

## DIN-RAIL COMPUTER EXTENSION MODULE: SERIAL COMMUNICATION INTERFACE

- 2 RS232
- 2 RS422/RS485
- IBIS Master
- IBIS Slave
- DIN rail, wall or 19" rack mounting
- -40 °C to +70 °C (+85 °C), fanless



### EXTENSION FOR VARIOUS APPLICATIONS

The ME3 is a modular extension for embedded applications in transportation, e.g., in trains or wayside. The module adds serial communication interfaces to the system CPU. Main applications of the module include predictive maintenance, IoT gateway, diagnostics server, smart vehicle, passenger information and ticketing systems.

### SERIAL COMMUNICATION

The ME3 comes with three COM front connectors supporting four UART interfaces. The standard product features one RS232 port with full hardware handshaking, one combined RS232 and RS422/RS485 port and either one RS422/RS485 port or one IBIS port (Master or Slave).

### MODULAR SYSTEM FOR EASY CONFIGURATION

Due to duagon's modular concept, the ME3 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 a wireless communication module, 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. ME3 has no moving parts, making it maintenance free.

### ROLLING-STOCK QUALIFIED AND LONG-TERM AVAILABILITY

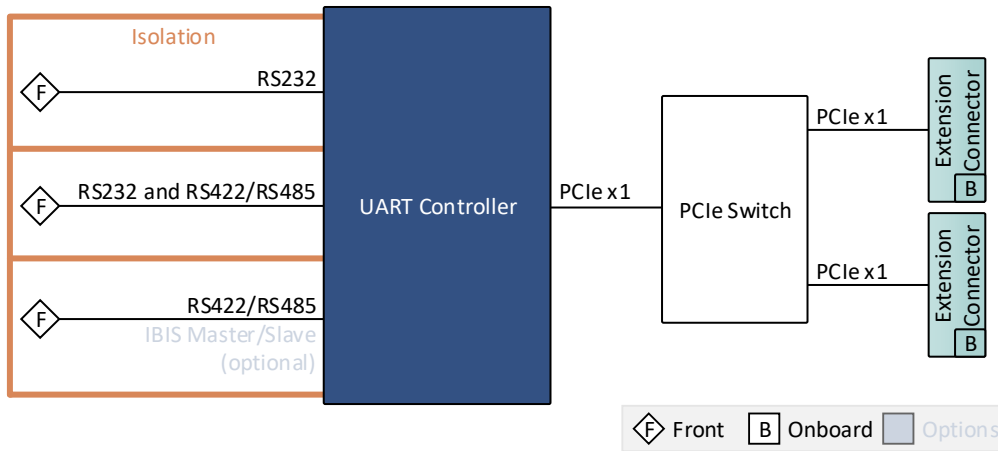
The serial communication module is qualified for rolling stock and wayside applications. Long term availability until 2027 minimizes life-cycle management by making the ME3 available at least for this period of time.



[www.duagon.com/products/me3/](http://www.duagon.com/products/me3/)

**DATA SHEET**

## ME3 | DIAGRAM



## ME3 | TECHNICAL DATA

## INTERFACES

- This product includes interface options
- Serial
  - 1 × RS232, isolated, D-Sub, 9-pin, plug
  - 1 × RS232/RS422/RS485, isolated, D-Sub, 9-pin, plug
  - 1 × RS422/RS485, isolated, D-Sub, 9-pin, plug
- IBIS
  - 1 × IBIS Master, isolated, D-Sub, 9-pin, plug
  - 1 × IBIS Slave, isolated, D-Sub, 9-pin, receptacle

## ELECTRICAL SPECIFICATIONS

- Power consumption: 2.5 W typ.

## MECHANICAL SPECIFICATIONS

- Dimensions: (W) 38 mm, (D) 144 mm, (H) 132 mm
- Weight: 480 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/s<sup>2</sup> (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B)
- Vibration: 10 min @ 2.02 m/s<sup>2</sup> (functional) and 5 h @ 11.44 m/s<sup>2</sup> (long-life) (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B x 2)
- Electrical safety
  - EN 50124-1:2017
  - EN 50153:2014 + A1:2017
  - EN 50155:2017
  - 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/s<sup>2</sup> (EN 50125-3:2003, in a switch cabinet 1 m to 3 m from the track)
- Vibration: 2.3 m/s<sup>2</sup> (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)

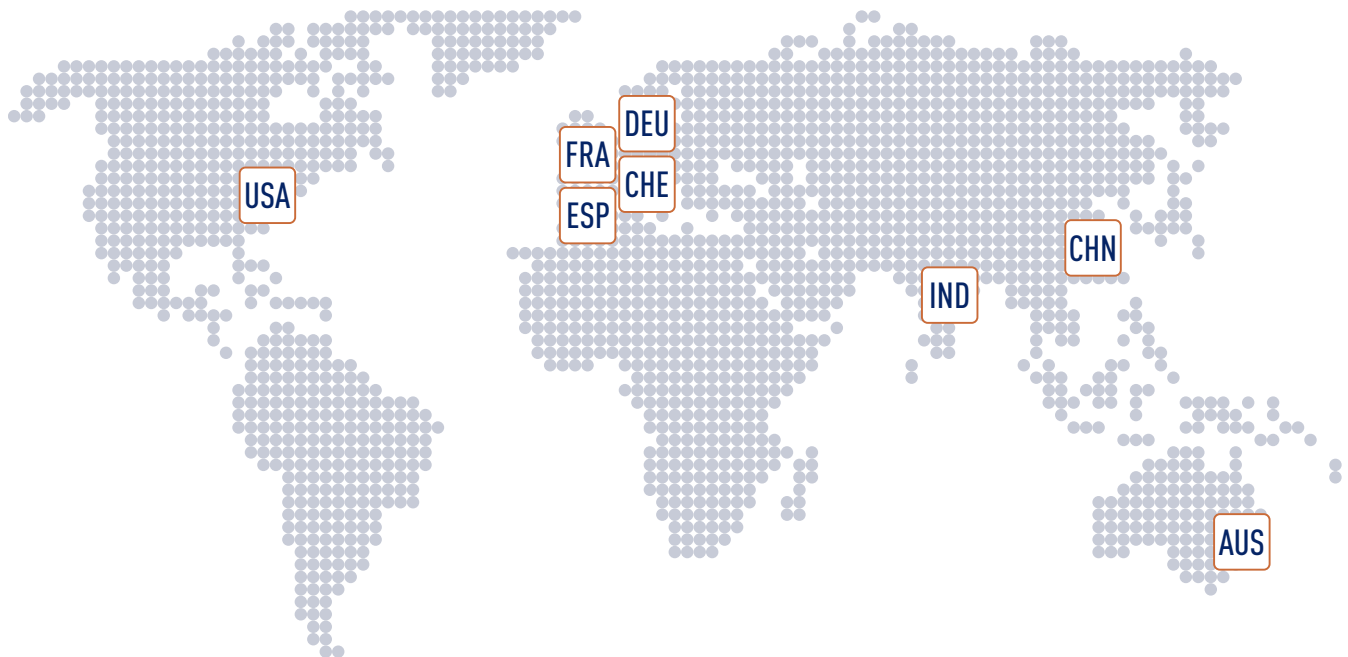
- Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb)
- Humidity: +55 °C and +25 °C, 90 % to 100 % RH (EN 60068-2-30:2005, Db)
- Electrical safety: EN 62368-1:2014 + AC:2015
- EMC emission
  - EN 55032:2015 (multimedia equipment), class A (industrial environments)
 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

### RELIABILITY

- 775 000 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), Ubuntu 18.04 X LTS
- Windows
  - Windows 10 IoT Enterprise 64-bit
  - Driver support
- ▶ See the product User Manual for details on software support: [www.duagon.com/products/me3/#doc](http://www.duagon.com/products/me3/#doc)
- ▶ See section Software on the product web page for available packages: [www.duagon.com/products/me3/#downl](http://www.duagon.com/products/me3/#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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