

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.

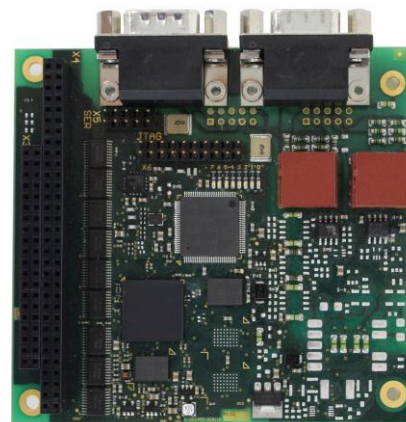
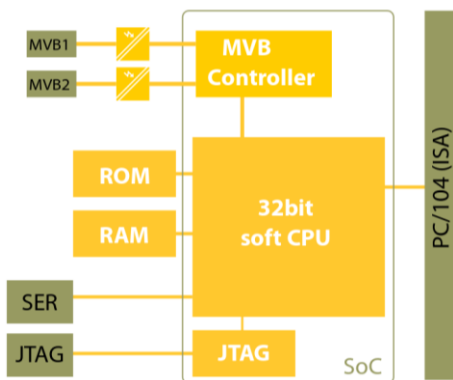
- ANSI C source files allows an easy porting to any host/operating system combination.
- The "UART Emulation" interface allows MVB communication without the need for a real-time operation system.
- The D113 complies to EN 50155, EN 50121, EN 61373 and IEC 61375 and is designed for harsh rolling stock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

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

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

d-000846-049370

Product Ordering Table

Product: **D113 L . T - P4 B - I1 -** Example: **D113L.T-P4B-I1¹**

MVB Function MDFULL <input type="checkbox"/> L <input type="checkbox"/> SERVER <input type="checkbox"/> A <input type="checkbox"/> MVB Bus Administrator without Bus Administrator <input type="checkbox"/> F <input type="checkbox"/> with Bus Administrator <input type="checkbox"/> F <input type="checkbox"/>	Connector Type SUB-D <input type="checkbox"/> B <input type="checkbox"/> Header <input type="checkbox"/> A <input type="checkbox"/> Carrier mount <input type="checkbox"/> C <input type="checkbox"/> Carrier mount PC/104 <input type="checkbox"/> S <input type="checkbox"/>	MVB Receiver Threshold² -50/-150 mV <input type="checkbox"/> I1 <input type="checkbox"/> ±350 mV <input type="checkbox"/> I3 <input type="checkbox"/> Standard RS485 <input type="checkbox"/> I3 <input type="checkbox"/>	
MVB Media Class EMD <input type="checkbox"/> .T <input type="checkbox"/> ESD+ <input type="checkbox"/> .D <input type="checkbox"/> ESD <input type="checkbox"/> .E <input type="checkbox"/>	Form Factor PC/104 <input type="checkbox"/> P4 <input type="checkbox"/>	Miscellaneous Connector Options (add all characters that apply) Default <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> PC/104 Connector Options With 64-pin AND 40-pin <input type="checkbox"/> 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> No stack-through pins <input type="checkbox"/> X <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Header Connector Options with long cable locks <input type="checkbox"/> L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> without cable locks <input type="checkbox"/> O <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> SUB-D Housing Options SUB-D with long hangover <input type="checkbox"/> H <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> SUB-D Screw Lock Options with UNC4/40 screw locks <input type="checkbox"/> U <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> without screw locks <input type="checkbox"/> N <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	MVB EMD Options Transformer directly attached to differential line <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> High differential resistance (>500kΩ DC) <input type="checkbox"/> X <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

¹ default ordering options

duagon AG
 Riedstrasse 12
 CH-8953 Dietikon
 Phone +41 44 743 73 00
 Fax +41 44 743 73 15

www.duagon.com

