

DIN-RAIL COMPUTER EXTENSION MODULE: FIELDBUS AND WIRELESS

- LTE Advanced via M.2
- 2 micro-SIM card slots
- MVB, CAN bus or audio via PCIe Mini Card
- GNSS receiver
- Conduction cooling of M.2 and PCIe Mini Cards
- DIN rail, wall or 19" rack mounting
- -40 °C to +70 °C (+85 °C), fanless



EXTENSION FOR VARIOUS APPLICATIONS

The ME4 is a modular extension for embedded applications in transportation, e.g., in trains or wayside. The module adds wireless connectivity and fieldbus and audio functionality to the system CPU. Main applications of the module include predictive maintenance, IoT gateway, diagnostics server, smart vehicle, passenger information and ticketing systems.

WIRELESS CONNECTIVITY

The ME4 comes with one M.2 slot for high speed LTE modems (LTE Advanced or LTE) providing two front-accessible micro-SIM card slots. For GPS/GLONASS functions, the box has an onboard GNSS receiver which can be connected via antenna connector.

FIELDBUS AND AUDIO FUNCTIONALITY

The ME4 is equipped with one PCI Express Mini Card slot which is prepared for adding an MVB, CAN bus or audio module. The functions can be made available on two D-Sub connectors at the front panel.

MODULAR SYSTEM FOR EASY CONFIGURATION

Due to duagon's modular concept, the ME4 offers flexibility in built-to-order configurations. Via its extension connectors, the box can be easily combined with pre-fabricated CPU modules or other extension modules, for example a PSU or removable storage shuttles, providing additional features and short delivery times.

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

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 allows fanless operation. ME4 has no moving parts, making it maintenance free.

ROLLING STOCK QUALIFIED AND LONG-TERM AVAILABILITY

The wireless and fieldbus module is qualified for rolling stock and wayside applications. Long term availability until 2027 minimizes life-cycle management by making the ME4 available at least for this period of time.

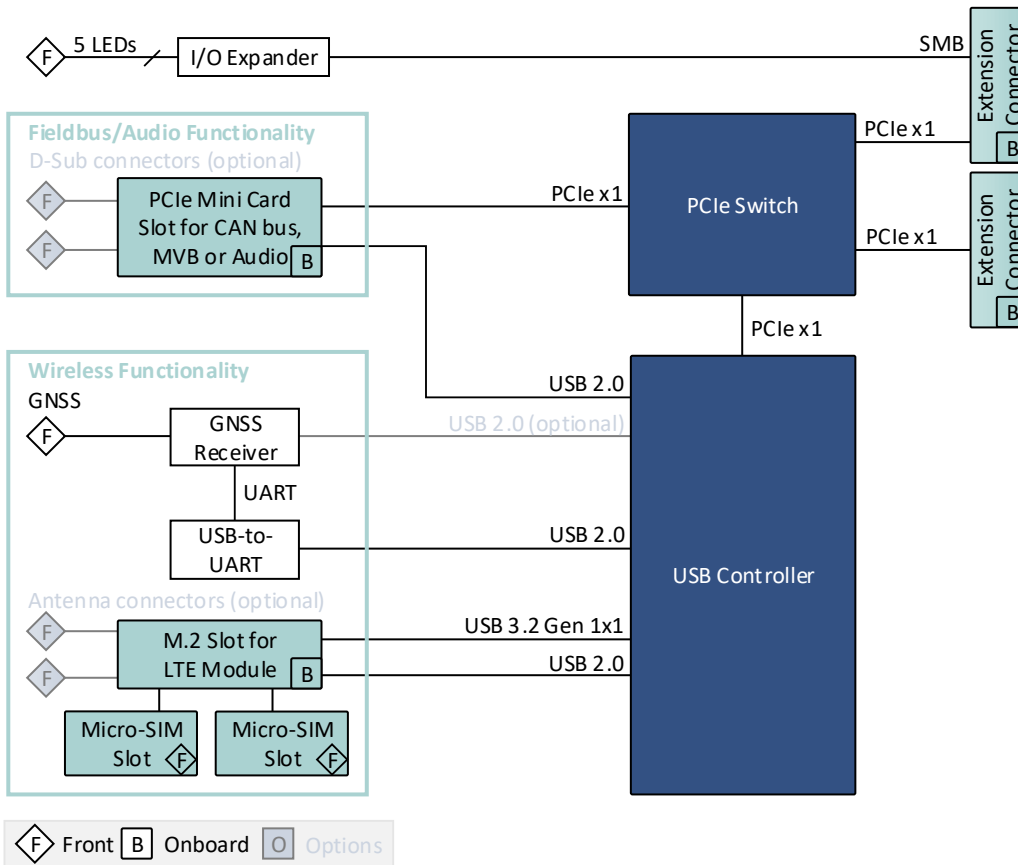


www.duagon.com/products/me4/

DATA SHEET



ME4 | DIAGRAM



ME4 | TECHNICAL DATA

WIRELESS FUNCTIONALITY

- Possible functions:
 - GNSS
 - LTE

FIELDBUS FUNCTIONALITY

- Possible functions:
 - CAN bus
 - MVB

AUDIO FUNCTIONALITY

- Possible functions:
 - Line-level input
 - Line-level output

INTERFACES

- This product includes interface options
 - Different wireless functions depending on assembled wireless interface cards
- Wireless
 - GNSS antenna connector: 1 × SMA receptacle (X3)
- M.2 Card
 - 1 × M.2 Card slot
 - M.2 3042 (LTE) socket 2 Key B; USB 2.0, USB 3.2 Gen 1x1
- PCI Express Mini Card
 - 1 × PCI Express Mini Card slot
 - PCIe Full-Mini; PCIe x1, USB 2.0



- SIM card
 - 2 × micro-SIM, externally accessible
- LED
 - Status: power status
 - User configurable: 3 ×
- Cutout
 - Antenna connector options: RP-SMA receptacle
 - D-Sub options: audio, CAN bus, MVB

ELECTRICAL SPECIFICATIONS

- Power consumption: 6 W typ.

MECHANICAL SPECIFICATIONS

- Dimensions: (W) 38 mm, (D) 144 mm, (H) 132 mm
- Weight: 500 g approx.
- Mounting
 - DIN rail
 - Wall/flat surface
 - Rack in 19" cabinet
- Cooling: Air cooling, natural convection, airflow 0.4 m/s
- Protection rating: IP20

PRODUCT COMPLIANCE: RAIL - ROLLING STOCK

- Operating temperature: -40 °C to +70 °C, +85 °C for 10 min (EN 50155:2017, class OT4, ST1)
- Rapid temperature variations: EN 50155:2017, class H1, no requirements
- Storage temperature: -40 °C (EN 50155:2017) to +85 °C (EN 60068-2-2, Bb)
- Altitude: +3000 m max. (EN 50125-1:2014, class AX)
- Pollution degree: EN 50124-1:2017, class PD3
- Humidity: +55 °C and +25 °C, 100 % RH 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 (functional) and 5 h @ 11.44 m/s² (long-life) (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B x 2)

- Electrical safety
 - 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
- EMC immunity: EN 50121-3-2:2016
- Protective coatings: EN 50155:2017, class PC2 (Any PCB protected on both sides)
- Useful life: 20 years (EN 50155:2017, class L4)

PRODUCT COMPLIANCE: RAIL - WAYSIDE NON-SAFETY RELATED

- Operating temperature: -40 °C to +70 °C (EN 50125-3:2003, class T2, cubicle, with class T2 maximum extended by 5 °C)
- Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb)
- Altitude: +3000 m max. (EN 50125-3:2003, class AX)
- Humidity: 100 % RH max. (EN 50125-2:2002, control cabinet, class T1/T2/TX)
- Shock: 11 ms @ 20 m/s² (EN 50125-3:2003, in a switch cabinet 1 m to 3 m from the track)
- Vibration: 2.3 m/s² (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 61000-6-2:2005

PRODUCT COMPLIANCE: ROAD VEHICLE

- EMC emission: ECE R10 Rev.5
- EMC immunity: ECE R10 Rev.5



PRODUCT COMPLIANCE: INFORMATION TECHNOLOGY EQUIPMENT

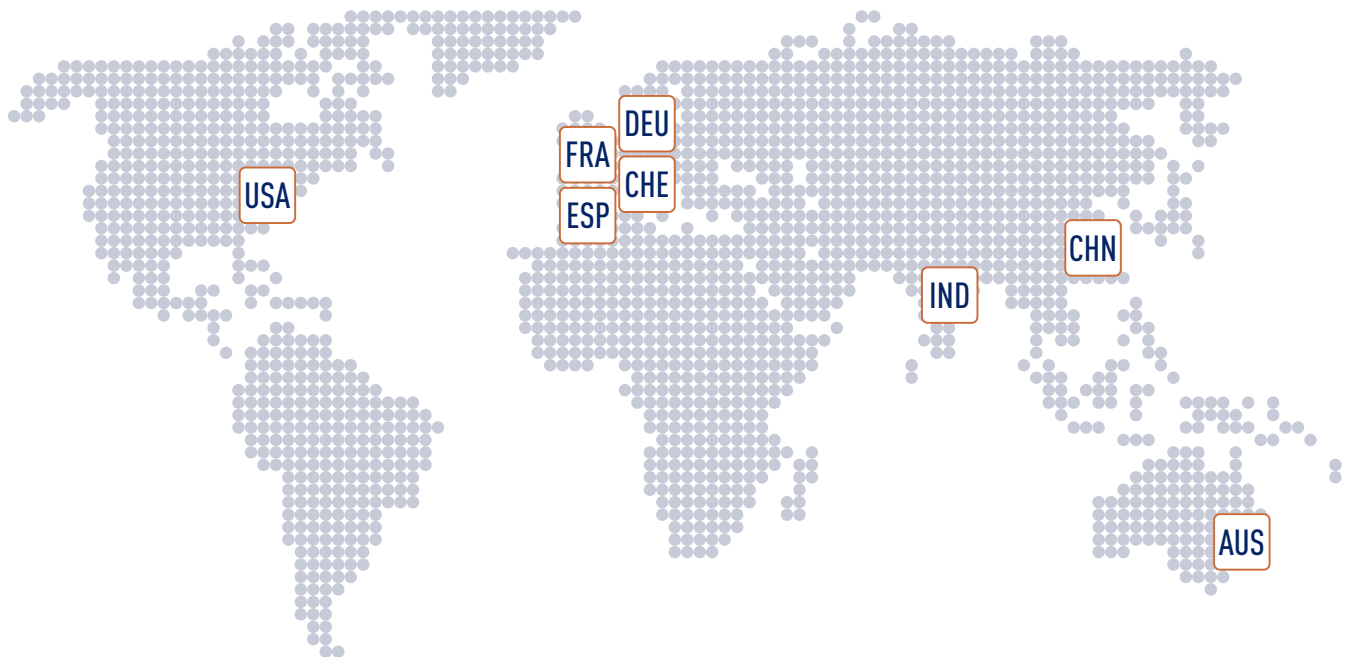
- Operating temperature: 0 °C (EN 60068-2-1:2007, Ae, temperature value in compliance with 6.6 b) to +60 °C (EN 60068-2-2:2007, Be)
- Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb)
- Humidity: +55 °C and +25 °C, 90 % to 100 % RH (EN 60068-2-30:2005, Db)
- Electrical safety: EN 62368-1:2014 + AC:2015
- EMC emission
 - EN 55032:2015 (multimedia equipment), class A (industrial environments)
 - EN 61000-3-2:2014
 - EN 61000-3-3:2013
- EMC immunity: EN 55024:2010 + A1:2015 (information technology equipment)

RELIABILITY

- 200 000 h predicted @ 40 °C according to IEC/TR 62380 (RDF 2000)

SOFTWARE SUPPORT

- Linux
 - Yocto BSP
 - Driver support
 - Tested with: Yocto BSP (Sumo 2.5, Linux kernel 4.15),
Lubuntu 18.04 X LTS
- Windows
 - Windows 10 IoT Enterprise 64-bit
 - Driver support
 - Not all functions are supported
- ▶ See the product User Manual for details on software support: www.duagon.com/products/me4/#doc
- ▶ See section Software on the product web page for available packages:
www.duagon.com/products/me4/#downl



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duagon has a global presence with support and sales representatives across 8 countries. With three decentralized engineering and production sites, our customers take advantage of the added competence and flexibility.

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