EMPFR

Enhanced Multi Purpose Flight Recorder

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Key Features

- Remote diagnostics capability
- Installation in any attitude
- Compact size, low weight
- Fast data recovery (FDR data < 1.5min, CVR data < 2min) using Ethernet interface direct to network or PC
- Meets and exceeds EUROCAE ED-112
- EASA and FAA approved to TSO-C123b and TSOC124b

Applications

- Crash Protected Recording

Overview

Current and anticipated FAA and EUROCAE requirements for crash protected recorders could be a considerable burden to your fleet and your business. A combined solution for the future also provides operational benefits today.

Curtiss-Wright has developed a versatile recorder, in a compact package. On-aircraft download is achieved in less than two minutes and can be networked directly to a remote operational base for remote diagnostics and fault reporting. Its features include

- Less than 3.2 kg (7.0 lb) including under water locator beacon
- Attaches directly to airframe
- Maximum 12W of power at 28VDC
- Fast Ethernet data recovery options
- 20,000 hours MTBF

The EMPFR is packaged as a compact unit ideal for the rotary wing or small/medium aircraft market. Importantly, this compact unit may be attached directly to the airframe without the need for bulky equipment racks or anti-vibration mounts, thus permitting optimum aircraft performance to be attained for lower operating costs.

Based on state-of-the-art solid state memory systems, the EMPFR features also include 4 channel voice recording for 120 minutes (one wide band, 3 narrow band audio channels), a rotor tachometer interface, 25 hours of flight data recording at 512 words/second and 2 hours of data-link recording (CPDLC). Higher FDR data rates up of up to 1,024 words/second are available, making EMPFR ideal for general aviation or flight test recording. Information retrieval is made via a 10/100MB Fast Ethernet interface directly to a portable transfer device or analysis PC using standard network hardware and protocols, alternatively connection may be made to transfer FDR data via an aircraft Wireless Data Link (WDL). The EMPFR exceeds the requirements of FAA, EUROCAE and EASA requirements ED-112, ETSO-C123b and ETSO-C124b, and is qualified to RTCA/DO-160F and designed in accordance with RTCA/DO-178B and RTCA/DO-254.

Specifications

Interfaces

Cockpit voice recorder (CVR) function

- Recording duration: 4 channels x 120 minutes
- Audio bandwidth:
  - 150 Hz to 3.5 kHz (3 voice channels)
  - 150 Hz to 6.0 kHz (single area microphone channel)
- Playback:
  - Off-aircraft high-speed download of complete CVR record using Ethernet interface to portable PC or recovery device
- Data-link: TSO-C117
- Fault reporting:
  - Via discrete output or via web status pages
  - Internal CVR/FDR synchronization
  - 18V output power for CCU

Flight data recorder (FDR) function

- Duration: 25 hours (at 512 words/sec)
- FDAU interface: Harvard bi-phase in accordance with ARINC 573/717
- Data rates: 64, 128, 192, 256, 384, 512 and 1024 wps
- Replay:
  - Real-time output of recorded data using ARINC 573/717 interface
  - On-or off-aircraft high speed downloads of complete FDR record using Ethernet interface into portable PC or recovery device
- Fault reporting: Via discrete output or via web status pages

EMPFR Common to All Configurations

- Locator beacon: Fitted with miniature ultrasonic ocator beacon, to TSO-C121
- Cooling: Free air convection, no forced cooling
- Connector: MIL-C-38999 Series III
- Environmental: RTCA/DO-160F
- Operating temperature: -55°C to 71°C
- Storage temperature: -55°C to 85°
- Altitude: -1,500 ft to 55,000 ft
- Crash protection: Exceeds ED-112,TSO-C123b,TSO C124b
  - Impact: 3,400g for 6.5 msec
  - High temp fire: 1,100°C for 60 minutes
  - Low temp fire: 260°C for 10 hours
  - Static crush: 2,270 kg for 5 minutes
  - Penetration: 227 kg from 3m
  - Deep water immersion: 60 MPa (20,000 ft)
- MTBF: 20,000 hours - fixed wing
  8,000 hours - rotary wing
- Software level: RTCA/DO-178B Level D
- Hardware level: RTCA/DO-254 Level D
- Field reprogrammable: Via Ethernet interface

Options

- Configurable as: Flight data recorder (FDR), Cockpit voice recorder (CVR), Combined voice, data link and flight data recorder (CVFDR)
- Optional equipment: Miniature Cockpit Area, Microphone (CAM), Slimline Cockpit Control Unit (single or dual recorder support),NVG option Mounting adapter for ARINC 757 retrofit installations, Portable Replay Equipment (PRE) Recorder independent power supply

Electrical and Mechanical

- Power
  - 28 VDC
  - 12W max
- Mass
  - <7.7 lb (3.5 kg) including Underwater Locator Beacon (ULB)
- Dimensions (H x L x W)
  - 3.5 x 10.9 x 4.6” (89 x 277 x 118 mm)

Ordering Information

Please contact Curtiss-Wright Defense Solutions.