

# EN 50155 Ethernet Broadband Bridge

## DDW-002-B1

- ❏ Compact rail-approved Ethernet broadband bridge
  - Single model 24 – 110VDC 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  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+70^{\circ}\text{C}$  ( $+158^{\circ}\text{F}$ )
  - Integrated M12 threading and high MTBF,
- ❏ Design and production testing exceeding requirements for train control
- ❏ Manufactured according to IPC-A-610D class 2



**EN 61000-6-2**  
Industrial Immunity

**EN 61000-6-3**  
Residential Emission

**EN 50155**  
On Board Rail

**EN 50121-4**  
Railway Trackside

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.

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.

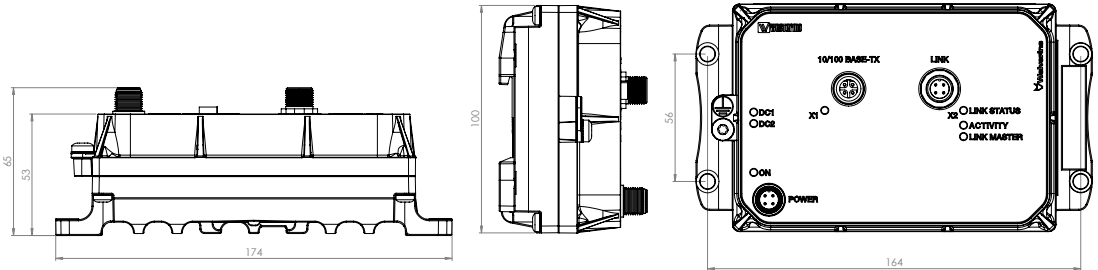
Meeting the requirements for rolling stock, makes the DDW-002-B1 also very well suited for deployment in other applications with severe operating conditions and extreme environments.

### Ordering Information

Art.no	Description
3641-0900	DDW-002-B1, EN 50155 Ethernet Broadband Bridge

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

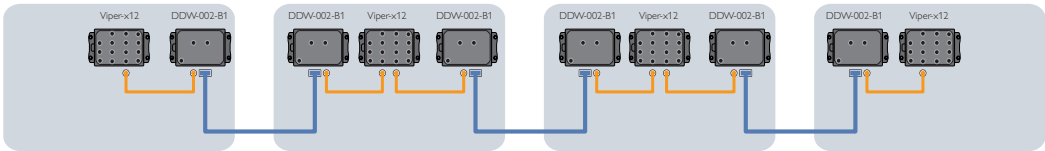
## Dimensional drawing



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 143VDC (14.4 to 154VDC for 100 ms)

## Interfaces

X1	1 x 10/100 Mbit/s
X2	1 x 2-wire interface up to 60 Mbit/s, distance typically up to at least 200 m (depending on cable characteristics)

## 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 55024, Immunity IT equipment
	FCC part 15 Class A
	EN 50121-4/IEC 62236-4, Railway signaling and telecommunications apparatus
	EN 50121-3-2 Railway applications – Rolling stock – apparatus
Safety	EN 55022, Emission IT equipment
	IEC/EN 60950-1, IT equipment
Environmental	EN 50155 Railway applications – Electronic equipment used on rolling stock
	EN 61373 – Railway applications – Rolling stock equipment. Shock and vibration tests
	IEEE 1478 – Environmental conditions for transit rail car electronic equipment
	EN 50124-1 – Railway applications – Insulation coordination
	IEC 60068-2-27, IEC 60068-2-64
	CEN/TS 45545-2 – Fire protection