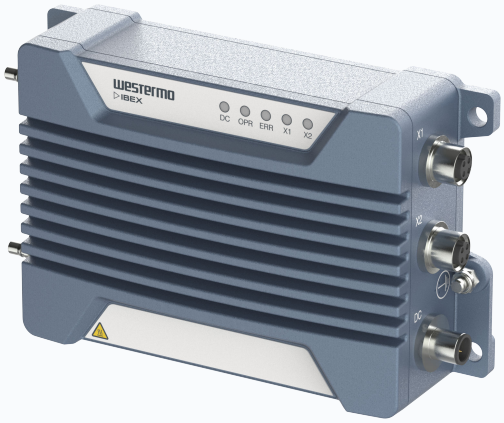
EN 50155 WLAN Client / Bridge / Access Point

Ibex-RT-220 Series

- Compact WLAN node
  - Configurable as Access Point, Client or Bridge
  - 2 x 2 MIMO
  - 2.4 GHz and 5 GHz
  - Flexible and easy set-up
  - Special mode for stable and secure inter-consist link
- Designed and built for 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
- High-end radio design for mission-critical capability
  - Low power consumption
  - Robust DFS (radar detection) features
  - Disturbance free operation close to other radio devices



CE FC Part 15 E13 EN 45545-2 Fire Protection EN 50121-4 Railway Trackside EN 50155 On Board Rail NFPA 130 Fire Protection

Ibex-RT-220 is a Wireless LAN Node for on-board and stationary applications. It ensures reliable connection for applications such as video transmission and TCMS, especially useful for transparent inter-consist links (ICL) with automatic reconfiguration.

Ibex-RT-220, along with the application-specific ICL antenna, is designed to withstand the tough environment on-board trains, exposing equipment to constant vibration, extreme temperatures, humidity and a demanding electromagnetic environment.

The radio module is calibrated to ensure high RF sensitivity (even at high data rates/modulations), stable RF links, optimised DFS handling, etc. It maintains high-speed data rates and reliable connection to industrial wireless clients even if the communication distance is increased.

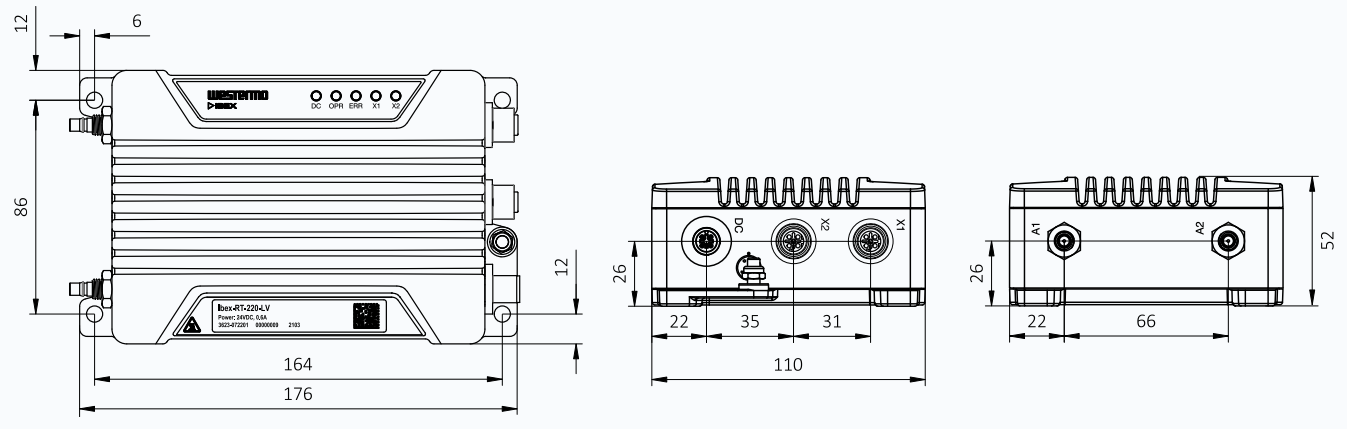
A GORE-TEX® membrane prevents internal condensation. High-level isolation between all interfaces enables direct connectivity to vehicle auxiliary power and protects against overvoltage and spikes/surge. IP66 protection prevents ingress of water and dust even at the quick connect QMA connectors.

An overall optimised design results in a compact form factor in combination with very high MTBF for easy integration in space restricted and outdoor installations and low lifecycle cost. Thorough type testing at independent labs certifies the compliance to a wide range of standards, not least EN 50155, FCC and EN 300 440 (the latter opening the possibility to use the 5.8 GHz band in the EU region).

Meeting the requirements of the railway and signalling market, Ibex-RT-220 is very well suited for deployment in any other application with severe operating conditions and tough environments, for instance in the mining and shipping industry.

Specifications - Ibex-RT-220 series

Dimensional drawing



Technical data	
Dimensions (W x H x D)	176 x 52 x 110 mm (6.93 x 2.05 x 4.33 inches)
Housing	Full metal
Weight	1.1 kg without antennas
Operating temperature	-40 to +70°C (-40 to +158°F)
Ingress protection	IP66
MTBF	400,000 hours (IEC 62380)
Power feed	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	2 x QMA compatible antenna connectors, 2x2 MIMO
Ethernet	2 x 10/100 Base-T with 2 x M12 D-codec connectors

Wireless	
Operating modes	Access Point, Client, Bridge, Inter-consist Link
Wireless standards supported	IEEE 802.11b, 802.11g, 802.11a, 802.11n
Frequency range	2.400 to 2.4835 GHz 5.150 to 5.350 GHz, 5.470 to 5.725 GHz, 5.725 to 5.875 GHz
Data rates supported	802.11b: 1 Mbit/s, 2, 5.5 and 11 Mbit/s 802.11g and 802.11a: 6 Mbit/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 MCS15 130/144.4 Mbit/s 802.11n 40 MHz BW, LGI/SGI: from MCS0 13.5/15 Mbit/s to MCS15 270/300 Mbit/s
RF transmit power 2.4 GHz[a]	Max. conducted transmit power, 802.11b/g/n: 1 port: +12 dBm for all data rates 2 ports: +15 dBm for all data rates
RF transmit power 5 GHz[a]	Max. conducted transmit power, 802.11a/n: 1 port: +15 dBm for all data rates 2 ports: +18 dBm for all data rates
Receiver sensitivity (typical)	802.11ng HT20: -93 dBm (MCS0), -74 dBm (MCS7), -71 dBm (MCS15) 802.11na HT20: -93 dBm (MCS0), -74 dBm (MCS7), -71 dBm (MCS15) 802.11ng HT40: -90 dBm (MCS0), -71 dBm (MCS7), -68 dBm (MCS15) 802.11na HT40: -90 dBm (MCS0), -71 dBm (MCS7), -68 dBm (MCS15)
MIMO features supported	Space Time Block Coding (STBC), RX Low Density Parity Check (LDPC), Maximum Likelihood Demodulation (MLD), Maximum Ratio Combining (MRC)

[a]Depending on regulatory limitations

Features	
Security	WPA2 (CCMP), WPA3-Personal (SAE/OWE), WPA3-Enterprise (Suite-B), 802.11w, 802.1X, 802.11r
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)
Monitoring features	Built-in monitoring sensors and diagnostics
Device management	SNMP, HTTP/HTTPS with user authentication, CLI (SSH and Telnet)
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

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)
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 • IEEE 802.11, 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
3623-072201	Ibex-RT-220-LV EU
3623-072202	Ibex-RT-220-LV NA
3623-072301	Ibex-RT-220-HV EU
3623-072302	Ibex-RT-220-HV NA
3623-0797	Inter-Consist Link Antenna 5 GHz (Accessory)
3623-0795	Factory Reset Plug (Accessory)