

DIN Rail Systems

A modular concept based on individual components which can be combined in flexible built-to-order configurations for a wide range of embedded IoT applications

The logo for mcA, featuring the letters 'mca' in a bold, red, sans-serif font. The 'a' is stylized with a black outline and a registered trademark symbol (®) to its upper right.

Always reliable. Always ahead.

The logo for IRIS Certification, featuring the word "IRIS" in a bold, black, sans-serif font, followed by a stylized graphic of three curved lines representing an eye or a signal. Below the graphic, the word "Certification" is written in a smaller, black, sans-serif font.

DIN Rail Modular Computer Family

The DIN rail modular computers, extensions and power supplies from MEN form another family system concept that is suitable for a variety of applications. The concept specifications include housing dimensions, mounting, cooling and IP protection. In addition, extension connectors and their pin-outs are defined.

Modular Concept for Vast Number of Applications

The computer modules deliver mid-range CPU performance with a low power dissipation, making them the perfect choice for e.g. predictive maintenance, CCTV, ticketing, diagnostics server or as a security gateway.

Fast Time-to-Market with Flexible Extension Modules

Easy integration of pre-fabricated extension modules allows application specific configurations to be assembled and delivered in short time. The extension modules provide interfaces like MVB, CAN, binary and analog I/O as well as wireless functions LTE Advanced, WLAN and GNSS. A removable shuttle with one or two 2.5" SATA HDD/SSD disks can extend the DIN-rail system for storage intensive applications.

An ultra-wide range PSU module can be integrated when a power input of 24 V to 110 V DC nominal is needed. DIN rail mounting (35 mm) is default. Wall and 19" rack mounting are options using adaption brackets.



Modular Gateway Computer

MC50M – 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
- » 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



MC50M - View from different perspectives

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 and PSU modules.

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.

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). In combination with the prefabricated PSU module MP1, the CPU module achieves the standard supply voltage range for use in rail vehicles. Long term availability of 15 years from product start minimizes life-cycle management.

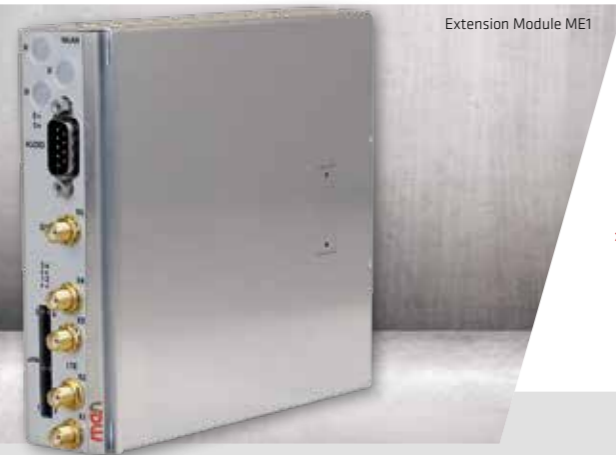


Find the complete product range under:
www.men.de/din-rail-systems

Wireless Communication Module

ME1 – Network Connectivity in Transportation

The ME1 is a modular extension for embedded applications in transportation, adding wireless connectivity to the MC50M system CPU. It comes with two M.2 slots for high speed LTE modems (LTE Advanced or LTE). For each M.2 slot, two front-accessible micro-SIM card slots are available. The PCI Express Mini Card slot is prepared for adding a WLAN module and also provides audio functions, which can be used via the optional 9-pin D-Sub connector on the front. For GPS/GLONASS functions, the box has an onboard GNSS receiver which can be connected via antenna connector.



- » 2 M.2 slots
- » 4 micro-SIM card slots
- » LTE Advanced
- » 1 PCIe Mini Card slot
- » WLAN, Audio
- » GNSS receiver
- » Conduction cooling of modems
- » -55°C to +70°C (+85°C), fanless

Power Supply Unit

MP1 – Ultra-Wide Range PSU for Transportation

The MP1 is a PSU module for use in transportation. The power input allows an operating input voltage range from 24 V DC to 110 V DC nominal, which is EN 50155 compliant. Due to MEN's modular concept, the MP1 offers flexibility in built-to-order configurations.

In combination with the pre-fabricated CPU Module MC50M, it extends the standard power supply voltage range of the computer module, making it also suitable for use in rolling stock applications.



- » Ultra-wide range power input: 24 V DC to 110 V DC nominal
- » Full range supply voltage: 16.8 V DC to 138 V DC
- » DIN rail, wall or 19" rack mounting
- » EN 50155 compliant
- » -40°C to +70°C (+85°C), fanless

Why MEN?

Development and production of rugged and reliable products

Our boards and systems are developed to meet requirements such as temperature ranges between -40°C and +85°C through convection or conduction cooling, shock, vibration, chemical influence or the option of coating against humidity right from the start.

Development based on quality management systems of our markets

We are certified according to ISO 9001 and ISO 14001, plus EN/AS 9100 (aerospace) and IRIS (railways) and provide systems according to ISO 7637-2 (road traffic) requirements. We develop according to the GRESS requirements by Airbus and are preparing for EFQM (European Foundation for Quality Management).

Development based on relevant standards know-how for our markets

Preparing products for environmental qualification according to vertical market standards is one of our key services, for example EN 50155 (railways), DO-160G (airborne), German Lloyd (ships) or ISO 7637-2 (automotive E-Mark).

Fully automated, high-quality in-house production

To achieve the highest product quality, our manufacturing and test process is fully automated. Vapor-phase soldering assures smooth processing of the components. Traceability is guaranteed by time stamps throughout the whole process.

All relevant environmental tests in-house

We carry out the preliminary qualifications in our own environmental test lab (temperature, shock, vibration, humidity), high-voltage and EMC chambers. Further calculations and analyses include MTBF, FMEA, Hazard Tree, HASS or HALT.

FPGA technology expertise

FPGAs allow us to customize our hardware without touching the board layout while keeping costs low, even in small quantities. FPGA-based solutions are flexible, offer long-term availability and support extended temperature operation.

Custom design of computer boards and systems

Often the most cost-effective solution results in a custom design – while using as many standard components as possible. Synergy effects emerge through the mutual development of standard and custom boards and systems, completed by the built-to-order approach of MEN's box PCs and 19"-based application-ready and turnkey systems.

Complete system solutions based on in-house mechanical design

Whether a 19" system, wall-mount, standalone or DIN-rail is needed, we guarantee overall operability of each system, minimizing the integration effort and the handling cost on the customer's side. The quality of our systems is assured by applying traceability through the V-model.

Customer assistance in configuration of mission-critical systems

Computer architectures with safety-critical requirements are very complex. Considerations include safety-critical characteristics and levels (SIL, DAL), reliability questions, error behavior modes and the major IEC and EN standards – backed by a professional safety and risk management.

MEN is a member of:

- » AMD Fusion Partner Program
- » ARINC (Aeronautical Radio Incorporated)
- » BavAIRia (Cluster for innovative aerospace technology in Bavaria)
- » CNA (Center for Transportation & Logistics Neuer Adler e.V.)
- » Intel® IoT Solutions Alliance
- » NXP Design Alliance
- » Open Source Automation Development Lab (OSADL)
- » PCI-SIG (Peripheral Component Interconnect Special Interest Group)
- » PICMG (PCI Industrial Computer Manufacturers Group)
- » RSSI (Railway Systems Suppliers, Inc. Trade Association)
- » UNIFE (Union des Industries Ferroviaires Européennes)
- » USB-IF (Universal Serial Bus Implementers Forum, Inc.)
- » Wind River (Partner Eco System)
- » ZVEI (German Electrical and Electronic Manufacturers Association)



ISO 9001
ISO 14001
EN 9100

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