

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 – 110VDC ($\pm 30\%$) power range
 - WeOS – resilient networking configurations
- ⌘ Externally tested and verified to EN 50155
 - Surge resistance and isolation
 - Magnetic field immunity & 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 class2

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E
EN 50121-4
EN 50155
EN 55022
EN 55024
EN 61000-6-1
EN 61000-6-2
EN 61000-6-3
EN 61000-6-4

Railway Trackside
On Board Rail
ITE Emission
ITE Immunity
Residential Immunity
Industrial Immunity
Residential Emission
Industrial Emission

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.

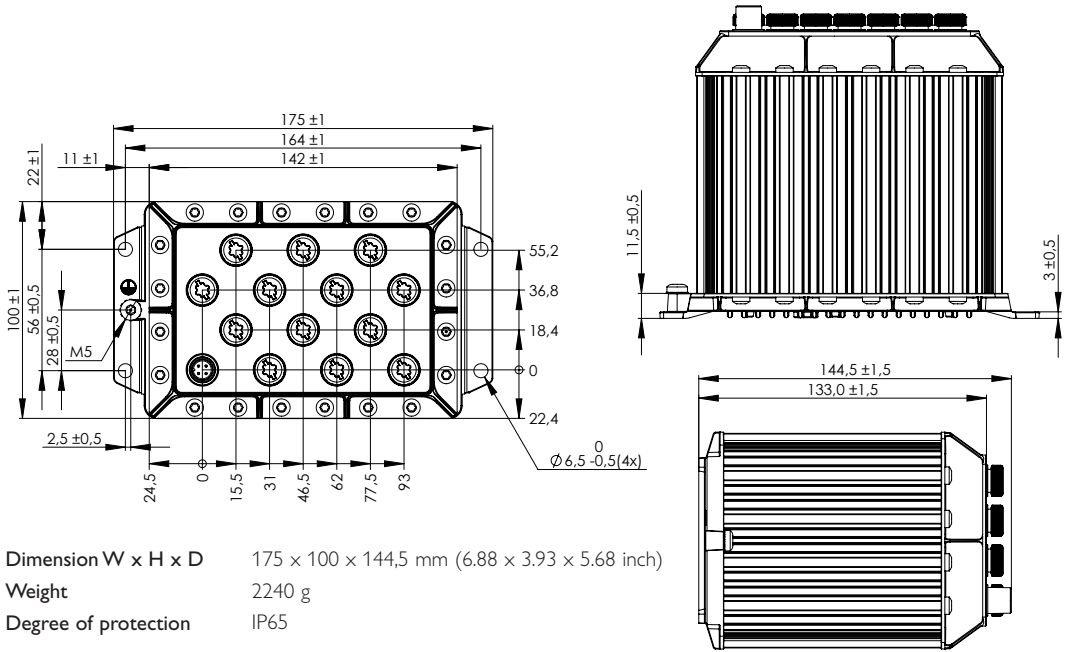
The EN 50155 standard requires mandatory performance and isolation testing. Not only does Westermo meet these, we exceed them in order to meet the additional manufacturer requirements for train control. Westermo's Swedish factory has been building Ethernet switches for the railcar market for many years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

Ordering Information

Art.no	Description
3641-1640	RFR-212-FB, Managed EN50155 Backbone Routing Switch
3641-0190	M12 USB memory
3146-11xx	Patch and power cables, see www.westermo.com

Specifications RFR-212-FB

Dimensional drawing



Dimension W x H x D 175 x 100 x 144,5 mm (6.88 x 3.93 x 5.68 inch)
 Weight 2240 g
 Degree of protection IP65

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

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

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

Agency approvals and standards compliance	
EMC	EN 50121-3-2, Railway applications – EMC: Rolling stock – Apparatus
	EN 50121-4, Railway signalling and telecommunications apparatus
	EN 55022, Emission IT equipment
	EN 55024, Immunity IT equipment
	EN 61000-6-1, Immunity residential environments
	EN 61000-6-2, Immunity industrial environments
	EN 61000-6-3, Emission residential, commercial and light-industrial environments
	EN 61000-6-4, Emission industrial environments
Safety	EN 50155, Railway applications, Approval/Compliance
Safety	EN 60950-1, IT equipment
Environmental	CEN/TS 45545-2 - Fire Protection