

## General Features

The D533 is an Ethernet-to-MVB carrier mount gateway with the following physical interfaces:

- MVB on two 9-pin male/female SUB-S connectors.
- Up to two Ethernet interfaces ETH0 and ETH1 on M12 (female, D-coded) connectors or headers.

The optional Ethernet interface ETH1 is intended to be used as a redundant line according to the **IEC 62439** PRP protocol or as a separate channel for configuration.

The Ethernet interfaces comply with **IEEE 802.3** and the internal logic supports the "Ethernet on traction vehicles" standard **IEC 61375-3-4**. The MVB interface complies to the TCN standard **IEC 61375** and supports device up-to class 4 including process and message data, and the device can act as bus administrator.

duagon's gateways are available in two versions – as platform to build a customer-specific application or as gateway with a standard configurable gateway application. The platform version is accompanied by a development library that enables fast and efficient development of customer-specific applications.

The device can be powered directly from the vehicle battery supporting a wide range of supply voltages or it can be powered over Ethernet (PoE).

The D533 is designed for the harsh traction environment and conforms to the **EN 50121**, **EN 50155**, and **IEC 61373** standards, e.g. by:

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

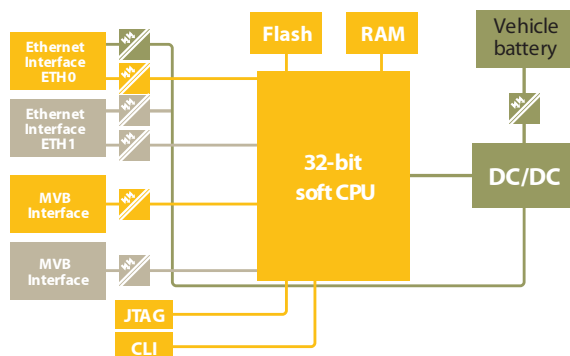
## Key Benefits

- Integrated train manufacturer specific webservices
- Hardware prioritisation within the duagon's own Ethernet controller
- Proprietary high-performance UDP Stack (optimised for cyclic process data telegrams)
- Encapsulation of real-time Ethernet protocol stacks
- Fully compliant with **IEEE 802.3**, **EN 50155**, **EN 50121**, **IEC 61373** and **IEC 61375**

## Application Examples

- Versatile legacy bus gateway

## D533 Hardware Structure



## Life Cycle Costs

Total cost of ownership was an important aspect when creating the installation, maintenance and service concept. Further-

more, to avoid service expenses, the gateway has strictly been designed without the usage of electrolytic capacitors.

# Technical Data

<b>Ethernet Interface 1 + 2</b>	<ul style="list-style-type: none"> <li>Physical layers according to <b>IEEE 802.3</b> 100BASE-TX</li> <li>M12 (D-Coded) according to <b>IEC 61076</b> or header/socket</li> <li>Full duplex mode, Auto-Negotiation, Auto-Polarity, Auto-Crossing</li> <li>1.5 kVAC galvanic isolation</li> </ul>
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<b>Ethernet Protocols</b>	<ul style="list-style-type: none"> <li>TCP/IP, UDP Sockets</li> <li>IPTCom</li> <li>Ethernet/IP, CIP</li> <li>TRDP</li> <li>PROFINET*</li> </ul>
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<b>MVB Interface</b>	<ul style="list-style-type: none"> <li>4096 Process data ports</li> <li>Physical layer: ESD+ or EMD</li> <li>Integrated 120 Ω termination resistance</li> <li>Two 9-pole SUB-D connectors (male/female)</li> <li>Free selectable UNC or M3 Bolt (default)</li> </ul>
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<b>CPU base System</b>	<ul style="list-style-type: none"> <li>32-bit soft processor</li> <li>Programmable in standard C</li> <li>Flash file system</li> </ul>
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<b>Diagnostic/Service</b>	<ul style="list-style-type: none"> <li>Device status information/identification available through host interface</li> <li>Firmware update via Ethernet</li> <li>JTAG and serial line available</li> </ul>
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<b>Supply Voltage</b>	<ul style="list-style-type: none"> <li>Single power supply 24 – 110 Vdc</li> <li>Power over Ethernet (PoE)</li> </ul>
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<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>Powered directly from battery <math>P_{max} &lt; 3W</math></li> <li>Interruption Class C2 ceramic capacitor on board, no need to replace capacitors due to aging</li> </ul>
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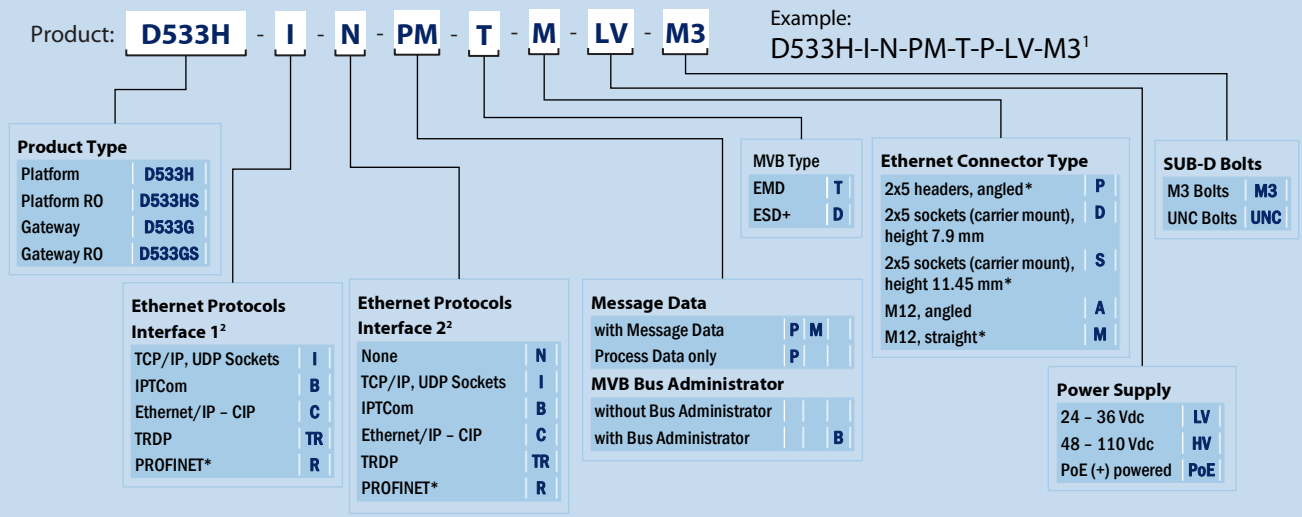
<b>Operating Conditions</b>	<ul style="list-style-type: none"> <li>Ambient temperature surrounding the PCB: -40 to +85°C (<b>EN 50155</b>, class TX)</li> <li>Relative humidity: 75%, max 95% for 30 days per year (conformal coating) according to <b>EN 60068</b></li> <li>Shock and vibration: According to <b>IEC 61373</b> category 1, class B</li> <li>EMI: According to <b>EN 50121</b> and <b>EN 50155</b></li> </ul>
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<b>Physical Characteristics</b>	<ul style="list-style-type: none"> <li>Dimensions: <ul style="list-style-type: none"> <li>M12 Version: 100 x 95 x 21.5</li> <li>Header Version: 100 x 95 x 17.4</li> </ul> </li> <li>Weight: 120g (typical, depending on order option)</li> </ul>
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<b>Environment</b>	<ul style="list-style-type: none"> <li>Fully compliant with RoHS and REACH</li> <li>100% cyclic climatic testing</li> </ul>
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d-046092-047493

## Product Ordering Table



<sup>1</sup> default order options  
<sup>2</sup> Ethernet "Sockets" is included on all interfaces  
\* contact duagon for lead times and availability

## Related Documents

- Data Sheet D533**      D533\_DS.pdf
- Product Ordering Guide**      order\_ug.pdf

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