

# CMDP

## COCKPIT MISSION DISPLAY PROCESSOR



The Cockpit Mission Display Processor (CMDP) is a high safety avionics computer platform with a powerful embedded graphics capability. It is configured using the base of the standard hardware and layered software modules, both developed by adopting the latest quality standards that make the CMDP certifiable according to DO178B and DO254 level B (optionally level A) and suitable as a main cockpit mission computer.

The CMDP is capable of performing highly integrated mission management tasks including embedded dual head cockpit graphics generation and advanced digital map. It offers enhanced functionality, innovative graphical features and an innovative Human Machine Interface (HMI).

It can be configured to the specific customer's mission requirements utilising a dedicated ground based software tool that is used for the main operating functions.

### ADDITIONAL FUNCTIONS

- Management of the Tactical Situation Display, filtering of graphic data, layering of data
- Management of platforms and missions using visualisation of the interactive table of data, menu and dialog windows
- Management of the mission sensors including the settings for operating modes and working parameters
- Integration of tactical data links to allow execution of cooperating missions.

The CMDP uses an embedded mass memory to store pre-flight data such as map databases, intelligence data, navigation data and to store data history for flight, mission and maintenance purposes. A typical system configuration for a cockpit mission system includes a single (or optionally dual) CMDP, one or more displays and external sensors from which A/C data and tactical information can be acquired to accomplish the mission.

The CMDP can be provided as a complete system with the operating software or as an open avionics computer that includes hardware and the relevant software equipment as well as standard tools that allow any customer to develop and test its own operating software.

# TECHNICAL SPECIFICATION

## MDP PHYSICAL CHARACTERISTICS

<b>Dimensions</b>	5 MCU
<b>Weight</b>	9.5Kg maximum
<b>Power Requirements</b>	28VDC
<b>Power Dissipation</b>	85W
<b>Cooling</b>	Convention cooled, closed enclosure
<b>MTBF</b>	2500 operative hours
<b>Connectors</b>	Up to 9 connectors MIL-STD-38999 and 2 Triax for 1553 Avionic-Bus interfacing

## PERFORMANCES PROCESSING & I/O

<b>Performance</b>	(CPU Board) CPU Speed (frequency): 1.000GHz 2,000 DMIPS 1GB DDR SDRAM
<b>Architecture</b>	Modular Open System Architecture according to VITA 46 (VPX)
<b>System Bus</b>	System bus implemented using High speed Serial bus (PCIe)
<b>Processor Architecture</b>	Modular architecture based on the PCI and PCIe local buses
<b>CPU</b>	AMCC Processor PPC460EX @ 1Ghz
<b>I/O</b>	Interfaces Dual redundant MIL-STD-1553 Interface RS4 22 serial interfaces RS23 2 serial interfaces Ethernet 10/100Base T Arinc 429 USB AFDX (optional) Discrete and analogue
<b>RT Operating System</b>	GHS Integrity 178B
<b>Software Factory</b>	ADA, C
<b>OpenGL</b>	Safety Critical OpenGL

## ENVIRONMENTAL

<b>Temperature</b>	-40°C to +70°C (operating)
<b>Vibration (random)</b>	0.0452 g <sup>2</sup> /Hz (lh/axis) Functional 0.0125 g <sup>2</sup> /Hz (lh/axis) Endurance
<b>EMC</b>	In accordance with MIL-STD-810 and RTCA/DO-160

## APPLICABLE STANDARDS

MIL-STD-810D
MIL-STD-704D
MIL-STD-462 (Test) & 461 (Req.)
MIL-STD-1553B
EIA-STD-RS422/485
STANAG S3350A, B, C , XGA (synch on green), DVI
RTCA DO-178B level B (optionally level A)
DO-254 level B
ARINC 429
VITA 42.0 & VITA 42.3

## OPTIONS FOR SOFTWARE

Equipment SW only , in accordance to DO-178B level B (optionally level A)
Equipment SW and Digital Map SW, in accordance to DO-178B level B (optionally level A)
Equipment SW and Operating Flight Program SW, including dual heads EFIS graphics generation, in accordance to DO-178B level B (optionally level A)

## SUPPORTED CARTOGRAPHIC DATA AND MAP FUNCTIONS

### RASTER

<b>CADR</b>	Scale: 1:7K, 1:33K, 1:50k, 1:66K, 1:100K, 1:250k, 1:500k, 1:1M, 1:2M, 1:5M
<b>CIB</b>	1mt, 5mt, 10mt
<b>Arc Standard Raster Product (ASRP)</b>	Scale: 1:250K, 1:500K, 1:1M, 1:5M
<b>GeoTiff Type:</b>	LAT/LONG, UTM, Lambert

### VECTOR

<b>Vector Map (VMAP)</b>	Level 0,1
<b>Digital Aeronautical Flight Information File (DAFIF)</b>	Up to 8
<b>Digital Vertical Obstruction Format (DVOF)</b>	Type 100 char
<b>Shape</b>	ESRI Shapefile
<b>Digital Chart of the World (DCW)</b>	SP57

### MATRIX AND ALGORITHMS

<b>Digital Terrain Elevation Data (DTED)</b>	Level 0,1,2
<b>Slope Shading</b>	North/West, South/West, South/Est, North/Est
<b>Elevation Banding</b>	Bands user-defined
<b>Dynamic Intervisibility</b>	Number of rays and sector user-defined
<b>Clear Line of Sight (CLOS)</b>	According to DTED available
<b>Dynamic Threat</b>	According to DTED available
<b>Terrain profile</b>	According to DTED and flight plan (over flight plan) available
<b>Terrain awareness</b>	DTED and DVOF input data

### GRID

<b>Universal Transverse Mercator (UTM)</b>	Scale, and grid spacing user-defined
<b>LAT/LONG</b>	Scale, grid spacing and tick spacing user-defined
<b>Distance</b>	Scale, Centre and Grid spacing user-defined

### GRAPHIC MISSION SYMBOLOGY

<b>Graphic lines</b>	Up to 2000
<b>Graphic symbols</b>	Up to 1000
<b>Graphic Points</b>	Up to 1000
<b>Graphic Arcs of circle</b>	Up to 400
<b>Graphic Ellipses</b>	Up to 200
<b>Graphic Circles</b>	Up to 200
<b>Graphic Rectangle</b>	Up to 200
<b>Graphic Squares</b>	Up to 200
<b>Graphic Crown circular sector</b>	Up to 200
<b>Graphic Triangle</b>	Up to 200

### IMAGES

<b>Geo-Referenced Type</b>	Bmp, jpeg, tiff
<b>Not Geo-Referenced Type</b>	Bmp, jpeg, tiff

### CARTOGRAPHIC DATABASE GENERATION

**Map Preparation Facility (MPF)** SW tool (Microsoft Windows based) used to generate map databases starting from cartographic standard and raw data

Digital map software developed in partnership with Ingegneria Dei Sistemi (IDS)

For more information:  
airborneandspace@leonardocompany.com

Electronics Division  
Via dell'Industria, 4 - 00040 Pomezia (RM) - Italy  
T +39 06 918531

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