

# MP70S

## ARINC 600 IFEC Network Server

### DO-160G Pre-Qualified, SWaP-C Optimized Airborne Computer

- » ARINC 600, 4 MCU housing with status display
- » Intel Core i7, quad-core 64-bit processor
- » 16-port managed Gigabit Ethernet switch
- » CompactPCI Serial technology
- » 2 rugged hot-plug HDD/SSD shuttles with locking support
- » 2 antenna interfaces for wireless and/or 3G/4G cellular interfaces
- » 2 USB 3.0 interfaces for fast data loading
- » Multipurpose OLED graphic display
- » Display port, USB 3.0, GB Ethernet and 2 SIM card slots accessible via the front flap
- » Pre-qualified according to DO-160G



#### Multipurpose Airborne Network Server

MP70S is an application ready, DO-160G pre-qualified, SWaP-C optimized, general purpose device for high speed network applications inside an aircraft, such as in-flight entertainment, wireless content server, web servers or flight maintenance servers.

#### Powerful CPU, Carrier Grade Ethernet and High Capacity Storage

The MP70S is powered by the latest generation Intel Core i7 CPU, features a carrier grade 16-port Ethernet switch and provides storage capacity for several terabytes of SSD which makes it the ideal solution for the high performance computing and networking requirements in aircraft.

#### CompactPCI Serial Based and ARINC 600 Compliant

The MP70S is ARINC 600 compliant, housed in a rugged convection cooled 4 MCU sized case which is designed for both line-fit and retrofit installations in avionics bays. Based on the open standard CompactPCI Serial, the MP70S is designed for long-term availability, scalability, flexibility and future guaranteed. It also guarantees the highest reliability due to directly soldered essential components such as the CPU and RAM and cable-less design.

#### ARINC Interfaces and Configurable Wireless Options

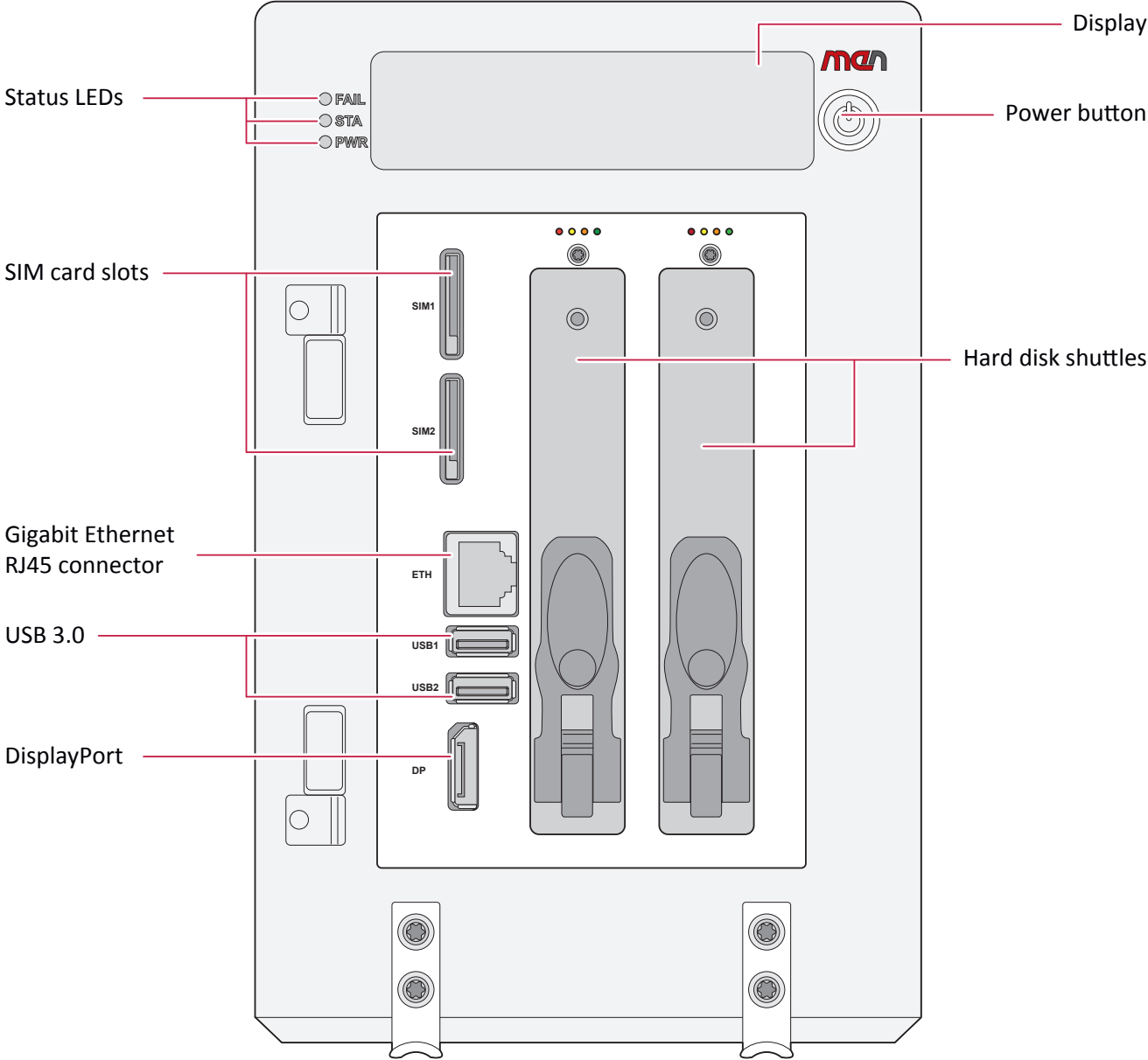
To connect to legacy aircraft equipment, the MP70S provides an interface for ARINC 429 and ARINC 717, as well as ARINC 763-3 discrete I/O. With two configurable wireless options, it can be configured to simultaneously act as a customer accessible wireless access point while also providing a connection to cellular 3G/4G networks to perform data loading.

#### Multipurpose Display

A display on the front panel allows the system designer to brand the system to his needs and/or show system status and operating instructions.

#### Easy Access for Maintenance and Installation

The MP70S service interfaces are directly accessible by opening the front flap for easy maintenance, installation and data loading. Two USB 3.0 interfaces allow extremely fast updates of the internal disks. The MP70S supports Linux (Windows on request), and is delivered with the operating system, Ethernet switch firmware and device drivers pre-installed.



## CPU

- The following CPU types are supported:
  - Intel Core i7-4700EQ 2.4 GHz, 16 GB DDR3 RAM with ECC and TPM, 3U CompactPCI Serial CPU board
  - Please contact MEN sales for configuration possibilities.

## Mass Storage

- The following mass storage devices are assembled:
  - SSD mSATA, 32 GB, SLC
  - Please contact MEN sales for configuration possibilities.

## Ethernet Switch

- 16-port Gigabit managed switch, 6x internal used, 10x accessible through ARINC 600 connector
  - G101 Managed Industrial Ethernet Switch with Uplink, 3U CompactPCI Serial board

## Front Interfaces

- Video
  - One DisplayPort 1.2
  - Maximum resolution: 2560x1600 pixels at 60 Hz
- SATA
  - Two 2.5" SATA HDD/SSD shuttles, SATA Revision 3.x, RAID level 0/1 support
  - Hot-pluggable with handle and status LED
- USB
  - Two Type A connectors, host, USB 3.0
- Ethernet
  - One RJ45 connector, 1000BASE-T
- SIM
  - Two mini-SIM card holders routed to LTE/UMTS card sockets
- Power button
- Status LEDs
  - Input power status
  - System status
  - Abnormal temperature indication
- OLED display

## In-System Interfaces

- PCI Express Mini Card Slots
  - Four PCI Express Mini Card slots
  - 1x PCI Express Mini Card slot with PCIe for WLAN, with hard-off
  - 2x PCI Express Mini Card slots with USB2/USB3 for UMTS/LTE and SIM cards, with hard-off
  - 1x PCI Express Mini Card slot with USB2/USB3 for audio
  - All PCI Express Mini Cards optional
  - Please contact MEN sales for configuration possibilities.

## Rear Interfaces

- Available via ARINC 600 connector
- Ethernet
  - Ten channels, 1000BASE-T, from Ethernet Switch
- Two antenna connections routable to PCI Express Mini Cards
- ARINC 717
  - Two RX and two TX channels
  - Multiplexed with ARINC 429 pins
  - Software selectable
- ARINC 429
  - Six RX channels and three TX channels
- ARINC 763-3
  - Discrete I/O with 6 open/ground inputs and 4 open/ground outputs
  - Wireless config pins with 3 open/ground for wireless module control
  - ARINC 429/717 TX driver module control
  - CPU reset trigger
  - System enable signal for internal power supply
- Audio
  - Output: two differential mono channels
  - Input: one differential mono channel with 32 kHz sampling frequency
  - 600 Ohms, 0.7 V RMS
- Power input

## Supervision and Control

- Dedicated shelf controller monitors power and temperature

## Electrical Specifications

- Supply voltage
  - 115 V AC, 360 Hz to 800 Hz one phase through ARINC 600 connector
- System hold-up time: 300 ms
- Power consumption
  - 100 W max., typically less than 70 W

## Mechanical Specifications

- 4 MCU ARINC 600 conformal housing
- Dimensions
  - Height: 193 mm
  - Width: 124 mm
  - Length: 322 mm
- Weight: 6840 g (model 09MP70S00)

## Environmental Specifications

- Classification for aviation applications:
  - RTCA DO-160G: Environmental Conditions and Test Procedures for Airborne Equipment
- Temperature range (operation): RTCA DO-160G Section 4, Cat. A1 §4.5.1, 4.5.2, 4.5.3, 4.5.4
- Cooling concept: Air-cooled, natural convection or forced convection
- Temperature range (storage): RTCA DO-160G Section 4, Cat. A1 §4.5.1
- Temperature range (variation): RTCA DO-160G Section 5, Cat. C §5.3.1
- Humidity: RTCA DO-160G Section 6, Cat. A §6.3.1
- Altitude: RTCA DO-160G Section 4, Cat. A1 §4.6.1
- Decompression: RTCA DO-160G Section 4, Cat. A1 §4.6.2
- Overpressure: RTCA DO-160G Section 4, Cat. A1 §4.6.3
- Shock (operational): RTCA DO-160G Section 7, Cat. B&D §7.2.1 / 2
- Crash safety impulse: RTCA DO-160G Section 7, Cat. B&E §7.3.1 / 2
- Crash safety sustained load: RTCA DO-160G Section 7, Cat. B A/C Type 2R §7.3.3
- Vibration (standard): RTCA DO-160G Section 8, Cat. S, Curve B §8.5.2
- Waterproofness: RTCA DO-160G Section 10, Cat. W §10.3.2
- Fluids susceptibility: RTCA DO-160G Section 11, Cat. F §11.4
- Flammability: 14 CFR FAR 25.853(a), Appendix F, Part I, (a) (1) (i)
- Conformal coating of board components

## EMC Immunity

- Classification for aviation applications:
  - RTCA DO-160G: Environmental Conditions and Test Procedures for Airborne Equipment
- Magnetic effect: RTCA DO-160G, Section 15, §15.3
- Power Input
  - Voltage and frequency: RTCA DO-160G, Section 16, Cat. A (WF) Single Phase §16.5.1.1
  - Voltage modulation: RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.2
  - Frequency modulation: RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.3
  - Momentary power interruptions: RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.4
  - Voltage distortion/normal surge voltage: RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.5.1
  - Normal frequency variations (A(NF) and A(WF) Category Equipment Only): RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.6
  - Voltage DC content: RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.7
  - Voltage distortion (total harmonic distortion): RTCA DO-160G, Section 16, Cat. A (WF) §16.5.1.8
  - Abnormal voltage and frequency limits in steady state: RTCA DO-160G Section 16, Cat. A (WF) §16.5.2.1
  - Momentary undervoltage operations: RTCA DO-160G Section 16, Cat. A (WF) §16.5.2.2
  - Abnormal surge voltage: RTCA DO-160G Section 16, Cat. A (WF) §16.5.2.3.1
  - Abnormal frequency transients: RTCA DO-160G Section 16, Cat. A (WF) §16.5.2.3.2
  - Abnormal frequency variations (A(NF) and A(WF)): RTCA DO-160G Section 16, Cat. A (WF) §16.5.2.3.3
  - Inrush current: RTCA DO-160G Section 16, Cat. I §16.7.5
  - Voltage spike: RTCA DO-160G Section 17, Cat. A §17.4
- Electrostatic discharge: RTCA DO-160G Section 25, Cat. A §25.5
- Audio frequency conducted susceptibility: RTCA DO-160G, Section 18, Cat. R (WF) §18.3.2
- Induced signal susceptibility: RTCA DO-160G, Section 19, Cat. ZW §19.3
- Radio frequency susceptibility conducted: RTCA DO-160G, Section 20, Cat. T §20.4
- Radio frequency susceptibility radiated: RTCA DO-160G, Section 20, Cat. T §20.5
- Lightning induced transient susceptibility pin injection: RTCA DO-160G, Section 22, Cat. A3C1XX §22.5.1
- Lightning induced transient susceptibility cable bundle: RTCA DO-160G, Section 22, Cat. XXE1XX §22.5.2 (not applicable to front service interfaces)

## EMC Emission

- Radio frequency energy conducted: RTCA DO-160G, Section 21, Cat. M §21.4
- Radio frequency energy radiated: RTCA DO-160G, Section 21, Cat. M §21.5

## Software Support

- Linux
  - Pre-installed Linux Ubuntu 14.04 LTS including all software APIs
- Windows 7

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