EN 50155 Ethernet Broadband Bridge

DDW-002-B1

- Compact rail-approved Ethernet broadband bridge
  - Single model 24 – 110 VDC power range
  - 1 x 100 Mbit/s Ethernet port
  - 1 x 2-wire cable port
- Externally tested and verified to EN 50155
  - Surge resistance and isolation
  - Magnetic field immunity and conducted emission
  - Shock and vibration
- Designed for long life and extreme operational environments
  - IP67 anti-condensation GORE-TEX® membrane
  - Ambient temperature -40°C (-40°F) to +70°C (+158°F)
  - Integrated M12 threading and high MTBF - 1,568,000 hours
- Design and production testing exceeding requirements for train control
- Manufactured according to IPC-A-610D class 2

IEEE 16 Rail Vehicles | **EN 50121-4** Railway Trackside | **EN 50155** On Board Rail | **EN 61000-6-1** Residential Immunity | **EN 61000-6-2** Industrial Immunity | **EN 61000-6-3** Residential Emission | **EN 61000-6-4** Industrial Emission

The Wolverine series consists of Ethernet extenders and bridges for propagating Ethernet traffic over existing cabling. The DDW-002-B1 is based on power line communication (IEEE 1901) and is capable of bridging high bandwidth Ethernet traffic over 2-wire cables, even when there are oxidized connectors.

This can lead to considerable financial savings when refurbishing a train with Ethernet communication, as existing train couplers can be reused without the need for a costly rebuild or even replacement. By simply installing a DDW-002-B1 on each side of the coupler, a bridge connecting the Ethernet networks on each side is created. The fact that no configuration is needed further contributes to the ease of use.

The DDW-002-B1 has been thoroughly tested by certified labs to ensure its compliance with the standard for electronic equipment used on rolling stock, the EN 50155. For several characteristics, Westermo exceeds the requirements mandated by the standard, e.g. by providing 1.5 kVrms insulation on all ports.

Furthermore, the design is based on Westermo's long experience within the rolling stock market, which brings benefits such as vibration safe integrated connector threading, IP67 ingress protection with GORE-TEX® membrane to prevent condensation water build-up and ultimately a high MTBF and long service life under the harshest conditions.

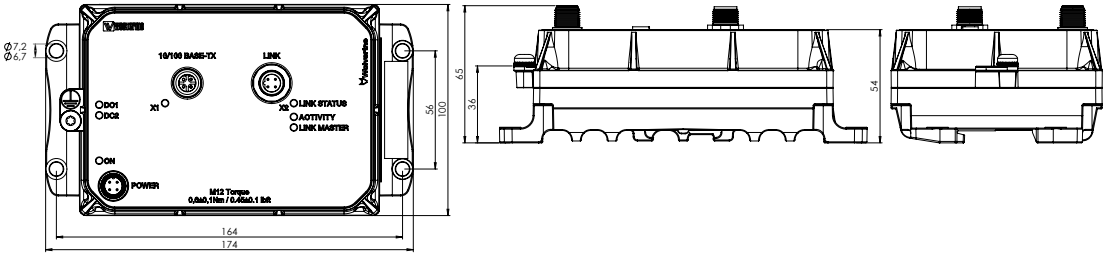
The DDW-002-B1 is built in Westermo's Swedish factory which is renowned for its extremely high standard, as confirmed by a multitude of quality audits by demanding international customers. The factory is organized according to lean manufacturing principles and it is equipped with sophisticated state-of-the-art quality assurance equipment.

Meeting the requirements for rolling stock, makes the DDW-002-B1 also very well suited for deployment in other applications with severe operating conditions and extreme environments.

Ordering Information	
Art.no	**Description**
3641-0900	DDW-002-B1, EN 50155 Ethernet Broadband Bridge
3146-11xx	Patch and power cables, see www.westermo.com

Specifications EN 50155 Ethernet Broadband Bridge - DDW-002-B1

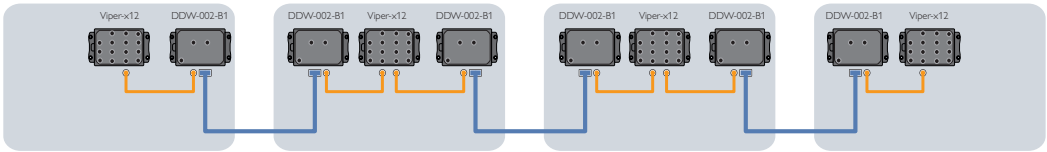
Dimensional drawing



Weight	1.4 kg
Degree of protection	IP67

Application

The DDW-002-B1 is typically used to link Ethernet consist networks (symbolized by the Viper-x12 symbol) to one another over non-Ethernet cables. In normal cases, the distance to bridge is short, but the DDW-002-B1 can typically handle distances of at least 200 m. For even longer distances, two DDW-002-B1 can be connected to create a new segment, able to reach another 200 m.



Power	
Rated voltage	24 to 110 VDC
Operating voltage	16.8 to 143 VDC (14.4 VDC for 100 ms, 154 VDC for 1 s)
Rated current	350 mA at 24 VDC and 90 mA at 110 VDC

Interfaces	
X1	1 x 10/100 Mbit/s
X2	1 x 2-wire interface up to 70 Mbit/s, distance up to 300 m (depending on cable characteristics). The wire may be powered, up to 143 VDC.

Temperature	
Operating	–40 to +70°C (–40 to +158°F)
Storage & Transport	–50 to +85°C (–58 to +185°F)

Agency approvals and standards compliance	
EMC	EN 61000-6-1, Immunity residential environments
	EN 61000-6-2, Immunity industrial environments
	EN 61000-6-3, Emission residential environments
	EN 61000-6-4, Emission industrial environments
	EN 50121-3-2 Railway applications – Rolling stock – apparatus
	EN 50121-4/IEC 62236-4, Railway signaling and telecommunications apparatus
	IEEE 16 - IEEE Standard for Electrical and Electronic Apparatus on Rail Vehicles
	Tested and verified for FCC part 15, class A
Safety	EN/IEC 60950-1 IT equipment
Environmental	EN 50124-1 – Railway applications – Insulation coordination
	EN 50155 Railway applications – Electronic equipment used on rolling stock
	EN 61373 – Railway applications – Rolling stock equipment. Shock and vibration tests
	IEC 60068-2-27 – Shock IEC 60068-2-64 – Vibration, broadband random and guidance
	IEEE 1478 – Environmental conditions for transit rail car electronic equipment
	EN 45545-2 – Fire protection