

## General Features

The D113 is a multi-purpose MVB interface platform on a PC/104 footprint with enhanced processing power.

duagon's own MVB controller is implemented on FPGA and supports the up to 4096 process data ports. The train communication network interface complies with the TCN standard IEC 61375 up to class 4. The full set of MVB features are available:

- Process Data
- Message Data (optional)
- Bus Administrator (optional)
- Physical media: ESD, ESD+, EMD and OGF

The D113 is available with two different TCN software stacks:

- **MDFULL:** Passive MVB interface with a duagon MVB controller.
- **SERVER:** Active MVB interface including the Message Data Real Time Protocol stack (MD RTP)

Each configuration is available with or without an integrated MVB Bus Administrator.

The D113 offers numerous hardware options including different connector types to adapt to any host system.

With duagon's multi-card host driver kit, featuring an easy-to-use UART emulation, optimized process data drivers and application examples, the D113 can be integrated quickly and efficiently on any host system.

The D113 is designed for harsh rolling stock environment and is fully compliant with EN 50155 and EN 50121 standards e.g. by:

- -40°C to 85°C operating temperature range
- coating against humidity
- enhanced EMI and vibration robustness

## Key Benefits

- Easy hardware integration on almost any PC/104 compatible host system (only 8 registers with 8- or 16-bit access).
- Easy programmable with duagon's host driver kit.
- The MVB driver provides an easy way to implement the communication between the customer's application and the MVB.

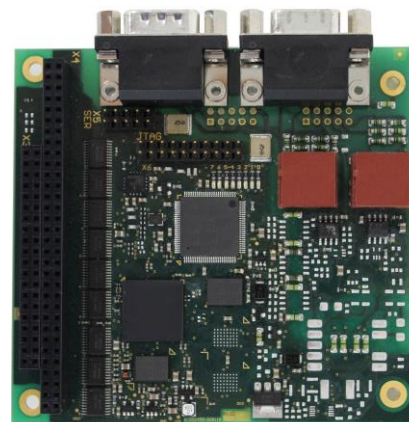
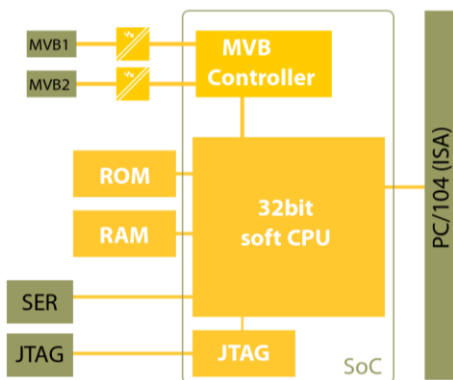
- ANSI C source files allows an easy porting to any host/operating system combination.
- The "UART Emulation" interface allows MVB communication without the need for a real-time operation system.
- The D113 complies to EN 50155, EN 50121, EN 61373 and IEC 61375 and is designed for harsh rolling stock environments.

## Application Examples

The D113 PC/104 MVB interface can be used to connect virtually any device to the Multifunction Vehicle Bus, including but not limited to:

- Door controller
- HVAC
- Cab radio
- Display
- Event recorder

## D113 Hardware Architecture



## Life Cycle Cost

Total cost of ownership was an important aspect when creating the installation, maintenance and service concept. Furthermore, to avoid service expenses,

the interface card has strictly been designed without the usage of electrolytic capacitors.

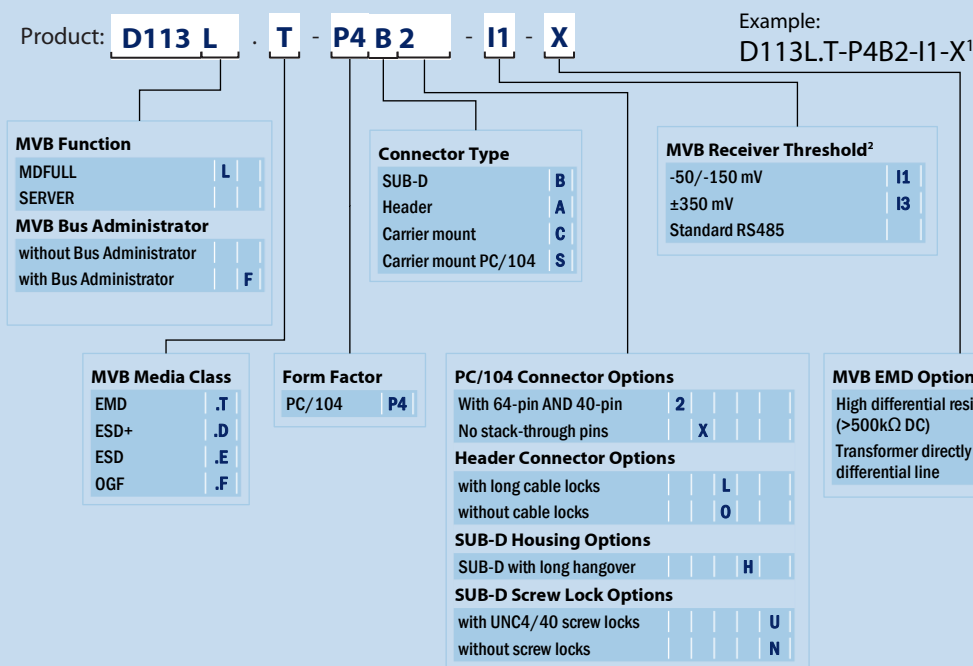
# Technical Data

<b>MVB Interface</b>	<ul style="list-style-type: none"> <li>The two MVB lines A and B are galvanically isolated from the logic/IO</li> <li>The D113 supports two redundant MVB lines A and B</li> <li>SUB-D or header connectors available</li> <li>Carrier Mount connectors are supported</li> <li>The MVB physical layers EMD, ESD+ and ESD are supported</li> </ul>
<b>MVB Protocols</b>	<ul style="list-style-type: none"> <li>MDFULL (passive MVB interface)</li> <li>SERVER (active MVB interface)</li> </ul>
<b>Host Interface</b>	<ul style="list-style-type: none"> <li>duagon MD16 UART emulation</li> <li>Interface according to PC/104 specification</li> </ul>
<b>Supply Voltage</b>	<ul style="list-style-type: none"> <li>Single power supply</li> <li>5.0V</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li><math>P_{max} &lt; 2 W</math></li> </ul>

<b>Diagnostic Service</b>	<ul style="list-style-type: none"> <li>Device status information/ identification available through host interface</li> <li>JTAG line available</li> </ul>
<b>Operating Conditions</b>	<ul style="list-style-type: none"> <li>Ambient temperature surrounding the PCB: -40 to +85°C (EN 50155 class TX)</li> <li>Relative humidity: 75%, max 95% for 30 days per year (conformal coating), according to EN 60068</li> <li>Shock and vibration: According to IEC 61373 category 1, class B</li> <li>EMI: According to EN 50121 and EN 50155</li> </ul>
<b>Form Factor</b>	<ul style="list-style-type: none"> <li>PC/104 "Compliant" according to PC/104 specification Rev. 2.6</li> </ul>
<b>Dimension/Weight</b>	<ul style="list-style-type: none"> <li>95 × 90.2 × 14 mm</li> <li>90g (typical, depending on order option)</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>Fully compliant with RoHS and REACH</li> </ul>

d-000848-046699

## Product Ordering Table



<sup>1</sup> default ordering options

## Related Documents

**Data Sheet D113**      D113\_DS.pdf  
**Product Ordering Guide**      order\_ug.pdf

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