General Features

The D521 is a WTB to MVB Gateway compliant to IEC 61375 and UIC Leaflet 556. The gateway is built with two WTB medium attachment units. Line A and B interfaces are galvanically isolated, enabling cable redundancy, and use standard 9-pole SUB-D type connectors. To overcome contact oxidation, the WTB gateway has an optional built-in fritting mechanism. The integrated WTB controller, realized on FPGA with duagon IP, can be configured to act as a strong or weak master or as a slave.

The gateway is delivered with a build-in UIC 556 conform mapping server application, handling message data communication and process data marshalling between the WTB and the MVB consist network. Safe data transmission can optionally be ordered. A complete configuration and integration toolchain is provided, including a configuration tool, to easily configure the application and allowing the gateway to be seamlessly integrated into any network architecture.

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

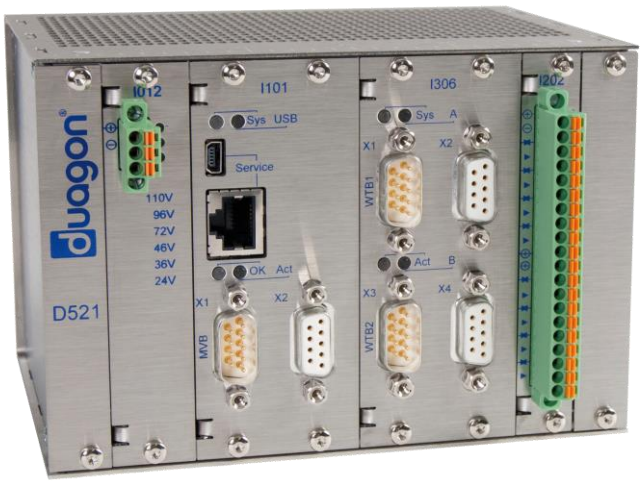
The D521 offers 8 digital inputs and 8 combined input/output channels. The I/O channels are used by the application to implement battery voltage monitoring, redundancy switch over and a "wake-up" signal.

The WTB gateway is connected directly to the train battery and supports all voltage types from 24 to 110 Vdc. Moreover, it has a built-in power save mode. The service interfaces accessible via Ethernet offers quick access to diagnostic information and all recorded data.

The D521 is designed for harsh rolling stock environments and is fully compliant with EN 50155.

The D521 is part of the WTB gateway series that covers further vehicle bus systems:

- D522 WTB - Ethernet Gateway
- D523 WTB - CAN Gateway



Key Benefits

- Fritting without additional DC/DC converters
- Configurable strong master, weak master and slave node
- Cable redundancy Line A and Line B
- Comparably small form factor
- Complies with EN 50155, EN 50121 and IEC 61375 standards, and is designed for harsh rolling stock environment

Application Examples

- Train back-bone node
- Redundant train back-bone node

Life Cycle Cost

The use of an FPGA with included duagon own soft-IP minimizes the risk and costs in case of component obsolescence. Data access and firmware updates are easily done through a service interface. Further, to avoid service expenses, the Gateways have strictly been designed without the usage of electrolytic capacitors.

Technical Data

Processor System	– 32 Bit ARM® Cortex™-A8 running up to 800 MHz – 256 MB DDR2-RAM, 64 kb FRAM – 1 GB flash file system – Optional RTC
UIC Mapping Server	– UIC Mapping Server according to UIC Leaflet 556 – Optional Safe Data Transmission (UIC Leaflet 556, Appendix L) – Easy to use configuration tool
WTB interface	– Galvanically isolated MAU for each line (realized with digital isolators) – Dual transceiver for both directions – Protected against overvoltage and short circuit – Fritting source and fritting load on each line
MVB Interface	– 4096 Process data ports – Physical layer: ESD+ or EMD – Integrated 120 Ω termination resistance – Two 9-pole SUB-D connectors (male/female)
Input Channels	– 8 current sink input channels with wetting and switching current circuit – HCI inputs with 10 mA sink current
Output Channels	– 8 high side (FET) from battery voltage – Read back function – Output short circuit protection – Maximum nominal load current: 1 A
Diagnostics / Service	– Ethernet 10/100 Mbit on RJ45 (only diagnostics and service), DHCP – Webserver for diagnostics and control – USB 2.0 high-speed OTG Type miniAB connector for easy monitoring – Diagnostic LEDs indicating power, system OK, Ethernet-, USB-, consist network activity, I/O status
Supply Voltage	– Single power supply 24 – 110 Vdc
Power Consumption	– Powered directly from battery P_{idle} < 12 W
Mounting	– DIN Rail – 3U Rack Cassette – Wall mount (4 screw holes)
Physical Characteristics	– Housing: Metal, IP30 protection – Dimensions: 147 × 100 × 120 mm – Weight: < 2.0 kg (may vary depending on mounting option)
Environment	– Fully compliant with RoHS and REACH – 100% 48h cyclic climatic testing

d-006792-041009

Product Ordering Table

Example:
D521-1-64k-O-H-LV-UIC-PMB-T-M3-D[1]

Product: **D521** - **1** - **64k** - **O** - **H** - **LV** - **UIC** - **PMB** - **T** - **M3** - **D**

File System	**I/O**	**Power Supply**		**MVB Function**			**SUB-D Bolts**	**FRAM**	**Fritting**	**UIC Layer**
1 GB **1**	8 In, 8 In/Out **0**	24 Vdc	**LV**	with Process Data	**P**		M3 **M3**	64 kb **64k**	with Fritting **H**	with UIC Mapping Server **UIC**
		36-48 Vdc	**MV**	with Message Data		**M**				with UIC Mapping Server **UICS**
		72 Vdc	**EV**	with Bus Administrator		**B**				incl. SDT[2]
		96-110 Vdc	**HV**							

MVB Type		**Mounting**	
EMD	**T**	Wall	**W**
ESD	**D**	DIN Rail	**D**
		3U	**3U**

[1] default order options
[2] Safe Data Transmission (SDT) according to UIC Leaflet 556 Appendix L

Related Documents

Data Sheet D521 D521_DS.pdf
Product Ordering Guide order_ug.pdf

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