

## DIN-RAIL COMPUTER EXTENSION MODULE: DATA STORAGE UNIT

- Hard disk drive or solid state drive shuttle
- 2.5" SATA HDD/SSD slot
- HDD/SSD slot prepared for locking
- Up to two ME2 modules per system
- DIN rail, wall or 19" rack mounting
- -40 °C to +70 °C (+85 °C), fanless



### EXTENSION FOR VARIOUS APPLICATIONS

The ME2 is a modular extension for embedded applications in transportation, e.g., in trains or wayside. The module adds storage capacity to the system CPU. Main applications of the module include CCTV, predictive maintenance, IoT gateway, diagnostics server, smart vehicle, passenger information and ticketing systems.

### STORAGE CAPACITY

The ME2 comes with a shuttle suitable for a 2.5" SATA HDD/SSD disk with a height of either 7 mm or 9.5 mm. For higher security requirements a lockable SATA shuttle is optionally available. For higher storage capacity two ME2 modules can be combined providing up to 8 TB.

### MODULAR SYSTEM FOR EASY CONFIGURATION

Due to duagon's modular concept, the ME2 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. ME2 has no moving parts, making it maintenance free.

### ROLLING STOCK QUALIFIED AND LONG-TERM AVAILABILITY

The data storage module is qualified for rolling stock and wayside applications. Long term availability until 2027 minimizes life-cycle management by making the ME2 available at least for this period of time.

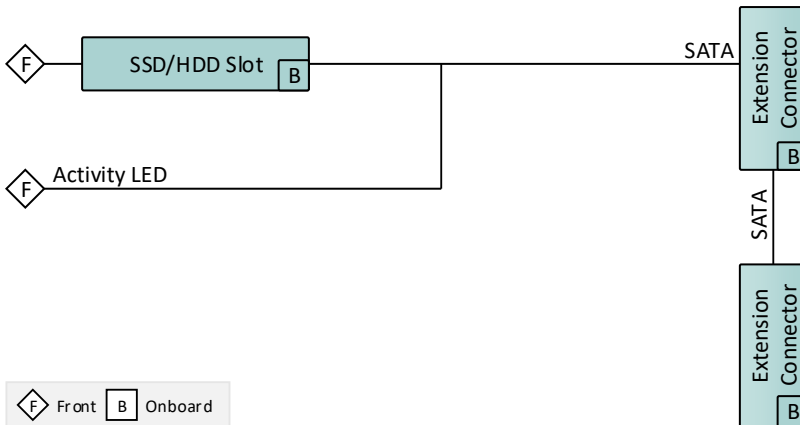


[www.duagon.com/products/me2/](http://www.duagon.com/products/me2/)

## DATA SHEET



## ME2 | DIAGRAM



## ME2 | TECHNICAL DATA

### MASS STORAGE

- The following mass storage devices can be assembled:
  - SSD/HDD 2.5" (SATA)

### INTERFACES

- SSD/HDD slot
  - 1 × SATA 2.5"; 7 mm or 9.5 mm; SATA Revision 3.x; externally accessible (shuttle)
  - Locking capability: optional
- SATA
  - 1 × SATA Revision 3.x, board to board
- LED
  - Mass storage: activity

### ELECTRICAL SPECIFICATIONS

- Power consumption: 3 W typ.

### MECHANICAL SPECIFICATIONS

- Dimensions: (W) 38 mm, (D) 144 mm, (H) 132 mm
- Weight: 535 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 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/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)

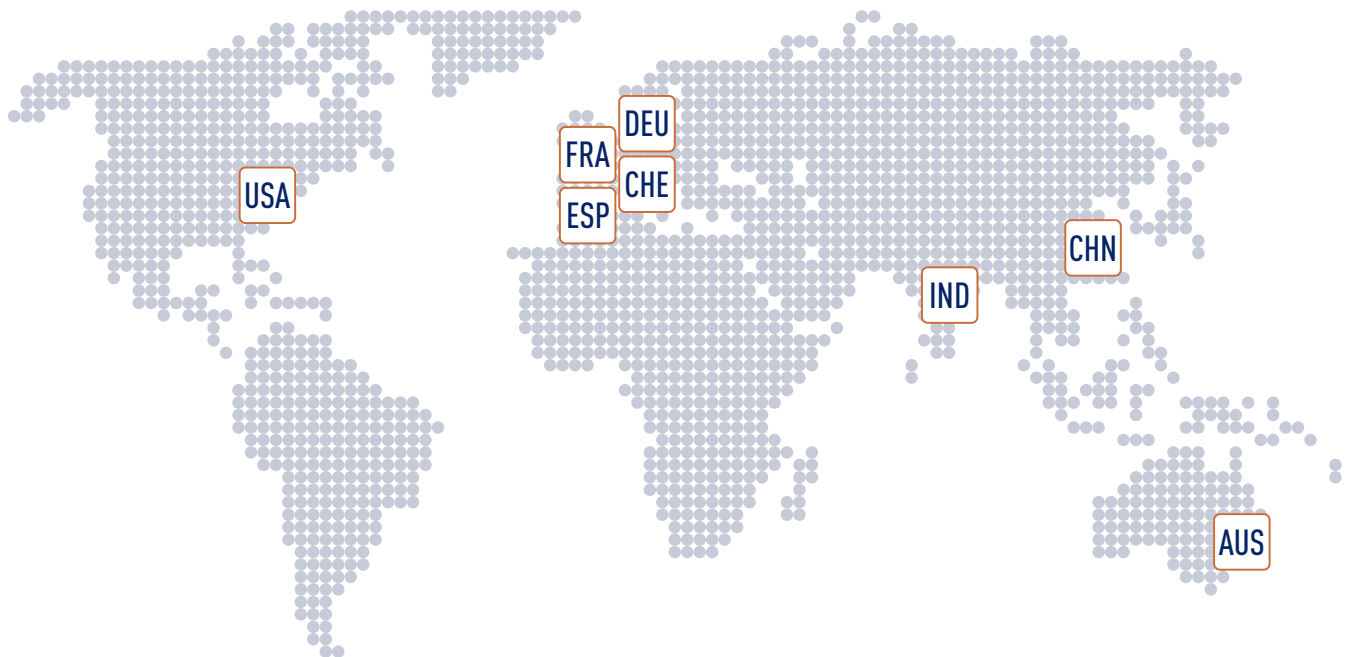
### RELIABILITY

- 9 138 000 h predicted @ 40 °C according to IEC/TR 62380 (RDF 2000)



## SOFTWARE SUPPORT

- Linux
  - Supported kernel: 4.8 or higher. For older kernels (e.g., 4.4.x), patches for the Apollo Lake platform are also available.
  - Yocto BSP
  - Tested with: Yocto BSP (Sumo 2.5, Linux kernel 4.15),  
Lubuntu 18.04 X LTS
- Windows
  - Windows 10 IoT Enterprise 64-bit
- ▶ See section Software on the product web page for available packages:  
[www.duagon.com/products/me2/#downl](http://www.duagon.com/products/me2/#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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