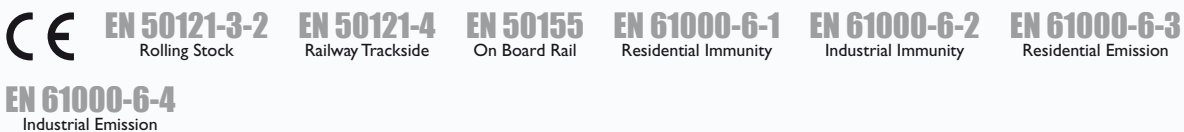


Managed EN 50155 Backbone Routing Switch RFR-212-FB

- **Designed for railcar backbone networks**
 - Dual bypass relay to mitigate powerless car scenario
 - Single model 24 – 110 VDC ($\pm 30\%$) power range
 - WeOS – resilient networking configurations
- **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**
 - IP65 anti-condensation GORE-TEX® membrane
 - Ambient temperature -40°C (-40°F) to $+70^{\circ}\text{C}$ ($+158^{\circ}\text{F}$)
 - High MTBF, 305,000 hours
- **Design and production testing to match requirements for train control**
 - Post production testing exceeding EN 50155 mandatory requirement
 - Burn in and isolation test on all units
 - Manufactured according to IPC-A-610D class 2



The RFR-212-FB has been specially designed to allow the creation of a fault tolerant Ethernet backbone structure in trains. The dual bypass relay ensures that aggregated links between carriages are maintained, even if one carriage has a power failure. The Westermo WeOS operating system provides an extensive suite of IP networking standards allowing resilient and flexible networks to be created, meeting the needs of the rail market.

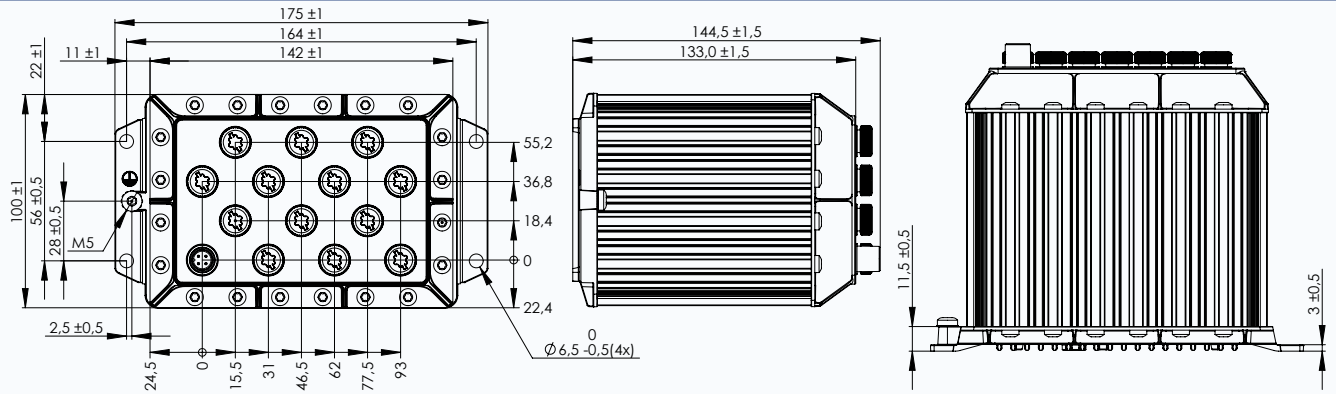
As is critical for all equipment to be installed in rail vehicles, the RFR-212-FB has been externally tested across the complete spectrum of standards required by EN 50155.

Westermo understand that systems on railcars are required by the EN 50155 standard to have a useful life of 20 years, so as well as using the highest quality components to deliver extended MTBF figures, we also implement features like the GORE-TEX® membrane in the IP65 enclosure to prevent water build up in the units.

The EN 50155 standard requires mandatory performance and isolation testing. Not only does Westermo meet these, we exceed them in order to meet the additional manufacturer requirements for train control. Westermo's Swedish factory has been building Ethernet switches for the railcar market for many years now and understands the measures that are required to provide the highest quality manufactured solutions.

Specifications - RFR-212-FB

Dimensional drawing



Housing

Dimensions (W x H x D)	175 x 100 x 144,5 mm (6.88 x 3.93 x 5.68 inch)
Weight	2.24 kg
Degree of protection	IP65

Temperature

Operating	-40 to +70°C (-40 to +158°F)
Storage and transport	-40 to +85°C (-40 to +185°F)

Interface

Ethernet TX (switch, router and coupler ports)	12 x 10/100 Mbit/s (4 for bypass capability)
Configuration plug	1 x 12 Mbit/s USB

Power parameters

Rated voltage	24 to 110 VDC
Operating voltage	16.8 to 143 VDC (14.4 to 154 VDC for 100 ms)
Rated current	470 mA at 24 VDC, 130 mA at 110 VDC

Type

Approval/Compliance

EMC	<ul style="list-style-type: none"> EN 50121-3-2 Railway applications – Rolling stock – apparatus EN 50121-4, Railway signalling and telecommunications apparatus EN 50155, Railway applications EN/IEC 61000-6-1, Immunity residential environments EN/IEC 61000-6-2, Immunity industrial environments EN/IEC 61000-6-3, Emission residential environments EN/IEC 61000-6-4, Emission industrial environments
Fire protection	<ul style="list-style-type: none"> EN 45545-2, Fire protection on railway vehicles

Software

WeOS	WeOS 4; https://www.westermo.com/solutions/weos
WeConfig	https://www.westermo.com/solutions/weconfig

Art.no.

Product

3641-1640	RFR-212-FB
3614-0190	M12 USB configuration backup device (accessory)
3146-11xx	Patch and power cables, see www.westermo.com (accessory)