MC50M

DIN Rail Modular Gateway Computer, M12 Embedded System for IoT, Security and Predictive Maintenance

- » Intel Atom E3900 series
- » Up to 8 GB DDR3 RAM with ECC
- » Trusted Platform Module
- » M.2 NVMe slot for storage
- » Gb Ethernet, USB 3.0, RS232, RS485/422, DisplayPort
- » DIN rail, wall or 19" rack mounting
- » Input voltage 24 V DC nom. with ignition
- » Full range power supply 9 V DC to 60 V DC
- » EN 50155 compliant (railways)
- » -55 °C to +70 °C (+85 °C), fanless

Low Power CPU for IoT/Network Applications

The MC50M is a modular computer for embedded applications in transportation, e.g., trains, buses or commercial vehicles. The computing platform features an Intel Atom E3900 series CPU with low power dissipation and scalability in performance and memory. The MC50M is the ideal basis for functions such as security gateway, predictive maintenance, CCTV or ticketing system, or to act as a diagnostics server.

Modular System for Easy Configuration

The MC50M can be a stand-alone product, but due to MEN's modular concept it offers flexible built-to-order configurations. The box can be easily combined with prefabricated extension modules, providing additional features and short delivery times.

In the modular system, the data transfer between the modules as well as the power supply of the individual components takes place via the extension connectors standardized by MEN.

Extension modules can provide application-specific functions like wireless communication (LTE advanced, WLAN, GNSS), MVB, CAN bus, or other I/O. A removable storage shuttle can support the integration of one or two 2.5" SATA HDDs/SSDs. With a PSU extension module, ultra wide range isolated power supply from 24 V DC to 110 V DC nominal (EN 50155) is available.



Power Saving Design and Security Features

The board management controller provides enhanced reliability and reduced downtime. The Trusted Platform Module supports security and encryption features. With the ignition switch for remote control of booting and shutdown, the platform provides additional features for power saving.

Flexible System Installation

Various mounting options facilitate the integration of the box into an existing environment. The standard 35 mm DIN Rail mounting offers space saving mounting of all system modules on a single rail. Wall mounting and mounting in a 19" rack using adaption brackets are an option.

The aluminum housing with cooling fins provides conduction cooling for fanless operation. MC50M has no moving parts, making it maintenance free.

In-Vehicle Qualified and Long-Term Availability

The CPU module is qualified for rolling stock and wayside applications as well as for road vehicles (ECE R10). Long term availability of 15 years from product start minimizes life-cycle management by making the MC50M available at least for this period of time.







F Front B Onboard



Diagram MC50M Data Sheet • 2018-09-14

CPU	 The following CPU types are supported: Intel Atom x7-E3950, 4 cores, 4 threads, 1.6 GHz, 2.0 GHz Turbo Boost, 12 W, 2 MB cache Intel Atom x5-E3930, 2 cores, 2 threads, 1.3 GHz, 1.8 GHz Turbo Boost, 6.5 W, 2 MB cache
Memory	 System RAM Soldered DDR3, ECC 8 GB max.
Security	TPM (Trusted Platform Module 2.0)
Mass Storage	 The following mass storage devices can be assembled: SSD M.2 (NVMe) The following mass storage devices are assembled: eMMC (soldered); 32 GB max.
Graphics	 Processor graphics Maximum resolution: 4096 x 2160 pixels @ 60 Hz, 24 bpp
Interfaces	 Video 1x DisplayPort 1.2a USB 2x USB 3.0, Type A Ethernet 3x 10/100/1000BASE-T, M12, X-coded Serial 1x RS232, isolated, D-Sub, 9-pin, plug 1x RS422/RS485, isolated, D-Sub, 9-pin, plug LED Status: board status (BMC), power status Ethernet: link, activity User configurable: 2x Power 1x power in, M12, A-coded, plug Ignition input
Supervision and Control	 Board management controller Temperature measurement Watchdog timer Real-time clock, buffered by supercapacitor (5 days)
Electrical Specifications	 Supply voltage 24 V DC nom. (EN 50155) 48 V DC nom. (EN 50155) 24 V DC to 110 V DC nom. (EN 50155)
Mechanical Specifications	 Dimensions (W) 42 mm, (D) 144 mm, (H) 132 mm Mounting possibilities DIN rail Wall-mount Rack-mount in 19" cabinet Cooling Air cooling, natural convection, airflow 0.4 m/s Protection rating IP20

Technical Data

Product Compliance: Rail - Rolling Stock	 Operating temperature: -40 °C to +70 °C (EN 50155:2017, class OT4, ST1) Storage temperature: -40 °C (EN 50155:2017) to +85 °C (EN 60068-2-2, Bb) Humidity: +55 °C and +25 °C, 100 % max. (EN 50155:2017) Shock: 30 ms @ 50 m/s² (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B) Vibration: 10 min @ 2.02 m/s² and 5 h @ 11.44 m/s² (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B) Vibration: 10 min @ 2.02 m/s² and 5 h @ 11.44 m/s² (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B x 2) Electrical safety EN 50155:2017 EN 50155:2017 EN 50153:2014 + A1:2017 EN 50124-1:2017 EN ISO 13732-1:2008 Fire protection: EN 45545-2:2013 + A1:2015, HL3 EMC emission EN 50121-3-2:2016 Regelung Nr. EMV 06 :2014-07-29, Anhang E: Messung an Geräten
Product Compliance: Rail - Wayside Non-Safety Related	 Operating temperature: -55 °C to +70 °C (EN 50125-3:2003, class TX, control cabinet) Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb) Humidity: 100 % max. (EN 50125-2:2002, control cabinet) Shock: EN 50125-3:2003, in a switch cabinet 1 m to 3 m from the track Vibration: EN 50125-3:2003, in a switch cabinet 1 m to 3 m from the track Electrical safety EN 50124-1:2017 EN 62368-1:2014 + AC:2015 EMC emission EN 50121-4:2016 EN 61000-6-4:2007 + A1:2011 EMC immunity EN 50121-4:2016 EN 50121-4:2016 EN 50121-4:2016 EN 61000-6-2:2005
Product Compliance: Road Vehicle	 EMC emission: ECE R10 Rev.5 EMC immunity: ECE R10 Rev.5
Reliability	MTBF: 200 000 h @ 40 °C according to IEC/TR 62380 (RDF 2000)
BIOS	AMI Aptio UEFI Firmware
Software Support	 Linux Windows For more information on supported operating system versions and drivers see Software.





www.men.de/products/mc50m/

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