

mmWave Trackside Rail Node

Oryx-7322

- Compact, multi-gigabit trackside node
 - Data rates up to 3 Gbps per radio
 - Optimized wireless connectivity using integrated phased array antennas
 - Compact IP66 design with easy installation and maintenance
- Designed for trackside deployment
 - Radios 180 degrees apart for up/down track alignment
 - Deployment up to 2 km intervals along the track
 - Flexibility to add additional units (e.g. busy stations)
- mmWave connectivity with unlicensed bands
 - Uses 57-71 GHz mmWave unlicensed bands
 - Supports train speeds up to 500 kmph
 - Typical range of 1 Gbps at 1 km



EN 45545-2
Fire Safety

EN 50155
On-board Rail

EN 50155
Trackside Rail

Westermo's mmWave solution for high-speed transport provides continuous, on-the-move multi-gigabit connectivity between trackside and train for on-board services including Passenger Internet Access, CCTV upload and data exchange.

The Oryx-7322 node is qualified for trackside deployment with extended service life and low maintenance. Typically deployed on rail trackside at intervals of up to 2 km, this unit provides a multi-gigabit link between train and trackside. The compact Oryx-7322 is EN50121-4 approved for trackside installation.

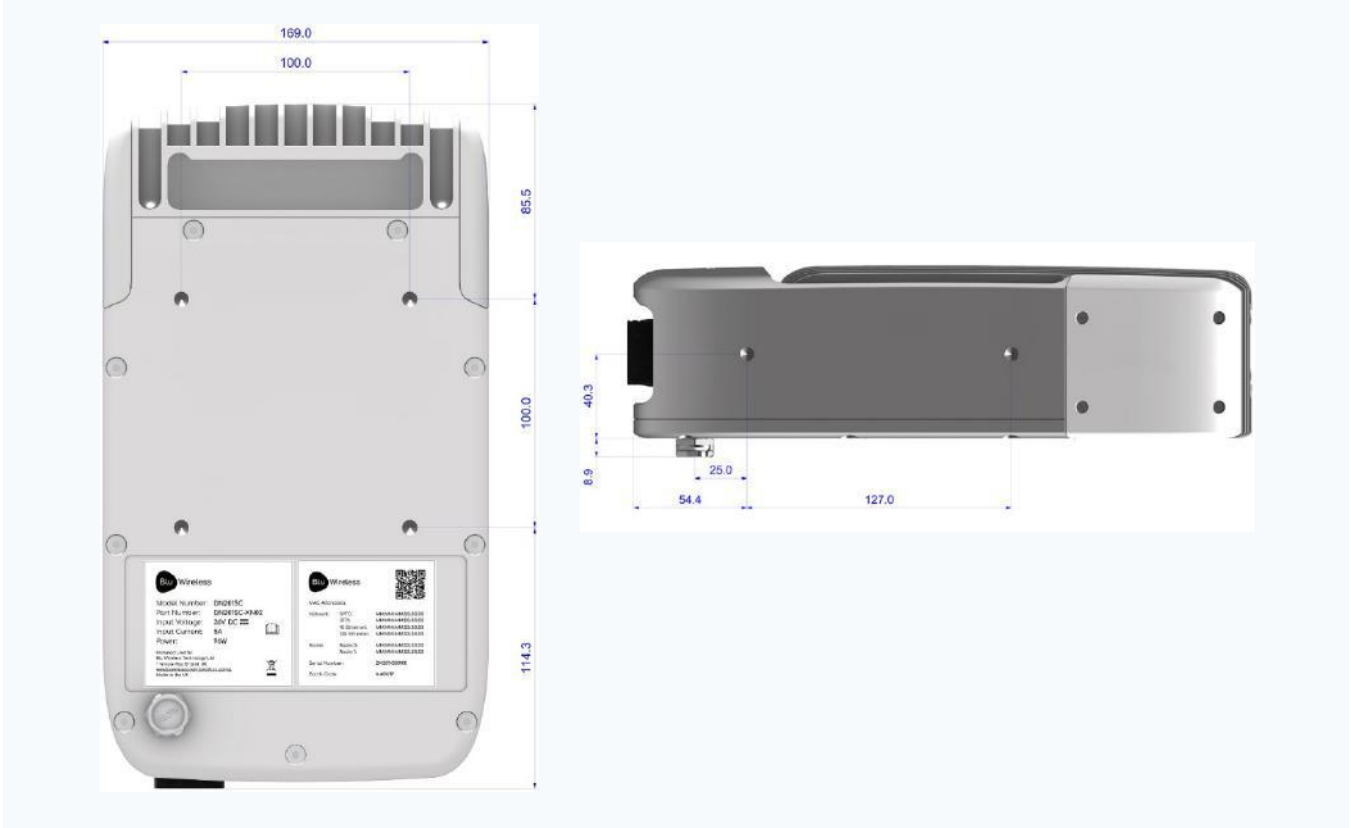
The Oryx-7322 trackside unit works together with the on-board unit Oryx-7321. Both feature two radios which work together to maintain an aggregated data throughput of between 2-4 Gbps per train, continuously and at speed.

Trackside and train units include the RWM6050 dual modem IC with HYDRA technology developed by Blu Wireless, two-sector electronic phased array antennas operating in 60 GHz unlicensed spectrum, and a quad-core ARM Network Processor. The units support flexible network and edge application configuration in a standard and secure Linux environment.

The Oryx-7322 is equipped with the latest cybersecurity features and updates. The links have AES128 encryption in the nominal configuration and AES256 in the extended range configuration.

Specifications - Oryx-7322

Dimensional drawing



Technical data	
Dimensions (W x H x D)	296 x 170 x 83 mm (11.65 x 6.69 x 3.27 inches)
Housing	Full metal (type)
Weight	3.9 kg
Operating temperature	-25 to +45°C, up to +55°C with reduced performance (-13.0 to +131.0°F)
Ingress protection	IP66
MTBF	DN201SC and DN202SC: 150k hours (17 years, according to mission profile) Note that MTBF varies with the assumed ambient temperature. We reference EN50125-1:2014, which indicates 25 °C should be used for all temperature classes for MTBF (section 4.3).
Rated voltage	20 to 48 VDC
Nominal voltage	36 VDC
Rated power	40 W nominal (70 W max.)

Interface	
Antenna	2x phased array antennas for 57-71 GHz with data rates up to 3 Gbps
Ethernet	10 Gigabit Ethernet (not all variants include an ethernet interface)
Fiber	10 Gigabit Fiber

Wireless	
Standards supported	IEEE 802.11ad
Frequency range	57 to 71 GHz
Channel bandwidth	Nominal: 1760 MHz Extended range: 880 MHz
Phased array azimuth steerability	+/-45 degrees for each radio
Azimuth beamwidth	7 degrees
Elevation beamwidth	20 degrees
Data throughput	Nominal configuration: 3 Gbps per radio Extended range: 1.5 Gbps Typical journey average per train with 2 Oryx-7321 units: 2.0 Gbps (dependent on deployment parameters)
Modulation scheme	BPSK, QPSK, 16QAM
Transmit power EIRP	+40 dBm
Range	Typical range (nominal configuration): 1 Gbps at 1 km (dry) and 1 Gbps at 650 m (wet Zone F rain fade) Extended range adds +40 % range for 50 % of data rate

Features	
Link encryption	Nominal: unencrypted or AES 128 Extended range: unencrypted or AES 256
Network coordination	High-speed transport optimised link selection and management
Network operations	Support for NMS, configuration, telemetry and software update services

Approvals and Standards	
Conformity	CE, FCC, EN 50155, EN 50121-4
Radio regulatory approvals	US FCC Part 15.255 and EU Radio Equipment Directive (RED)

Ordering information			
Art. no.	Model	Part Number	Description
3623-73220	Oryx-7322-T1G10-F1G10-TS-1P	DN201SC	Oryx mmWave trackside rail node with ethernet and fiber
3623-73221	Oryx-7322-F1G10-TS-1	DN202SC	Oryx mmWave trackside rail node with fiber only