General Features

The D512 is a compact 2-port Ethernet repeater for railway applications that is completely transparent to all Ethernet protocols and offers full 10Mbit/100Mbit bandwidth in full or half duplex mode. It allows the integration of any remote device or sub-network into an Ethernet network, and with its low latency, it is ideal to bridge long distances in redundant ring topologies. Optionally it is available with bypass relays. In the case of bypass relays, there is a digital status output pin available.

The D512 is intended to enable 10BASE-TX or 100BASE-TX connections of more than 100 meters (for connections with a high number of connectors and/or long patch cables the limit is even less than 100 meters).

The two Ethernet ports support 10BASE-TX or 100BASE-TX, Auto-Crossover and Auto-Negotiation. They are equipped with M12 connectors to guarantee a reliable connection. The D512 is powered directly from the train battery (24V to 110V) or from PoE (IEEE 802.3af).

As an option, the repeater can be ordered with a customer defined configuration for the Ethernet ports (default: Auto-Negotiation and Auto-Crossing on).

The D512 is designed for harsh rolling stock environment and fully compliant to EN50155, IEC61375 and IEEE802.3.

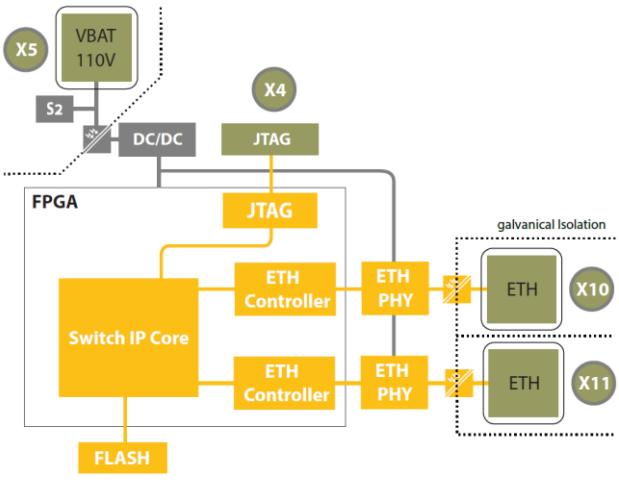
Key Benefits

- Completely transparent to all Ethernet protocols
- Full or half duplex communication (restriction to 2 ports)
- Very low latency (<2us)
- Full 10Mbit or 100Mbit bandwidth (unlike "Ethernet extenders")
- Customer specific port configurations for Auto Negotiation and Auto Crossing possible
- Battery voltage input (up to 110V) eliminates the need for an external power supply
- Can optionally also be powered from PoE
- Power interruption class S2: No service needed thanks to design without electrolytic capacitor
- Complies to IEC61375, EN50155, EN50121 and IEEE802.3

Application Examples

- Bridging of long distances in redundant ring topologies (low additional latency, D512 is not affected by topology changes)
- Integration of remote device/sub-network into an Ethernet network

D512 Hardware Structure



Life Cycle Cost

Total cost of ownership was focused when creating the installation, maintenance and service concept. The PoE option of the D512 reduces the number of power supplies and cabling effort, leading to lower costs. Further, to avoid service expenses, the repeater has strictly been designed without the usage of electrolytic capacitors

Technical Data

Technology	– IEEE802.3u 10BASE-TX or 100BASE-TX – IEEE 802.3af PoE – Transparent to all Ethernet protocols – Latency < 2us
Interface	– 2 M12 Ethernet ports – Full of half duplex mode – Auto-Negotiation, Auto-Crossing – 1.5kVAC galvanic isolation
By Pass Relays	– Four bypass relays will bypass the Ethernet signals if the device is un-powered or has an error. – In case of a failure the status output will keep a steady state.
Diagnostic	– Link and Act LED per port
Input Voltage / Power	– Powered directly from battery (24V -110V) or from PoE – Pmax = 2W – Interruption Class S2 ceramic capacitor on board, no need to replace capacitors due to ageing
Operating Conditions	– Ambient temperature: –40 to +70°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
Mounting	– DIN Rail – Anywhere (4 screw holes)
Physical Characteristics	– Housing: Metal, IP30 protection – Dimensions: 120 × 106 × 32 mm – Weight: 415 g
Environment	– Fully compliant with RoHS and REACH

d-006961-047522

Product Ordering Table

Product: **D512** - [ ] - [ ] - [ ] - [ ]

Example:
D512-HV[1], D512-F-HV-G

Ethernet Link	
Auto	
Fixed 100MBit FD	F
Fixed 100MBit HD*	FH
Fixed 10MBit FD*	F10
Fixed 10MBit HD*	F10H

By Pass Relais	
Without	
With bypass Relais	BY

Power Supply	
Nominal battery voltage: 24V, 36V	LV
Nominal battery voltage: 48V, 72V, 96V, 110V	HV
Power over Ethernet	PoE

Grounding Bolt	
No grounding bolt	
M5 grounding bolt	G

[1] default ordering options
* contact duagon for lead times and availability

Related Documents

Data Sheet D512 D512_DS.pdf
Product Ordering Guide order_ug.pdf

available at www.duagon.com

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