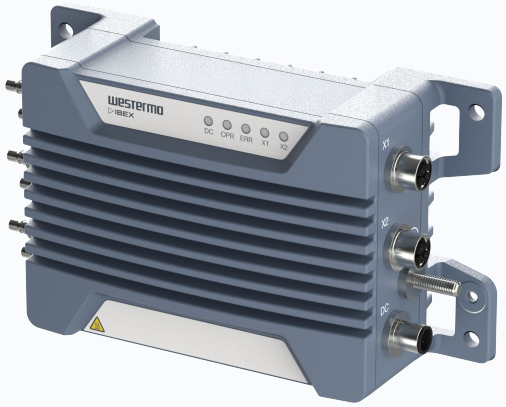
EN 50155 WLAN 802.11ac Dual Concurrent Access Point

Ibex-RT-610 series

- **Compact WLAN access point**
  - 2.4 GHz and 5 GHz
  - Flexible and easy set-up
- **Designed and built for extreme operational environments**
  - Extended operating temperature range with guaranteed performance across the range
  - High-level isolation enables direct DC power connectivity
  - EN 50155 approved for usage onboard trains and locomotives
- **Latest generation 802.11 design**
  - IEEE802.11ac Wave2 for maximum capacity
  - 4x4 Multi-User MIMO



Part 15

EN 45545-2 Fire Protection | EN 50121-4 Railway Trackside | EN 50155 On Board Rail | NFPA 130 Fire Protection

The Ibex-RT-610 consists of concurrent dual-band 802.11ac Wave2 Wireless LAN Access Points for on-board and stationary applications. They ensures reliable, high-speed data, airtime fairness, band steering, client steering, and can be used as passenger hotspots or as access points for connecting wireless industrial clients.

The Ibex-RT-610 is designed to withstand the tough environment on-board trains, exposing the access point to constant vibration, extreme temperatures, humidity and a demanding electromagnetic environment.

A GORE-TEX® membrane prevents internal condensation. High-level isolation between all interfaces enables direct connectivity to vehicle auxiliary power and protects against overvoltage and spikes/surge. IP66 protection prevents ingress of water and dust even at the quick connect QMA connectors.

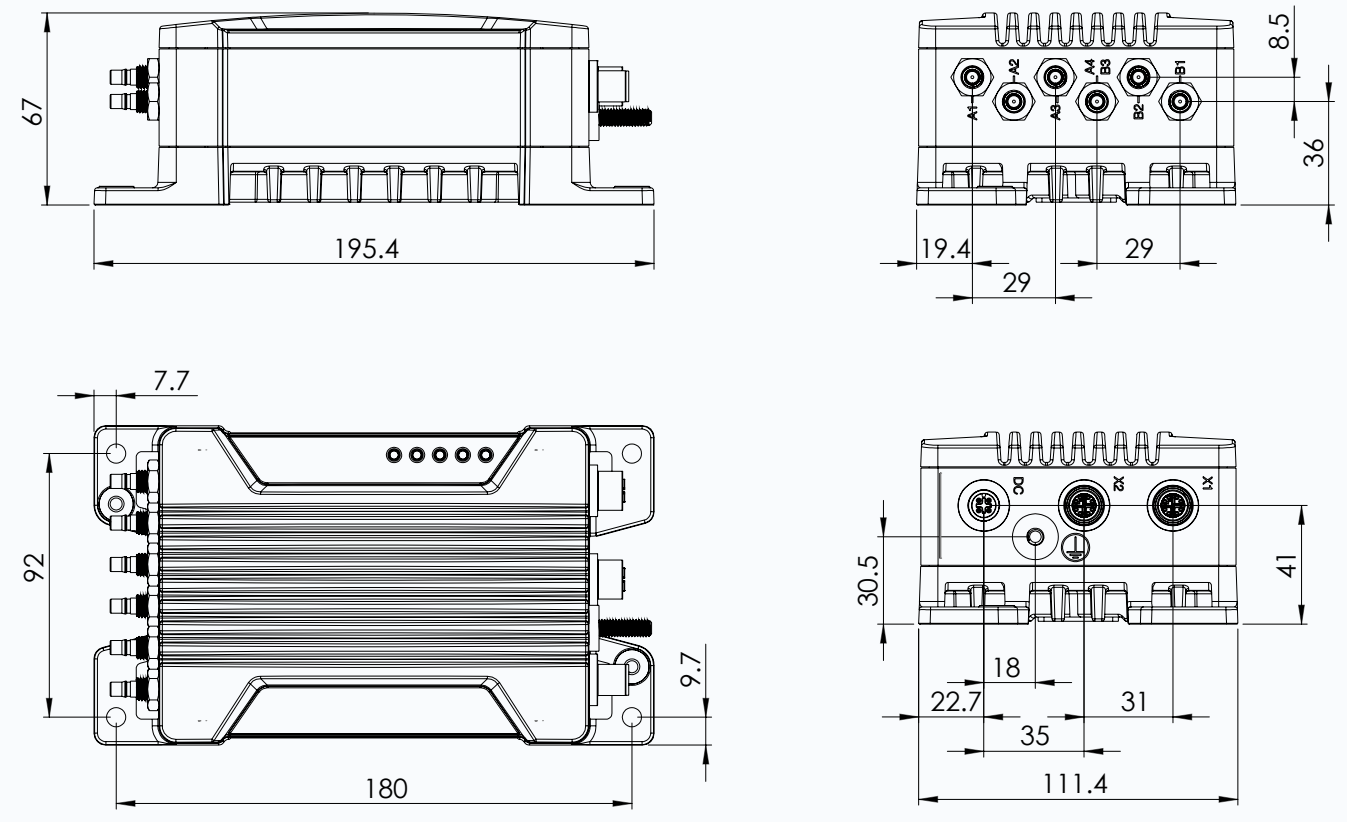
An overall optimised design results in a compact form factor in combination with very high MTBF for easy integration in space restricted installations and low lifecycle cost.

Thorough type testing at independent labs certifies the compliance to a wide range of standards, not least EN 50155 and FCC.

Meeting the requirements of the railcar market, the Ibex-RT-610 is very well suited for deployment in any other application with severe operating conditions and tough environments, for instance in the mining or shipping industry.

Specifications - Ibex-RT-610 series

Dimensional drawing



Technical data	
Dimensions (W x H x D)	195.4 x 67 x 111.4 mm (7.69 x 2.64 x 4.39 inches)
Housing	Full metal
Weight	1.45 kg without antennas
Operating temperature	-40 to +70°C (-40 to +158°F)
Ingress protection	IP66
MTBF	420,000 hours (IEC 62380)
Rated voltage	LV: 24 VDC isolated, 0.6 A max. or IEEE 802.3 at type 1 powered device HV: 72 to 110 VDC isolated, 0.2 A max.

Interface	
RF antenna	4 x QMA compatible antenna connectors, 4x4 MU-MIMO for 5GHz 2 x QMA compatible antenna connectors, 2x2 MIMO for 2.4GHz
Ethernet	2 x 10/100/1000 Base-T, 2 x M12 X-coded connectors

Wireless	
Operating modes	Access Point, Client, Bridge
Wireless standards supported	IEEE802.11g, 802.11a, 802.11n, 802.11ac
Frequency range	2.400 to 2.4835 GHz (2x2 MU-MIMO) 5.150 to 5.350 GHz, 5.470 to 5.725 GHz, 5.725 to 5.875 GHz (2x2 MU-MIMO)
Data rates supported	802.11a/g: 6Mbit/s, 9, 12, 18, 24, 36, 48 and 54 Mbit/s 802.11n 20 MHz BW, LGI/SGI: from MCS0 6.5/7.2 Mbit/s to MCS23 195/216.7 Mbit/s 802.11n 40 MHz BW, LGI/SGI: from MCS0 13.5/15 Mbit/s to MCS23 405/450 Mbit/s 802.11ac 20 MHz BW, LGI/SGI: from VHT0 6.5/7.2 Mbit/s to VHT9 312/346.7 Mbit/s 802.11ac 40 MHz BW, LGI/SGI: from VHT0 13.5/15 Mbit/s to VHT9 720/800 Mbit/s 802.11ac 80 MHz BW, LGI/SGI: from VHT0 29.3/32.5 Mbit/s to VHT9 1560/1733.3 Mbit/s 802.11ac 160 MHz BW, LGI/SGI: from VHT0 58.5/65 Mbit/s to VHT9 1560/1733.3 Mbit/s (2SS)
RF transmit power 2.4 GHz[a.]	Max. conducted transmit power, 802.11g/n, up to +18 dBm for all data rates
RF transmit power 5 GHz[a.]	Max. conducted transmit power, 802.11a/n/ac, up to +18 dBm for all data rates
Receiver sensitivity (typical)	-95 dBm (6 Mbit/s), -85 (36Mbit/), -80 dBm (54 Mbit/s) 20 MHz: -95 dBm (MCS0), -79 dBm (MCS7), -75 dBm (MCS8) (max. 4SS) 40 MHz: -92 dBm (MCS0), -77 dBm (MCS7), -71 dBm (MCS9) (max. 4SS) 80 MHz: -88 dBm (MCS0), -74 dBm (MCS7), -67 dBm (MCS9) (max. 4SS) 160 MHz: -88 dBm (MCS0), -74 dBm (MCS7), -67 dBm (MCS9) (max. 2SS)
MIMO features supported	Space Time Block Coding (STBC), RX Low Density Parity Check (LDPC), Maximum Likelihood Demodulation (MLD), Maximum Ratio Combining (MRC), Multi-User-MIMO (MU-MIMO), Transmit Beamforming (TxBF)

[a.] Depending on the regulatory limitations and selected antennas

Features	
Security	WPA2-Personal (CCMP), WPA2-Enterprise, WPA3-Personal (SAE/OWE), WPA3-Enterprise (Suite-B), 802.11w, 802.1X, SecureBoot (TPM), Security Log (persistent)
Ethernet routing/networking and VPN	Fixed fallback IP, IP aliases, MAC address control lists, Port forwarding, Routing, Multicast Routing, DHCP Server/Client, NAT, VLAN support, NTP client, SNMP v2c and v3 with USM authentication and encryption support, SNMP Traps, RSTP, Firewall, IP Masquerading (NAT/NAPT), Port Forwarding, Stateless NAT (1-1 NAT), SSL VPN (Client and Server), Certificate Authentication, Pre-shared Key (PSK) Point-to-Point Mode, Layer-2 and Layer-3 VPN, Layer-2 VPN bridging, Address pool and address per CN, TLS Authentication), Generic Routing Encapsulation (GRE)
Client management	ATF (Air Time Fairness), Client Steering and Load Balancing between , Multi-AP Client Steering, 802.11k, 802.11v
Monitoring	Built-in monitoring sensors and diagnostics
Management	SNMP v2c/v3 with USM authentication and encryption support, HTTP/HTTPS web interface and WebAPI with user authentication (local or LDAP), CLI (SSH and Telnet), Certificate Management (SCEP)
SNMP MIB Support	MIB-2, RFC1213, HOST-RESOURCES, BRIDGE, ETHERLIKE, IF-MIB, LLDP-MIB, UCD-SNMP-MIB, WESTERMO-SW6-MIB, WESTERMO-SW6-BRIDGE-MIB, WESTERMO-SW6-FIREWALL-MIB, WESTERMO-SW6-ICL-MIB, WESTERMO-SW6-GNSS-MIB, WESTERMO-SW6-NWM-MIB, WESTERMO-SW6-PWN-MIB

Approvals and Standards	
Climate	• EN 50155, class OT4 Railway applications - Electronic equipment used on rolling stock • EN 50125-3, Railway applications – Environmental conditions for equipment, Part 3: Equipment for signalling and telecommunications
EMC	• EN 50155, Railway applications - Electronic equipment used on rolling stock • EBA EMV 06, German Federal Railway Authority, Radio compatibility of rail vehicles (valid for LV models only) • EN 50121-3-2, Railway applications – Electromagnetic compatibility, Part 3-2: Rolling stock – Apparatus • EN 50121-4, Railway applications - Electromagnetic compatibility. Part 4: Emission and immunity of the signalling and telecommunications apparatus • ETSI EN 301 489-1, Electromagnetic compatibility (EMC) and Radio spectrum Matters (ERM) for radio equipment and services - Part 1: Common technical requirements • ETSI EN 301 489-17, Electromagnetic compatibility (EMC) and Radio spectrum Matters (ERM) for radio equipment - Part 17: Specific conditions for Broadband Data Transmission Systems • ECE E-Mark, Road Vehicles, E13 10R-06 15771 (valid for LV models only) • EMV06, Technical Rules for Electromagnetic compatibility (valid for LV models only)
Mechanical (Shock and vibration)	• EN 61373, category 1, class A and B • EN 50125-3, Outside the track
Insulation (Coordination and test)	• EN 50124-1, Railway applications – Insulation coordination • EN 50155, Railway applications - Electronic equipment used on rolling stock
Radio communication	• ETSI EN 300 328, Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques • ETSI EN 301 893, 5 GHz RLAN • IEEE802.11, Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications • FCC-47-15, Radio frequency devices
Safety	• EN/IEC 62368-1, Safety Requirements for audio/video, information and communication technology equipment • EN 45545-2, Fire protection on railway vehicles • NFPA 130, Fire protection for fixed guideway transit and passenger rail system

Ordering information	
Art. no.	**Description**
3623-073001	Ibex-RT-610-LV EU
3623-073002	Ibex-RT-610-LV NA
3623-073101	Ibex-RT-610-HV EU
3623-073102	Ibex-RT-610-HV NA
3623-0799	Factory Reset Plug X-code (Accessory)