

## General Features

The D017M is an MVB interface card for Mini PCIe systems. The module includes one galvanically isolated interface with line A and B. The physical layer can be chosen as EMD, ESD+ or OGF.

duagons own MVB controller is implemented in an FPGA and supports all 4096 process data ports. An additional 32bit soft-core handles the complete message data stack with an easy-to-use interface. The D017M fully complies to the TCN standard IEC61375 up to MVB class 4. The optionally includable Bus Administrator manages the complete MVB Network and can be configured using the duagon D2000 network tool.

To fulfil the requirements of the different applications, the physical layer of the MVB (Line Transceivers (RS485), galvanic

isolation (500Vrms), MVB termination power generation) can be ordered either on the PCIe mini card or on a separate PCB. This separate PCB also includes the two D-SUB connectors.

The D017M host interface can be controlled via an easy-to-integrate UART emulation protocol. The configuration registers and all communication data are accessible by the driver kits, that are available for different operating systems like WindowsXP, Windows7, Linux, etc. The D017M can thus be integrated on almost any host system through only 8 registers (each 8bit long).

The D017M is designed for harsh rolling stock environments and is fully compliant to EN 50155.

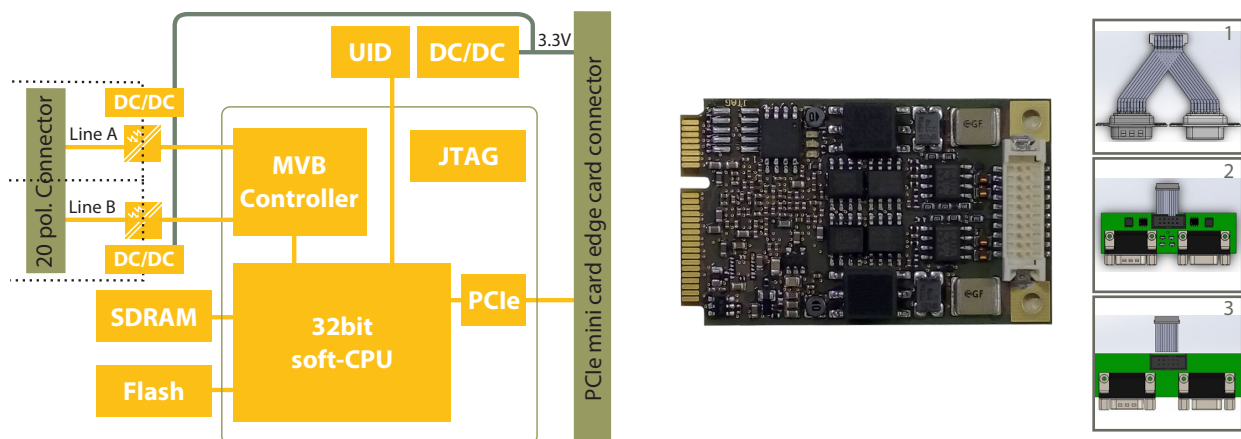
## Key Benefits

- Includes the complete physical layer for MVB
- Integrated termination resistors and generators
- Easy-to-configure MVB Bus Administrator
- Full featured message data communication
- Full range of 4096 process data ports
- No obsolescence risk due to the use of duagon's own soft-IP in an FPGA
- Space-Saving through miniaturized form factor (30 x 51 x 7 mm) (version with 10-pin connectors)
- Fitting modern CPU platforms - powered by 3.3V
- Fully compliant to EN 50155, EN 50121, IEC 61373 and IEC 61375

## Application Examples

- Generic MVB Interface

## D017M Hardware Architecture



## Accessories - cable set

Every D017M is delivered with a selectable cable set:

1. Y-cable connecting 2 Sub-D (female + male) to the PCIe mini card. (Option Y)
2. PCB with the complete MVB line drivers, the galvanical isolation and the termination generators. (Option X)

3. PCB with only the two Sub-D mounted (Option I)

Please take a look at the order options to define the corresponding cable set.

## Technical Data

<b>CPU base System</b>	<ul style="list-style-type: none"> <li>- 32bit soft-CPU running at 100MHz (FPGA)</li> <li>- 16 MB SDRAM</li> <li>- 8MB Flash file system</li> </ul>
<b>MVB Interface</b>	<ul style="list-style-type: none"> <li>- 4096 process data ports, full process data length on all ports</li> <li>- Message data stack optionally available</li> <li>- 350 Vrms galvanic isolation between MVB line A and B for ESD+ devices</li> <li>- 500 Vrms galvanic isolation between MVB line A and B for EMD devices</li> <li>- 500 Vrms galvanic isolation between MVB and internal logic.</li> <li>- Fully compliant to IEC 61375</li> <li>- Two different EMD insensitivity levels for different EMI requirements</li> </ul>
<b>MVB Bus Administrator</b>	<ul style="list-style-type: none"> <li>- Polling of all configured MVB ports</li> <li>- Scanning for devices attached to the MVB</li> <li>- Initialising Message Data transfer</li> </ul>
<b>PCIexpress</b>	- PCIe 2.0 Gen1 (2.5 Gbps)
<b>Host Interface</b>	- 8 bit UART emulation
<b>Driver Kit</b>	<ul style="list-style-type: none"> <li>- WIN XP 32bit / 64bit</li> <li>- WIN 7 32bit / 64 bit</li> <li>- Linux</li> <li>- Other OS on request</li> </ul>

<b>Supply Voltage</b>	<ul style="list-style-type: none"> <li>- Single power supply</li> <li>- 3.3V</li> </ul>
<b>Diagnostic/Service</b>	<ul style="list-style-type: none"> <li>- Device status information/identification readable through host interface</li> <li>- On board temperature sensor for temperature supervision</li> </ul>
<b>Power Consumption</b>	- P <sub>max</sub> : typ. 1.5W (without MVB short circuit current)
<b>Operating Conditions</b>	<ul style="list-style-type: none"> <li>- Ambient temperature: -40 to +85 °C (EN 50 155 TX)</li> <li>- Relative humidity: 75%, max 95% for 30 days per year (conformal coating) EN 60 068</li> <li>- Shock and vibration: According to IEC 61 373 category 1, class B</li> <li>- EMI: According to EN 50 121 and EN 50 155</li> </ul>
<b>Dimensions/Weight</b>	<ul style="list-style-type: none"> <li>- 51 × 30 × 7 mm</li> <li>- Component height top: 3.6 mm</li> <li>- Component height bottom: 1.6 mm</li> <li>- &lt;10g (only PCIe mini card)</li> </ul>
<b>Cable Sets</b>	<ul style="list-style-type: none"> <li>- 20 pin y connector cable with two D-SUB connector</li> <li>- 10 pin connector with two D-SUB on a separate PCB. (MVB drivers mounted on the PCIe mini card)</li> <li>- 10 pin connector with two D-SUB and the MVB drivers on a separate PCB.</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>- Fully compliant to RoHS and REACH</li> <li>- 100% 48h cyclic climatic testing</li> </ul>

## Order Code and HW Options

Product Type: **D017M** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

EXAMPLE: D017M-PMB-D-I1-X-M3

MVB Function	MVB Type	Insensitivity	Front End	Sub-D Bolt	Receive only
Prozess Data	P _ _	ESD+ D	150mV I1	Internal Transc. 20pin + cable set Y	UNC UNC tx&rx <empty>
Message Data Stack	P M _	EMD T	350mV I3	Internal Transc. 10pin + cable set I	M3 M3 rx only S
Bus Administrator	P _ B	OGF O	External Transc. 10pin + cable set X	none N	
			Internal Transc. 20pin no cable N*		
			Int. Tr. 20pin + cable 30cm coat Y30C		

tx = MVB transmit, rx = MVB receive

## Related Documents

**Data Sheet D017M**  d-009349-nnnnnn.pdf  
available at [www.duagon.com](http://www.duagon.com)

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