

High-Resolution, High-Contrast Display
Versatile Retrofit or Forward-Fit Application

EFI-890R Advanced Flight Display

For Flight Deck Modernization

Extensive Inputs and Outputs Support a Host of Integration Possibilities
Installation as a Stand-Alone PFD or Fully-Integrated PFD/ND System
Common "Smart Display" Hardware Design



UNIVERSAL™ AVIONICS
an Elbit Systems Company

Flight deck modernization with integrated Flat Panel Displays offer significant improvement in situational awareness and reduces pilot workload which adds to the overall safety of your flight.

The EFI-890R features an adaptable design proving valuable in forward-fit and retrofit applications where interface flexibility is essential. Extensive integration capabilities support a host of aircraft platforms and existing avionics, providing The Perfect Fit for your flight deck.

The Perfect Fit™ For Aircraft Flight Decks

The EFI-890R Advanced Flight Display offers flexibility for installation as a stand-alone Primary Flight Display (PFD) or Multi-Function Display (MFD), as well as a fully integrated PFD/Navigation Display (ND) cockpit system. The unit is optimally sized, featuring a lightweight, compact housing while offering a large, 8.9-inch diagonal LCD display.

The high-resolution, high-contrast display provides superior readability throughout a full range of ambient lighting conditions including bright sunlight and dim nighttime environments. Extremely wide viewing angles are also accommodated.

A unique LED backlight system with reduced power requirements produces a lower unit operating temperature for superior reliability. This LED backlight system produces brighter, clearer displays with improved color uniformity.

The EFI-890R replaces ADI, HSI, Radar Indicator, Altimeter, VSI, RMI and Air-speed Indicators with PFD and ND large multi-format displays. The dedicated Engine Display available in certain aircraft installations replaces the existing individual electromechanical instruments with a single screen, dual channel redundancy, and relatively hemispherical viewing angle with essentially no color/contrast shifts.

Versatile Retrofit and Forward-fit Applications

Featuring an adaptable design, the EFI-890R is a proven solution for retrofit and forward-fit applications in over 40 aircraft types. It is certified for a full range of platforms, meeting certification requirements for Part 23, 25, 27 and 29 operators worldwide.

With interface capabilities for numerous flight deck instruments, its versatile design supports direct inputs from a multitude of analog and digital aircraft systems from autopilots and flight directors to radars and Terrain Awareness Warning Systems (TAWS).

For operators, this eliminates the cost of replacing existing systems or the need for additional external symbol generators resulting in significant cost-savings.

The independently functioning “smart” displays have common hardware which incorporate internal signal conversion and data processing.

The EFI-890R offers a solution to best match your aircraft and your operational requirements.

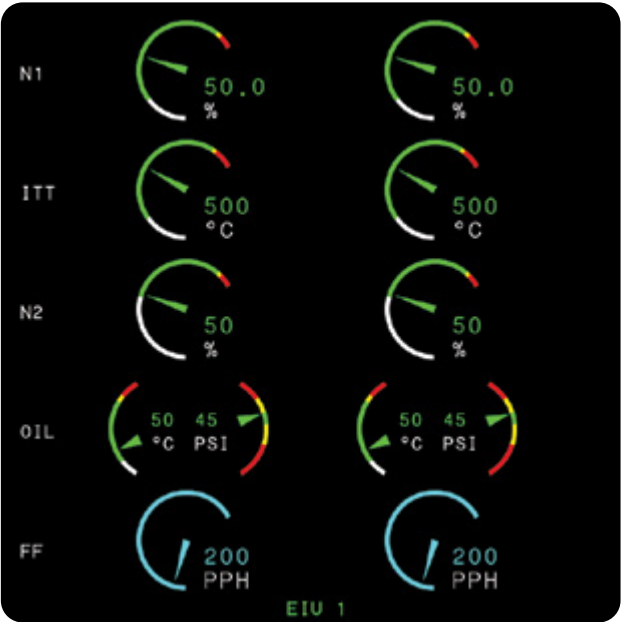
Multi-Function Display

The large format MFD-890R Multi-Function Display is designed for operators who want the benefits of glass-cockpit displays at a fraction of the cost and complexity associated with a full avionics suite replacement. The MFD-890R is fully compatible with the EFI-890R Advanced Flight Display system, al-

lowing the unit you install today to become part of a complete cockpit retrofit at a later time. This platform provides integral input/output ports and symbol generators in every display, and the use of display controls via discrete and common electronics.



Compatible with electro-optical and infrared (EO/IR) imaging systems



Digital Engine Display (available on certain models)

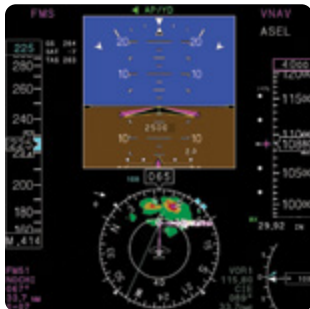


Primary Flight Display with Vision-1™ Egocentric View

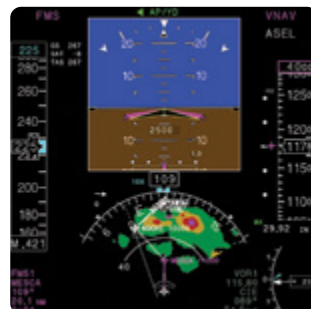
Advanced display technology and innovative presentation symbology combine to provide you with all the information you need, extensive, yet uncluttered with soft keys and function controls which are located on separate logical and intuitive controllers.

The PFD displays flight guidance, airspeed, vertical speed, altitude and heading, along with every bug, marker and other detail desired over a full-screen ADI display. Multiple optional display formats are pilot-selectable, including Vision-1 Synthetic Vision System. Traffic Collision and Avoidance Systems (TCAS) Resolution Advisories and Terrain Awareness Warning System (TAWS)/Enhanced Ground Proximity Warning System (EGPWS) annunciations are supported. Vbar or cross-pointer flight displays are also supported.

In composite mode, the PFD adds Map or HSI displays in 360° and 120° arc formats with optional weather radar display. Flight plans in map mode include support for conics (procedure turns, arc legs and holding patterns) as provided by the navigation system.



Primary Flight Display with
360° Map View and Radar



Primary Flight Display with
120° Map View and Radar



Full Primary Flight Display Mode
with V-Bar Overlay



Composite Primary Flight Display
with 360° HSI



Composite Primary Flight Display
with 120° HSI

RNP/ANP scale for FMS operations to indicate an RNP-required segment or procedure is being flown (Universal Avionics patented feature).



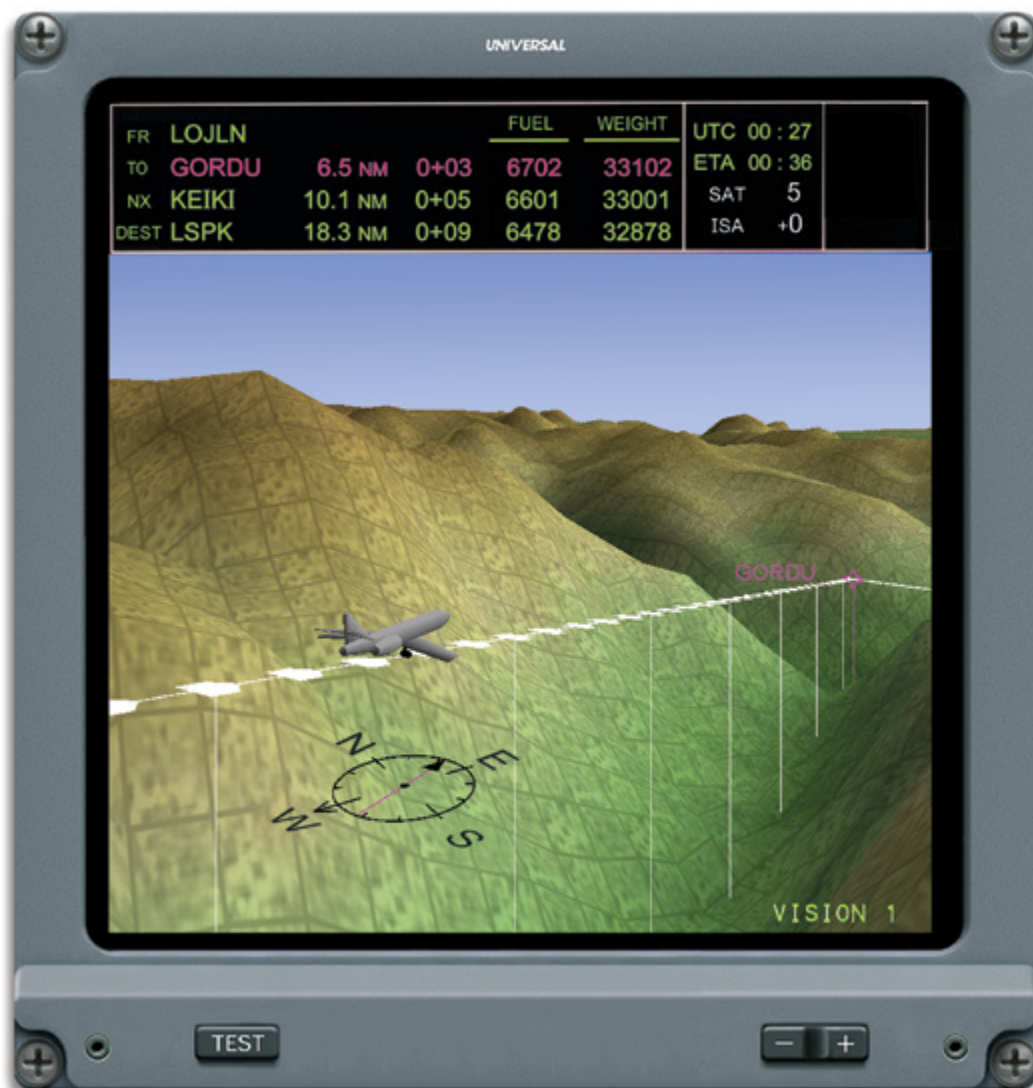
ANP/RNP – Flight Director Not Active



ANP/RNP – Flight Director Captured



ANP/RNP – ANP Beyond RNP Limits



Nav Display with Synthetic Vision, TAWS, and Electronic Charts

The Navigation Display (ND) presents Map and HSI views, as well as a host of interfacing components including the Vision-1 Synthetic Vision System, TAWS Terrain Awareness Warning System, Electronic Charts, and Checklists. Support is also provided for EGPWS, and other non-Universal Avionics LRN/GPS systems.

A navigation progress data block, in the upper portion of the screen, is provided for most ND modes. This progress bar, as shown below, provides information pertinent to the intended path of flight such as time and distance to the "TO" waypoint, next waypoint and destination along with fuel and weight data, UTC, ETA, SAT, and ISA variation.



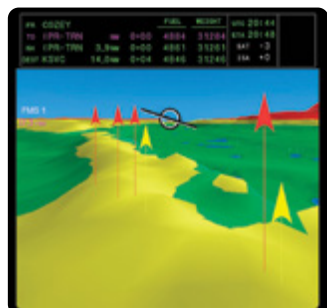
Nav Display with 360° Map View and Radar



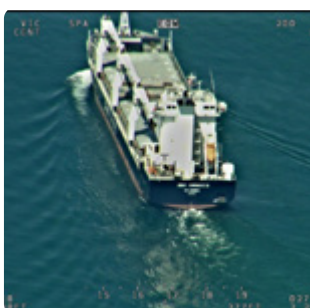
Nav Display with 120° Map View and Radar



Nav Display with Electronic Chart



Nav Display with TAWS 3D Perspective View



Nav Display with Video Interface
Photo Credit: L-3 WESCAM - MX Series

Control Panels

An array of Dzus-mounted control panels support 1-, 2-, 3-, 4- and 5-display configurations with dedicated / shared control.



Vertical PFD Combined Display Control Panel



Course/Heading Control Panel



Reference Select Control Panel



PFD Combined Display Control Panel



Display and Radar Control Panel



Display Control Panel

CHP Course / Heading Control Panel is available in single or dual control format. It controls setting of the heading reference bug and short range NAV source course, with a “push to sync” function available for both.

RSP Reference Select Control Panel supports setting of Speed and Altitude Reference Bugs on the PFD, Altitude Preselect, and airspeed / altitude units of measure. Available in either a single or dual control format.

PFDCP PFD Combined Display Control Panel provides for NAV / BRG source select, baro altitude / minimums select, RA / DA toggle, ADC revert, attitude / heading revert, display revert, and source transfer for the on-side PFD and ND / MFD. Also provides for selection of terrain, weather, and traffic for the on-side PFD. It incorporates ATT / HDG and ADC Revert buttons, eliminating the need for separate switches in the installation. This control panel is also available in a vertical format.

RCP Display and Radar Control Panel provides for weather radar range, antenna tilt, and mode control for compatible weather radar systems. It also provides for traffic, terrain, and external video selection for the ND / MFD.

DCP Display Control Panel provides for traffic, terrain, weather and external video selection for the ND / MFD.

Nav Display



ND supports HSI (360°/120°), Vision-1, traffic, weather radar, lightning, video from onboard cameras, enhanced map presentations, and curved procedures.

Flexible Integration Capabilities

- 17+ types of Attitude/Heading Sensors
- 14+ types of Air Data Sensors
- Multiple Analog and Digital Radio Altimeters (6+ known types)
- 13+ different Weather Radar Systems
- 10+ different Flight Director/Autopilot systems (including ASCB Version A)
- 5+ Traffic Collision and Avoidance Systems (TCAS)
- Supports numerous analog and digital radios

Specifications

Hardware

Bezel Size: 7.84 in. H x 7.42 in. W
Depth: 9.79 in. (back of bezel to rear of connector)
Image Size: 6.3 in. H x 6.3 in. W (8.9 in. diagonal)
Weight: 10.4 lbs.
Mounting: 4-Point front flange mounted (no mounting trays)
Faceplate Color: Gray or Black
Display: Active Matrix Color LCD with LED backlight system
Viewing Angle: +60 / -60 deg. Horizontal, +45 / -10 deg. Vertical
Resolution: 780 x 780, 124.5 color groups per inch (CGPI)

Inputs/Outputs

6 ARINC 429 input ports
2 ARINC 429 output ports
2 ARINC 708 input ports
5 CSDB input ports
2 CSDB output ports
3 input / 1 output Manchester bus ports
4 ARINC 407 synchro inputs with 2 ref inputs
AC analog outputs to support Course Error and
Hdg Error outputs to an analog autopilot
2 Differential DC and 4 single end DC outputs
15 DC analog inputs
14 +28V / Open discrete inputs
2 RGB-HS – VS high resolution video input ports
Discrete / Opto-encoder controller inputs
3 Monochrome RS-170 / Color NTSC composite video inputs

Cooling

Integral fans; cold wall construction

Configuration Module

EEPROM harness module for installation configuration

Power

Primary Input: 28 VDC standard
Lighting: 5V or 28V
Consumption: 82 Watts

FAA TSO / ETSO

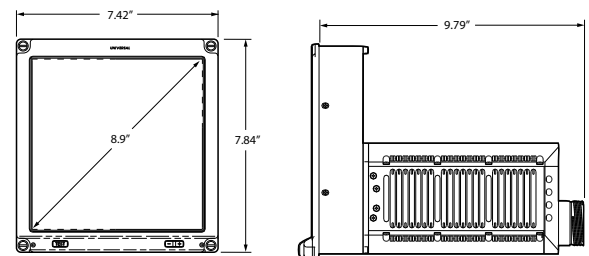
C113 Airborne Multipurpose Electronic Displays

RTCA Documents

Hardware: DO-160D
Software: DO-178B, Level A

Supported Interfaces

- Analog and Digital Heading sources
- Moving Map overlays
- Flight Plan data from FMS/GPS system (including conics when provided)
- VOR/DME and VOR/TAC station locations (identifiers when provided by the sensors)
- Bearing & Distance data for VOR, FMS/GPS, TACAN, and NDB (analog and digital sources supported)
- Terrain Awareness Warning System (TAWS) graphics
- Vision-1 Synthetic Vision System (SVS) graphics
- Enhanced Ground Proximity Warning System (EGPWS) graphics
- Traffic Collision and Avoidance Systems (TCAS1, TCAS2 or T2CAS™) overlays
- Weather Radar Displays (multiple radar systems supported – VP displays when provided)
- Electronic charts and other graphical image from multiple systems
- Mission Video from compatible systems including EuroNav
- Analog video including cameras, Enhanced Vision System (EVS), NTSC composite video and Electro-Optical sensors



Specifications and graphic displays contained herein are subject to change without notice. Features and capabilities may be limited due to installation or interfacing equipment.

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