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, fifiltering 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.

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TECHNICAL SPECIFICATION

MDP PHYSICAL CHARACTERISTICS

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

PERFORMANCES PROCESSING & I/O

Performance	(CPU Board) CPU Speed (frequency): 1.000GHz 2,000 DMIPS 1GB DDR SDRAM
Architecture	Modular Open System Architecture according to VITA 46 (VPX)
System Bus	System bus implemented using High speed Serial bus (PCIe)
Processor Architecture	Modular architecture based on the PCI and PCIe local buses
CPU	AMCC Processor PPC460EX @ 1Ghz
I/O	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
RT Operating System	GHS Integrity 178B
Software Factory	ADA, C
OpenGL	Safety Critical OpenGL

ENVIRONMENTAL

Temperature	-40°C to +70°C (operating)
Vibration (random)	0.0452 g²/Hz (lh/axis) Functional 0.0125 g²/Hz (lh/axis) Endurance
EMC	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

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

VECTOR

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

MATRIX AND ALGORITHMS

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

GRID

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

GRAPHIC MISSION SYMBOLOGY

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

IMAGES

Geo-Referenced Type	Bmp, jpeg, tiff
Not Geo-Referenced Type	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)

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