WESTERMO Ibex-RT-310 Series WLAN Client Bridge Access Point User Manual

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Contents

General Information

Legal Information

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More information about Westermo can be found at **www.westermo.com**.

About This Guide

This guide is intended for installation engineers and users of the Westermo products.

It includes information on safety and regulations, a product description, installation instructions and technical specifications.

Software Tools

Related software tools are available at **https://www.westermo.com/support/productsupport**.

License and Copyright for Included FLOSS

This product includes software developed by third parties, including Free/Libre Open Source Software **(FLOSS).** The specific license terms and copyright associated with the software are included in each software package respectively. Please visit the product web page for more information.

Upon request, the applicable source code will be provided. A nominal fee may be charged to cover shipping and media. Please direct any source code request to your normal sales or support channel.

Safety and Regulations

Warning Levels

Warning signs are provided to prevent personal injuries and/or damages to the product. The following levels are used:

Level of warning	Description	Consequence personal injury	Consequence material damage
WARNING	Indicates a potentially hazardous situation	Possible death or major injury	Major damage to the product
CAUTION	Indicates a potentially hazardous situation	Minor or moderate injury	Moderate damage to the product
NOTICE	Provides information in order to avoid misuse of the product, confusion or misunderstanding	No personal injury	Minor damage to the product
NOTE	Used for highlighting general, but important information	No personal injury	Minor damage to the product

Table 1. Warning levels

Safety Information

Before installation:

Read this manual completely and gather all information available on the product. Make sure it is fully understood. Check that your application does not exceed the safe operating specifications for the product.

SAFETY DURING INSTALLATION

The product must be installed and operated by qualified service personnel and installed into an apparatus cabinet or similar, where access is restricted to service personnel only. For Ibex products, outdoor installation is allowed.

During installation, ensure a protective earthing conductor is first connected to the protective earthing terminal (only valid for metallic housings). Westermo recommends a cross-sectional area of at least 4 mm2

Upon removal of the product, ensure that the protective earthing conductor is disconnected last.

HAZARDOUS VOLTAGE

⚠ Do not open an energised product. Hazardous voltage may occur when connected to a power supply

PROTECTIVE FUSE

The power supply wiring must be sufficiently fused.

⚠ It must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

Replacing the internal fuse must only be performed by Westermo qualified personnel.

POWER SUPPLY CONNECTION

⚠ There are safety regulations governing the power source that can be used in conjunction with the product. Refer to chapter Interface Specifications.

RADIO PRODUCTS

⚠ Observe the usage limitations of radio products at filling stations, in chemical plants, in systems with explosives or potentially explosive locations.

The product may not be used in airplanes. Exercise particular caution near personal medical aids, such as pacemakers and hearing aids. Never perform work on the antenna system during a thunderstorm.

To fulfill human safety, a minimum separation distance of 20 cm or more should be maintained between the antenna of the product and personnel during operation.

HOT SURFACE

⚠ Be aware that the surface of this product may become hot. When it is operated at high temperatures, the external surface may exceed Touch Temperature Limit according to the product's relevant electrical safety standard.

This product complies with Touch Temperature Limits throughout its operational temperature range.

CORROSIVE GASES

⚠ If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

CABLE TEMPERATURE RATING FOR FIELD TERMINAL WIRES

⚠️ There may be a requirement on the minimum temperature rating of the cable to be connected to the field wiring terminals, see chapter Interface Specifications.

Care Recommendations

Follow the care recommendations below to maintain full operation of the product and to fulfill the warranty obligations:

- Do not drop, knock or shake the product. Rough handling above the specification may cause damage to internal circuit boards.
- Use a dry or slightly water-damp cloth to clean the product. Do not use harsh chemicals, cleaning solvents or strong detergents.
- Do not paint the product. Paint can clog the product and prevent proper operation.

If the product is used in a manner not according to specification, the protection provided by the equipment may be impaired.

If the product is not working properly, contact the place of purchase, the nearest Westermo distributor office or Westermo technical support.

ℹ️ **NOTE**

Devices not used shall be kept in the factory sealed moisture barrier bag. Open, unsealed devices should not be kept unpowered for more than 30 days.

Product Disposal

This symbol means that the product shall not be treated as unsorted municipal waste when disposing of it. It needs to be handed over to an applicable collection point for recycling electrical and electronic equipment.

By ensuring the product is disposed of correctly, you will help to reduce hazardous substances and prevent potential negative consequences to both the environment and human health, which could be caused by inappropriate disposal.

Figure 1. WEEE symbol for treatment of product disposal

Compliance Information

🛈 **REGULATORY NOTICE**

Any changes or modifications shall be approved by the party responsible for compliance. If not, users could void the user's authority to operate the equipment. Country code and antenna gain need to be set properly for correct functionality in the installed country.

Agency Approvals and Standards Compliance

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 • IEEE802.11, Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications • FCC-47-15, Radio frequency devices • SRRC certificate (China), Radio Transmission Equipment
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

United States – FCC

The enclosed product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this product may not cause harmful interference and
2. this product must accept any interference received, including interference that may cause undesired operation.

To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this product and persons during operation. To ensure compliance, operations at closer distances than this are not recommended.

This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications

However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the product off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the unit and receiver
• Connect the product into an outlet on a circuit different from that to which the receiver is connected
• Consult the dealer or an experienced radio/TV technician for help

ⓘ NOTE
This product contains FCC ID 2AEJD-103902-DT50RF.

NOTE

The Ibex-RT-320-LV is registered for 4.9 GHz public safety band with the FCC ID 2AEJD-3623-0720

United States – AREMA

The product has been tested according to AREMA Part 11.5.1 environmental class J and C and AREMA Part 11.5.2 exposure class Internal.

Canada – IC

This product complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- This product may not cause interference.
- This product must accept any interference, including interference that may cause undesired operation of the product.

NOTE

This product contains the IC Certification number 9301A-103902DT50.

NOTE

The Ibex-RT-320-LV is registered for 4.9 GHz public safety band with the IC Certification numbers 9301A-36230720

Certified Antennas for FCC and IC

The following antennas can be used with the product (the antenna type ID has to be set to the right value):

Type	Part no.	Manufacturer	Gain	Chains	Antenna type ID
Dipole	F51-N	Tekfun	2 GHz: 4.5 dBi max5 GHz: 7 dBi max	1, 2, 3	1001
Patch	SPA 2400/75/8/0/V	Huber & Suhner	2 GHz: 8 dBi max	1, 2, 3	1000
Patch	SPA-5600/40/14/0/V_2	Huber & Suhner	5 GHz: 14 dBi max	1, 2	1002
Patch	SPA-5600/65/9/0/MIMO	Huber & Suhner	5 GHz: 9 dBi max	1, 2, 3	1003
Shark	SPA-5600/45/12/10/V	Huber & Suhner	5 GHz: 12 dBi max	1, 2	1004
Shark	SPA-5600/45/12/10/V	Huber & Suhner	4 GHz: 12 dBi max	1, 2	1009

Table 2. Certified antennas for FCC and IC

Simplified Declaration of Conformity

Hereby, Westermo declares that this product is in compliance with applicable EU directives and UK legislations. The full declaration of conformity and other detailed information is available at **www.westermo.com/support/product-support**.

CE UK CA

Figure 2. The European Conformity and the UK Conformity Assessment markings

Product Description

Product Description

The Ibex-RT-310 and Ibex-RT-320 series can be configured as a WLAN Access Point, Client or Bridge. It is designed for onboard and infrastructure Wi-Fi installations in public transport and harsh environments. The 802.11 WLAN radio is operating at 2.4 GHz and 5 GHz frequency bands.
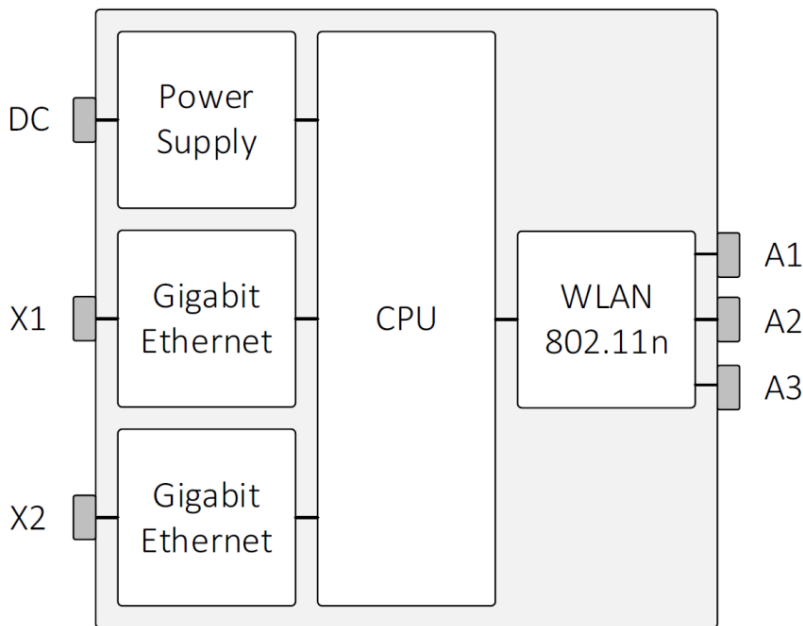
Figure 3. Ibex-RT-330 block diagram

The Westermo configuration management tool, WeConfig, can be used for discovery and basic configuration and maintenance. The configuration can be done via SNMP or via WebGUI. The status information is available in local LED status indicators, and through SNMP/WebGUI.

The Ibex-RT-310 och Ibex-RT-320 is designed to withstand tough environmental conditions and can be remotely managed using web browser or SNMP management tools. Integrating hardware, software and network design support tools, this router platform offers advanced capabilities, the lowest total cost of ownership and will create the most reliable and resilient networks.

The product is engineered to maintain uninterrupted data communication, even in exceptionally harsh environments. Tested and certified to withstand extreme temperatures, vibrations and shocks, these routers only use industrial grade components which contributes towards a market leading mean time between failure (MTBF), maximized service life, and reduced operational and life cycle costs.

Available models

Art. no.	Model	Region	PoE Port	Rated current
3623-071001	Ibex-RT-310-LV EU	Europe	X2	24 VDC
3623-071002	Ibex-RT-310-LV NA	North America	X2	24 VDC
3623-072001	Ibex-RT-320-LV EU	Europe	X2	24 VDC
3623-072002	Ibex-RT-320-LV NA	North America	X2	24 VDC
3623-072101	Ibex-RT-320-HV EU	Europe	–	72-110 VDC
3623-072102	Ibex-RT-320-HV NA	North America	–	72-110 VDC

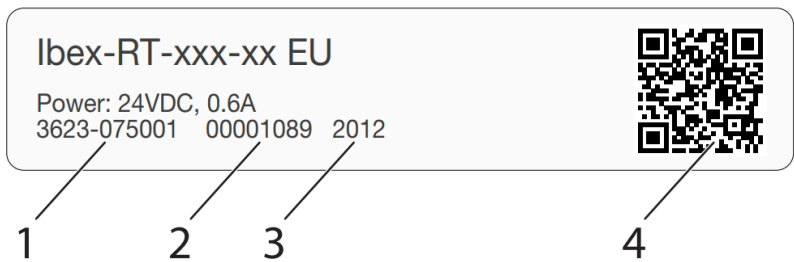**Table 3. List of available models**

Hardware Overview

Frontside Overview

Table 4. Location of interface ports and LED indicators
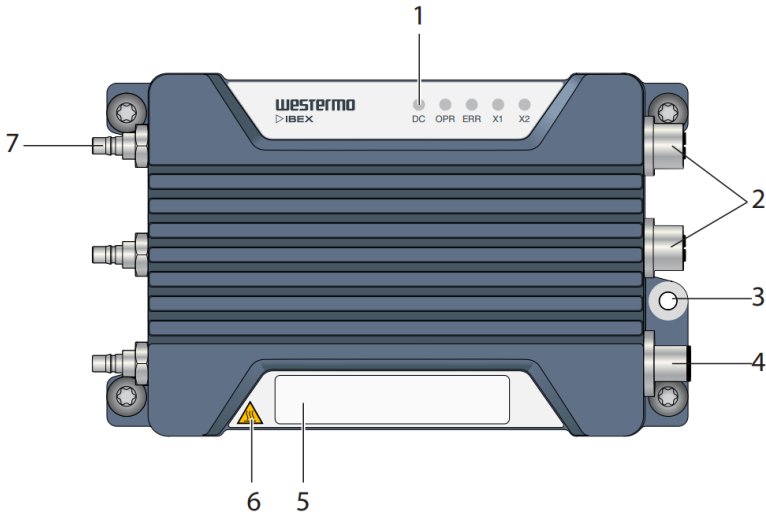
No.	Description		
1	LED indicators	2	Gigabit Ethernet ports X1 and X2
3	Protective earth terminal	4	Power input DC
5	Frontside label	6	Warning symbol for surface temperatures above +60°C
7	Antenna ports A1 to A3		

Front Side Label

No.	Description	Remarks
1	Article number	Example of article number
2	Serial number	Example of serial number
3	Manufacturing date	The Date Format is: YYWW YY = Manufacturing Year WW = Manufacturing Week
4	QR code	The data matrix is: AAAAAAAAARR-1-VV-SSSSSSSS-YYWW AAAAAAAAA = Article numberRR = Region codeVV = Product revision SSSSSSSS = Serial number YY = Manufacturing Year WW = Manufacturing Week

Table 5. Front side label

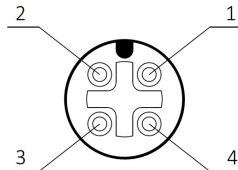**Interface Ports View**
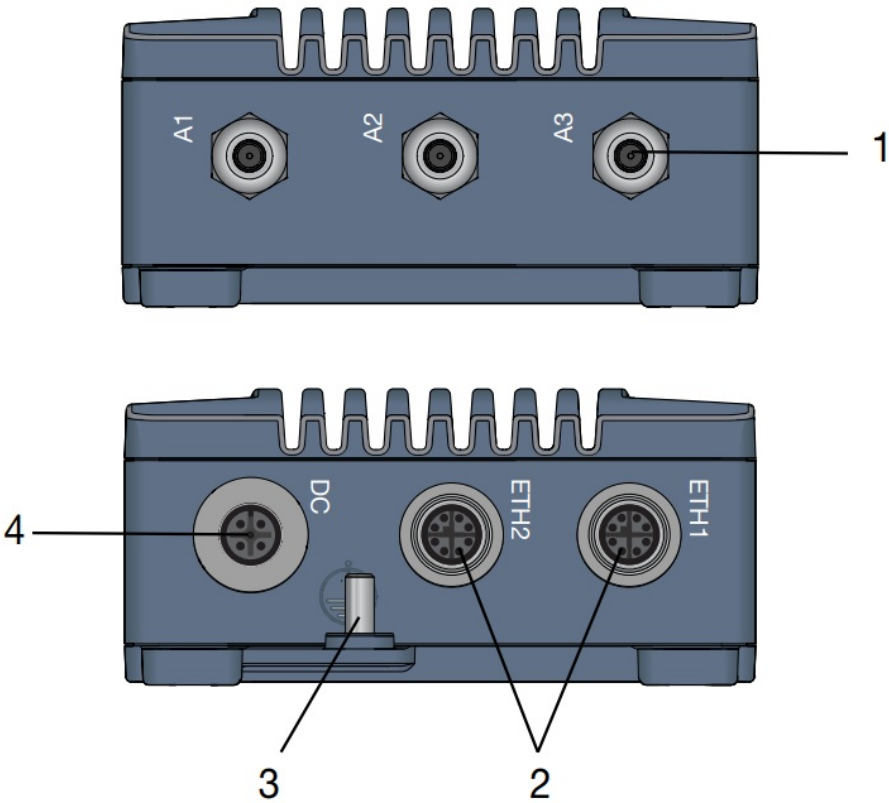
No.	Description	No.	Description
1	Antennas	2	1000Base-T
3	Grounding point	4	Power

Table 6. Interface ports view

Connector Information

Power Input Connection

Marking	Position	Direction	Description	
DC	1	+DC	Positive terminal	
	2	–		
	3	-DC	Negative terminal	
	4	–		
	Housing	Shield	Chassis of product (ground)	

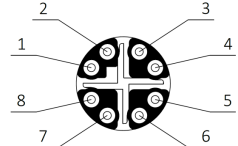**Table 7. M12 A-coded 4-pin male power connector according to IEC 61076-2-101**

ℹ️ **NOTE**

If the product is powered by PoE, the protective dust cap which is part of the delivery must be closed to protect the power interface from water or dust ingress

Ethernet Ports

The product includes two Ethernet ports X1 and X2 which supports auto negotiated 10 Mbit/s, 100 Mbit/s and 1000 Mbit/s operation. Automatic MDI/MDIX crossover is supported for 10BASE-T, 100BASE-T, 1000BASE-T operation.

Marking	Position	Direction	Description	
X1/X2	1	In/Out	DA+	
	2	In/Out	DA-	
	3	In/Out	DB+	
	4	In/Out	DB-	
	5	In/Out	DD+	
	6	In/Out	DD-	
	7	In/Out	DC-	
	8	In/Out	DC+	
	Housing	Shield	Chassis of product (ground)	

Table 8. M12 X-coded 8-pin female Ethernet connector according to IEC 61076-2-109

Position	Device mode A	Device mode B
1	+DC	
2	+DC	
3	-DC	
4	-DC	
5		-DC
6		-DC
7		+DC
8		+DC

Table 9. Ethernet PoE connection on X2 (LV-model only)

ℹ️ **NOTE**

PoE is supported on X2 for the LV product variant only.

ℹ️ **NOTE**

If the Ethernet function is not used, the protective dust cap which is part of the delivery must be closed to protect the interface from water or dust ingress.

Antenna Ports

The antenna connectors are identified on the product with A1 to A3. QMA industrial standard connector is used.

A1 to A3 are used for WLAN communication. At least A1 must be connected to an external WLAN antenna. The antenna configuration is made through the software interface.

❗ **NOTICE**

Any unused antenna ports must be properly terminated with 50 Ohm, otherwise the product might be damaged when power is applied to a non-terminated antenna port.

ℹ️ **NOTE**

To ensure specified IP protection, suitable QMA connectors/cables and terminations must be used.

LED Indicators

- **DC**

- **OPR**

- **ERR**

- **X1**

- **X2**

Figure 4. LED indicators

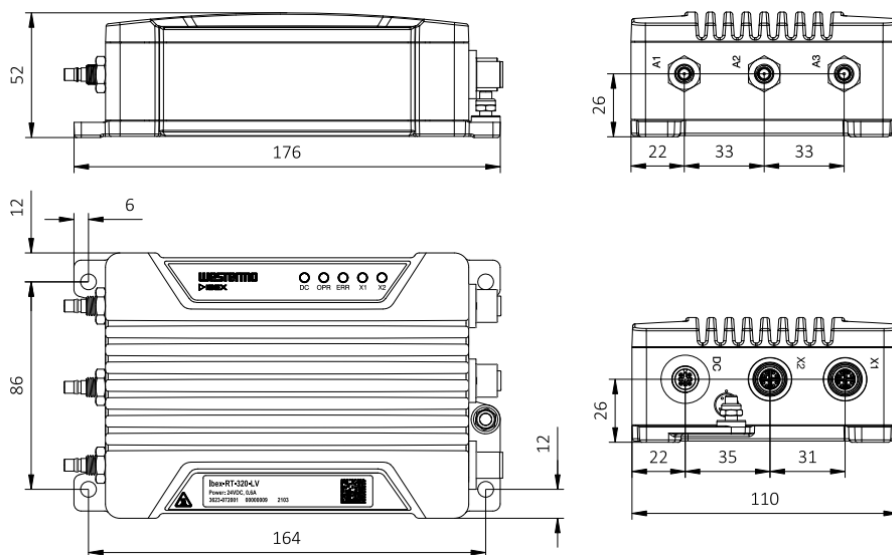| LED	Description
DC	Power status
OPR	Operation status
ERR	Error status
X1	Ethernet status for X1 port
X2	Ethernet status for X2 port

Table 10. LED indicators

 NOTE

Refer to management guide for detailed LED status indication.

Dimensions

Dimensions are stated in mm and are regardless of variants.

Figure 5. Dimensional drawing

Installation

Mounting

The product is fixed with the four fixing points located at the corners of the product. M5 or M6 screws are used for the fixation of the product. The screws are tightened with min. 3.0 Nm (fixing screw ISO 898/1, quality class 8.8).

! NOTICE

All four specified fixing points must be used for fixing. The installation surface should be flat to have all fixing points connected to the surface.

ⓘ NOTE

For indoor installation, consider additional protection against dust to ensure proper heat dissipation.

ⓘ NOTE

For outdoor installation, consider additional protection against sun radiation, dust and dirt to optimize ambient temperature range.

ⓘ NOTE

Unused connectors must be covered by a protective cap (delivered with the product), tightened to the specified torque in order to fulfill the specified ingress protection code.

Factory Reset

To reset the product into factory default settings, a reset adapter is needed which is plugged into one of the Ethernet ports X1 or X2 during startup

Art. no.	Description
3623-0799	Factory Reset Plug, X-coded

Factory reset procedure

1. Plug the factory reset adapter to one of the Ethernet interfaces.

2. Power the product.

3. Wait until factory reset adapter is detected. This is indicated by solid ORANGE OPR LED and RED ERR LED.

4. Remove factory reset adapter within 15 seconds.

5. Successful initiation of the factory reset is indicated by blinking ORANGE OPR LED and RED ERR LED.

Earth connection

For correct function, the earth connection at the grounding point needs to be properly connected to a solid ground. An M5 grounding screw at the housing is used for grounding. A short wire with a cross section of at least 4 mm2 shall be used. The grounding wire is set below the rip-lock washer. The nut is fixed for good reliable grounding contact. The tightening torque of the nut shall be 2.0 Nm.
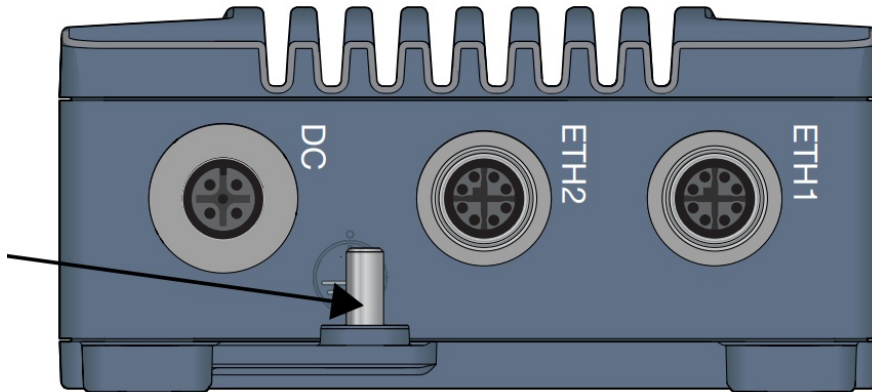
Figure 6. Earth connection

❗ NOTICE

Do not use equipment without protective earth connection.

Connection of Cables

Recommended tightening torque for the M12 connectors is 0.6 Nm. All M12 connections are screw connections.

When connecting the power cable, ensure that the pins are connected correctly before tightening the power cable to the unit.

ℹ NOTE

This product has no replaceable fuse and should be connected via an external fuse for protection.

Cooling

This product uses convection cooling. Make sure that it is installed so that the ambient temperature is within the specified temperature range, e.g. by avoiding obstruction of the airflow around the product.
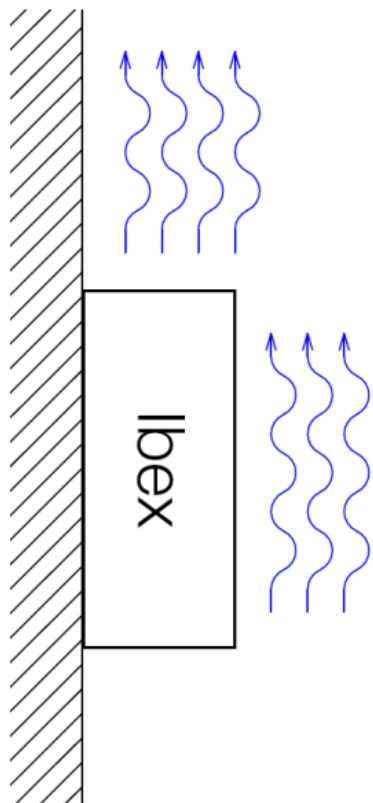
It is recommended to install the product in areas where the natural convection airflow is not blocked and that there is enough spacing around the product.

**Figure 7. Installation with reduced natural convection airflow**
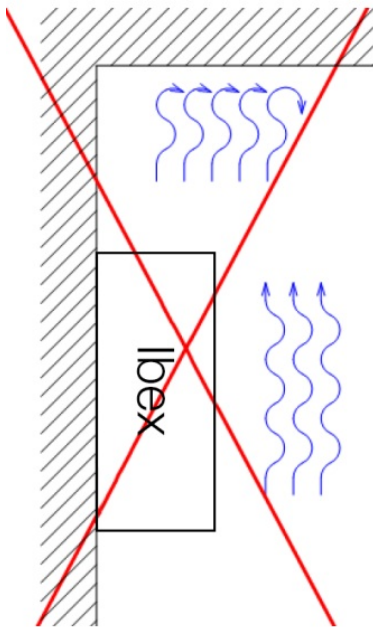
Figure 8. Installation with natural convection airflow

When operating the product at high ambient temperatures, it is recommended to mount the product to a metallic base plate to improve the heat dissipation. The base plate increases the surface to spread the heat.

Figure 9. Improved heat transfer based on fixing plate and natural convection
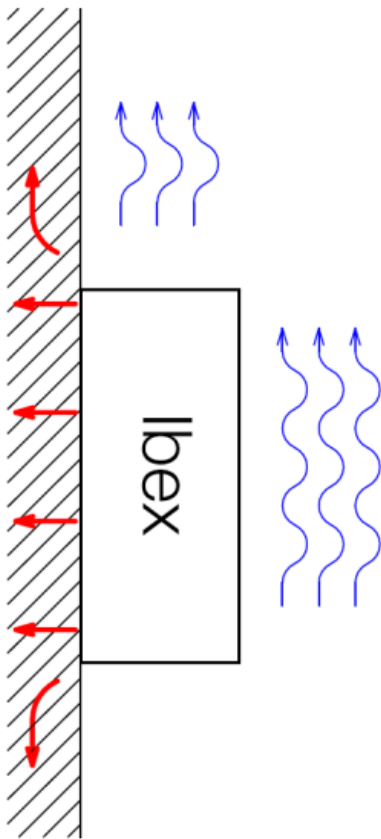
ℹ️ **NOTICE**

Limited air flow is rising the product temperature and may lower the upper limit of the operating temperature range.

ℹ️ **NOTICE**

Temperature is dependent on the operational parameters, like RF output power, amount of traffic.

ℹ️ **NOTICE**

This product has integrated temperature sensors for monitoring the internal device temperatures. If temperature limits are exceeded, alarms are sent through the SW interface.

ℹ️ **NOTICE**

The operating conditions shall be ensured so that the normal operation does not cause temperature alarms. Improve installation conditions or RF parameters in case of any temperature alarms

Replacement of Product

Disconnect all cables and unscrew the product from the wall. Mount the replacement product and reconnect all cables, observing the instructions in Connection of Cables. MTTR (Mean Time To Repair), i.e. time for replacement of product is: < 10 minutes.

⚠️ **HOT SURFACE**

Be aware that the surface of this product may become hot. When it is operated at high temperatures, the external surface may exceed Touch Temperature Limit according to the product's relevant electrical safety standard.

This product complies with Touch Temperature Limits throughout its operational temperature range.

Specifications

Interface Specifications

DC, Power port		
	Ibex-RT-310-LV and Ibex-RT-320-LV:	**Ibe** **x-RT-320-HV:**
Connector	M12 A-coded male	
Rated voltage	24 VDC	72 to 110 VDC
Operating voltage	16 to 30 VDC	50 to 138 VDC
Rated current	0.6 A	0.2 A
Rated frequency	DC	
Inrush current	39 mA2s at 24 VDC	4 mA2s at 72 VDC13 mA2 at 110 VDC
Startup current	2 x rated current	
Polarity	Reverse polarity protected	
Redundant power input	No	
Conductor cross section (fle xible)	> 0.5 mm² (AWG 20)	
Cable temperature rating	-40 to +70°C	
Shielded cable	Not required	

PoE (PoE powered product – Ibex-RT-310-LV and Ibex-RT-320-LV only on X2)	
Connector	M12 X-coded female
Device mode	A and B
Rated voltage	48 VDC
Operating voltage	37 to 57 VDC
Power classification	Class 3

Ethernet TX	
Connector	M12 X-coded female
Electrical specification	IEEE std 802.3
Data rate	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Transmission range	Up to 100 m with CAT5e cable or better
Cabling	Shielded cable CAT5e or better is recommended
Conductive chassis	Yes

ⓘ NOTE

The product is to be connected to internal Ethernet networks without exiting a facility and being subjected to TNVs.

❗ NOTICE

To avoid damages on the Ethernet interfaces, ensure that the far end side of the Ethernet cable shield itself is connected to protective earth.

Antenna WLAN (A1, A2, A3)	
Connector	QMA female
Direction	Transmit and receive
Cabling	50 Ohm coaxial cable and WLAN antenna required
Conductive chassis	Yes
WLAN interface	High power 3×3 MIMO 802.11n Access Point/Client
WLAN frequency bands	2.400 to 2.4835 GHz, 4.940 to 4.990 GHz, 5.150 to 5.350 GHz, 5.470 to5.725 GHz, 5.725 to 5.850 GHz
Transmitting power Ibex-RT-3 10	Max. conducted combined transmit power within the whole frequency range:802.11b/g/n, up to +18 dBm for all data rates 802.11a/n, up to +18 dBm for all data rates
Transmitting power Ibex-RT-3 20	Max. conducted combined transmit power within the whole frequency range:802.11b/g/n, up to +27 dBm for all data rates 802.11a/n, up to +27 dBm for all data rates

❗ NOTICE

Depending on the installation country there are frequency/band restrictions and output power limitations.

❗ NOTICE

Unused antenna port must be terminated with 50 Ohm terminations.

> **! NOTICE**
>
> To avoid damages on the antenna interfaces, ensure that the far end side of the antenna cable and/or the antenna itself is connected to protective earth.

Type Tests and Environmental Conditions

Environmental phenomena	Basic standard	Description	Test levels
ESD	EN 61000-4-2	Enclosure	Contact: ±6 kV Air: ±8 kV
Fast transients	EN 61000-4-4	DC power port	± 2 kV, direct coupling
		Ethernet ports	± 2 kV, capacitive coupling clamp
		Antenna ports	
Surge	EN 61000-4-5	DC power port	L-E: ± 1 kV, 12 Ω, 9 µF, 1.2/50 µs L-E: ± 2 kV, 42 Ω, 0.5 µF, 1.2/50 µs L-L: ± 1 kV, 12 Ω, 9 µF, 1.2/50 µs L-L: ± 2 kV, 42 Ω, 0.5 µF, 1.2/50 µs
		Ethernet ports	L-E: ± 1 kV, 2 Ω, 18 µF, 1.2/50 µs
		Antenna ports	
Power frequency magnetic field	EN 61000-4-8	Enclosure	300 A/m continues, DC, 16.7 Hz, 50 Hz,60 Hz
Pulsed magnetic field	EN 61000-4-9	Enclosure	300 A/m
Radiated RF immunity	EN 61000-4-3	Enclosure	20 V/m, 80% AM (1 kHz) at 80 MHz to 2.7 GHz3 V/m, 80% AM (1 kHz) at 2.7 GHz to 6 GHz30 V/m, PM 200 Hz square at 380 MHz to 385 MHz30 V/m, PM 200 Hz square at 390 MHz to 395 MHz
Conducted RF immunity	EN 61000-4-6	DC power port	10 V, 80% AM (1 kHz) from 0.15 to 80MHz
		Ethernet ports	
		Antenna ports	
Radiated RF emission	CISPR 16-2-3	Enclosure	Class BFCC Part 15 B, Class B
Conducted RF emission	CISPR 16-2-1	DC power port	Ibex-RT-310-LV and Ibex-RT-320-LV: Class B Ibex-RT-320-HV: Class A
		Ethernet ports	
Insulation resistance	EN 50155	Power port (DC) to all other ports	> 100 MOhm

Dielectric strength	EN 50155	Power port (DC) to all other ports	Ibex-RT-310-LV and Ibex-RT-320-LV: 750 VDC, 60 sIbex-RT-320-HV: 2250 VDC, 60 s
Temperatures	EN 60068-2-1EN 60068-2-2EN 60068-2-14	Operational	-40 to +70°C (-40 to +158°F)a
		Storage and transport	-55 to +85°C (-67 to +185°F)
Humidity	EN 60068-2-30	Operational	5-95% relative humidity
		Storage and transport	
Altitude		Operational	3000 m
MTBF	IEC TR 62380		370,000 hours
Vibration	MIL STD 810,M514.7 (sine)	Operational	5 to 10 Hz, 5.08 mm p-p10 to 200 Hz, 2 g20 sweep cycles in each axis, 0.9 octave/min
	EN 60068-2-64(random)	Operational, endurance test	11.44 m/s2 random, 5 to 150 Hz, 3 x 5 h2.3 m/s2 random, 5 to 2000 Hz, 3 x 4 h
Shockb	EN 60068-2-27	Operational	100 m/s2, 30 ms, 3 x 6 shocks (half sine)
	MIL STD 810, M516.7		20 g, 11 ms, 3 x 6 shocks (saw tooth)
Weight			1100 gr
Degree of protection	EN 60529	Enclosure	IP66c
Cooling			Convection
Pollution degree	EN 62368-1		PD2
Conformal coating type	IPC-A-610	Electronic modules	AR (Acrylic)

Refer to "Safety and Regulations" chapter regarding touch temperature
b The power and Ethernet cables need to be fastened 200 mm or closer to the unit. The same recommendation applies to the Antenna cables. cProvided all connectors are connected with IP66 cabling or fitted with protective caps (delivered with the unit) and tightened to the specified torque

Table 12. Environmental and mechanical conditions

Abbreviations and Terms

Abbreviation	Description
AM	Amplitude Modulation

AREMA	American Railway Engineering and Maintenance-of-Way Association
AWG	American Wire Gauge
BPSK	Binary Phase Shift Keying
CAT5e	Category 5 Enhanced Cable
CE	Conformité Européenne
CPU	Central Processing Unit
DC	Direct Current
EMC	Electromagnetic Compatibility
EN	European Standard
ERR	Error
ESD	Electro Static Discharge
ETSI	European Telecommunications Standards Institute
FCC	Federal Communication Commission
FLOSS	Free/Libre Open Source Software
HV	High Voltage
IEC	International Engineering Consortium
IC	Industry Canada
ID	Identification
I/O	Input / Output
IP	Ingress Protection
ISO	International Standardization Organisation
LAN	Local Area Network
LED	Light Emitting Diode
LV	Low Voltage
MIMO	Multiple Input, Multiple Output
MTBF	Mean Time between Failure
MTTR	Mean Time to Repair
OPR	Operation
PM	Pulse Modulated
PoE	Power over Ethernet
QMA	Quick-connect RF Connectors
QR	Quick Response
RF	Radio Frequency

TNV	Telephone Network Voltage
SN	Serial Number
SNMP	Simple Network Management Protocol
VPN	Virtual Private Network
WebGUI	Web Graphical User Interface
WeConfig	Westermo Configuration Tool
WEEE	Waste Electrical and Electronics Equipment
WLAN	Wireless Local Area Network

Table 13. Abbreviations and terms

Revision Notes

Revision	Date	Change description
Rev. H	2022-12	2.5.2 Agency approvals updated; SRRC certificate added, removed old chapter 3.3. Rear Side Label.
Rev. G	2021-10	(User guide migrated to CMS tool), 2.2 Safety Information; information on cooling moved to chapter 4.5 Cooling, 2.5.1 Agency Approvals and Standards Compliance updated, 3.3.2 Front Side Label; callouts reversed order, 3.5 Led Indicatiors; illustration added, 4.2 Factory Reset moved from old chapter 3.6, 4, 5 Cooling; illustrations updated.
Rev. F	2021-06	3.4.2 Updated (D-code > X-code)
Rev. E	2021-05	Regulatory statements updated for public safety band in chapter 2.5.2, 2.5.4, 2.5.5 and table 13. Note in chapter 2.3 updated.
Rev. D	2021-03	Product illustrations updated to blue, text in illustrations removed, Westermo address updated, chapter 2.5.5 updated

Support
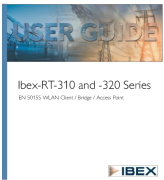
WESTERMO

Documents / Resources

WESTERMO Ibex-RT-310 Series WLAN Client Bridge Access Point [pdf] User Manual
Ibex-RT-310 Series WLAN Client Bridge Access Point, Ibex-RT-310 Series, WLAN Client Bridge Access Point, Bridge Access Point, Access Point

References

- **Westermo ▷ Robust and Secure Industrial Networking Solutions**
- **Product support, user guides and software downloads ▷ Westermo**
- **Product support, user guides and software downloads ▷ Westermo**

Manuals+,