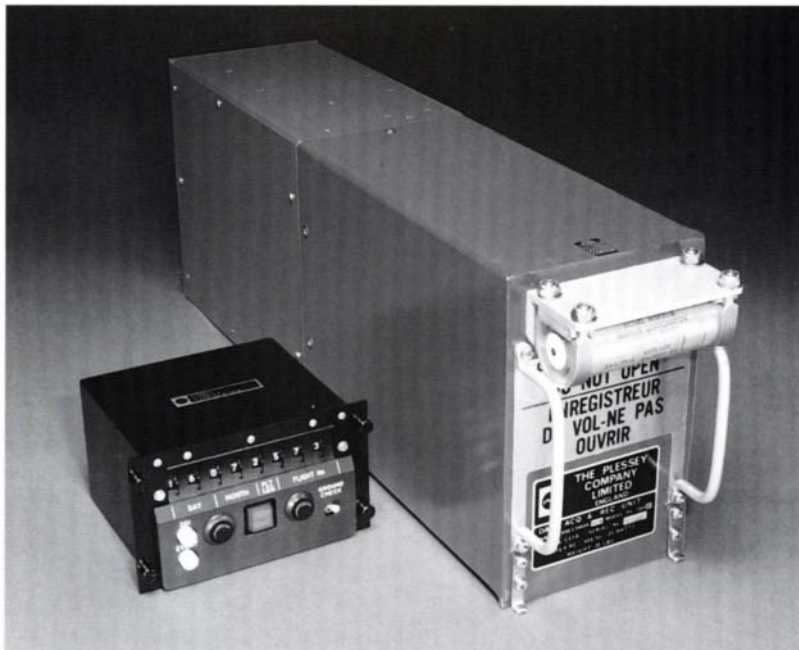


# ESD1584

# Data Acquisition and Recorder Unit



■ *Single packaged acquisition unit and fully protected crash recorder*

■ *Very low power consumption*

■ *Fully complies with FAR 121-343, ANO 1972 spec. 10, data format to ARINC 573*

■ *Low weight, low component count, high reliability*

■ *Rapid on-board extraction of data*

**The data acquisition and recorder unit, type ESD1584, is unique in that it meets the full requirements of current CAA and FAA legislation within a single 1/2 ATR case. The unit is approved to the survivability and performance standards specified in air navigation order 1972, specification no.10, and FAR 37-150-TSO-C51a. Also the unit's signal handling capacity is sufficient to meet the requirements of specification no.10 and FAR 121-343, with ten per cent spare capacity.**

These features, combined with its low procurement and ownership costs, make the ESD1584 an ideal replacement for electro-mechanical ARINC 542 recorders.

A useful facility of the system is the high speed extraction of data 'in-situ', using a copy recorder. This facility enables data to be removed for analysis without disturbing the aircraft installation.

A Flight Data Entry Panel (FDEP), type ESD1591, can be supplied if there is a requirement for manual insertion of documentary data into the recording.

The ESD1584 comprises a protected recorder at the front of the unit and data acquisition electronics at the rear. The design baseline for the acquisition electronics is ARINC 573, input parameters being sampled at a rate of 64 samples per second and each sample being converted to a twelve bit binary word. The resultant digital data stream is routed to the accident-protected recorder assembly, where the information is recorded serially on mylar tape, providing a continuous loop memory of 25 hours.

The unit incorporates a comprehensive self-test facility. Correct operation of the unit is sensed in accordance with mandatory requirements for aircraft despatchability and displayed on a status indicator on the flight deck. If an FDEP is installed, status is displayed on indicators on the front panels of this unit.

The high speed replay circuitry incorporated in the ESD1584 enables the operator to extract the entire 25 hours of recorded data in sixteen minutes by means of a data-dump recorder. The data-dump recorder is plugged into a test socket on the aircraft, enabling data to be extracted without removing the ESD1584 from the aircraft. The data-dump recorder is a Lockheed type 235.

### Input capacity

The ESD1584 provides 60 analogue input wires associated with the following signal types:

Synchro

DC absolute voltage

DC voltage ratio

AC voltage ratio

Potentiometer

An input for 300 to 800 ohms variable resistance, and 28 inputs for discrete (on/off) signals are also available.

In addition, depending on the unit variant selected, one of the following is provided:

Up to 8 frequency inputs (tacho or pulse probe).

Up to 8 ARINC 429 (DITS)

Up to 4 ARINC 429 DITS plus 4 pulse probe

24 additional discrete inputs

24 discrete + GMT clock to ARINC 585

Digital air data systems (DADS)

### Programme flexibility

The ESD584 can be programmed to provide parameter sampling rates from once every 4 seconds to 32 times per second.

Three methods of programming, depending on the variant selected, are used:

### Fixed programme

The fixed programme fully defines the input pins and signal type for each data word.

### Signal type selection by wire link:

The signal type selection by wire link method, similar to the system shown in ARINC 573, defines the input pins for all data words.

The selection of signal type for some words is made by wire links fitted in the aircraft.

### Programmable read only memory:

The programmable read only memory permits user definition of the input pins and signal types for all data words, thus offering maximum flexibility. The size of the memory permits eight different sample sequences to be stored, selection being made by aircraft links. By this means the same unit may be used for different requirements.

### System capacity

The data rate for the ESD1584 is 256 twelve digit data words per 4 second frame.

### ESD1591 Flight Data Entry Panel

The ESD1591 provides for the manual insertion of data into the system and also a means for displaying the status of the ESD1584.

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The primary function of the ESD1591 is to provide the means of manually entering documentary data into the recorder during each flight. Eight thumbwheel switches for manual setting up of this information are mounted on the front panel of the unit.

### Environmental conditions

BS3G100, RTCA DO-160

### Dimensions and weight

Height: 95mm (3.75in)

Width: 140mm (5.75in)

Depth: 114mm (4.50in)

Weight: 1.23kg (2.75lb)

### ESD1584 Data Acquisition and Recorder unit

#### types of inputs

##### (i) All variant:

a) Analogue (60 wires)

Synchro 26v

DC ratio and absolute AC ratio

Potentiometer

Variable resistance

b) Discrete (28 wires)

DC, series and shunt

AC, series and shunt

Marker beacon

##### (ii) Variant dependant options

Frequency (tacho or pulse probe)

DITS (ARINC 429)

DADS (ARINC 575/576)

GMT (ARINC 585)

Additional discretes

### Power supplies

115V 400Hz conforming to BS3G100

### Power consumption

25W

### Environmental conditions

BS3G100, RTCA DO-160, TSO-C51a

### Crash survivability

Air navigation order 1972, specification 10, FAR 37.150, TSO-C51a

### Dimensions and weight

1/2 ATR long

Height: 193mm (7.62in)

Width: 124mm (4.88in)

Depth: 495mm (19.52in)

Weight: 11.34kg (25lb)

## ESD1584

### Data Acquisition and Recorder Unit

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