

General Features

The D512 is a compact full duplex 2-port Ethernet repeater for railway applications that is completely transparent to all Ethernet protocols and offers full 100Mbit bandwidth in full 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 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 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 duplex communication (restriction to 2 ports)
- Very low latency (<2us)
- Full 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 devices/sub-networks into an Ethernet network

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	<ul style="list-style-type: none"> – IEEE802.3u 100BASE-TX – IEEE 802.3af PoE – Transparent to all Ethernet protocols – Latency < 2us
Interface	<ul style="list-style-type: none"> – 2 M12 Ethernet ports – Full duplex mode – Auto-Negotiation, Auto-Crossing – 1.5kVAC galvanic isolation
By Pass Relays	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Link and Act LED per port
Input Voltage / Power	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Ambient temperature: –40°C to +70°C (EN 50155 TX) – Relative humidity: 75%, max 95% for 30 days per year (conformal coating) EN 60068 – Shock and vibration: According to EN 61373 category 1, class B – EMI: According to EN 50121 and EN 50155
Mounting	<ul style="list-style-type: none"> – DIN Rail – Anywhere (4 screw holes)
Physical Characteristics	<ul style="list-style-type: none"> – Housing: Metal, IP30 protection – Dimensions: 120 × 106 × 32 mm – Weight: 415 g
Environment	<ul style="list-style-type: none"> – Fully compliant to RoHS and REACH

d-006961-026107

Order Code and HW Options

EXAMPLE: D512-HV, D512-F-HV-G

Product Type: **D512** - - - -

Ethernet Link		By Pass Relays		Power Supply		Grounding Bolt	
Auto	<empty>	No	<empty>	PoE(+) powered	PoE	No grounding bolt	<empty>
Fixed	F	Yes	BY	24 – 36 Vdc	LV	M5 grounding bolt	G
				48 – 110 Vdc	HV		

Related Documents

Data Sheet D512  d-006967-nnnnnn.pdf
available at www.duagon.com

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