ELECTRONICS DIVISION

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.

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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 (over flight plan)	According to DTED and 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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