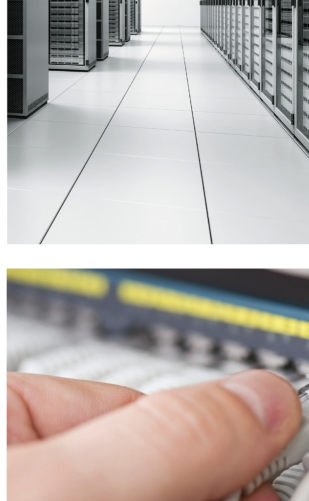
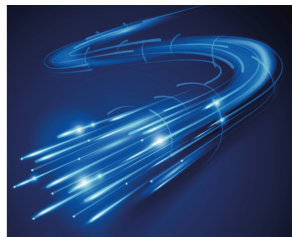




RS420 Series

Installation Manual

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I Related Documents

Windbit Dm929 OSDx Command Line Interface (CLI)

Chapter 1 About this Guide

This is the installation manual for the **RS420 Series** devices and contains information on how to correctly install the equipment in a working environment.

1.1 Supported devices

The information contained in this manual specifically pertains to the **RS420** router family.

1.2 Who should read this manual?

This manual is intended for support personnel who are responsible for configuring, maintaining and monitoring the device.

1.3 When should this manual be read?

When you are ready to familiarize yourself with the device and its components, please refer to this guide for comprehensive information.

By reading this manual, you will gain a deeper understanding of your new device's functionalities.

1.4 What is in this manual?

The installation manual contains the following information:

- A description of the features available in the **RS420** router family.
- Detailed technical specifications.
- Requirements for the power supply.
- Compatibility of elements that can be connected during router operation.
- Step-by-step instructions on how to install and uninstall modules and power sources.
- A detailed description of the device's LEDs and connectors.
- Helpful troubleshooting tips.

1.5 What is not in this manual?

The information regarding the device software and its configuration is not included in this manual. To obtain instructions on configuring this device, please refer to the corresponding protocol manuals available at:

<http://www.windbit.com>

1.6 How is the information organized?

Each chapter focuses on a specific aspect of the hardware and its components. Detailed and technical specifications, along with relevant information about each component, can be found in the corresponding chapter.

1.7 Technical support

In order to ensure optimal performance and stay up-to-date with the latest features, Windbit provides technical support and regular software upgrades.

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Chapter 2 RS420 Series



Fig. 1: RS420 Series

2.1 Models

The table provided below details the available models within the **RS420 Series**:

Models	Sales Code	Wi-Fi	WWAN
TLDPM00K1	RCRS420H001	No	No
TLDPM01K1	RCRS420H002	No	Quectel EC25-E (4G, LTE Cat.4)
TLDPM02K1	RCRS420H003	No	Quectel EC25-AU (4G, LTE Cat.4)
TLDPM01K1	RCRS420H004	AZW AW-XM458-TPU	No
TLDPM01K1	RCRS420H005	AZW AW-XM458-TPU	Quectel EC25-E (4G, LTE Cat.4)
TLDPM02K1	RCRS420H006	AZW AW-XM458-TPU	Quectel EC25-AU (4G, LTE Cat.4)
TLDPM03K1	RCRS420H007	No	Quectel EG25-GL (4G, LTE Cat.4)
TLDPM03K1	RCRS420H008	AZW AW-XM458-TPU	Quectel EG25-GL

			(4G, LTE Cat.4)
--	--	--	-----------------

2.2 Characteristics

2.2.1 Power supply

To learn more about the various **RS420** power supplies, please refer to [Components and Power Supply](#) on page 6, specifically [Power source](#) on page 12.

2.2.2 Hardware monitoring

The **RS420** router family features LEDs on both the rear and front panels that serve as hardware monitors. These LEDs offer visual cues about the device's operational status and indicate connectivity, data flow, and other relevant information.

For additional details about the LED panel, refer to [Components](#) on page 6.

Chapter 3 Components and Power Supply

The following chapter provides comprehensive information about the chassis and components of the **RS420** router family, including details about:

- Components.
- Assembly procedures.
- Power supply.
- RST button.
- Data connection.
- SIM card installation.

3.1 Components

3.1.1 Front panel

The following figure shows the front panel.



Fig. 2: Front Panel

The front panel components include:

Front panel components

Item	Description
A	LED panel.
B	Cell connectors: Main and DIV. For more information on the Cellular interface, refer to: - WWAN antenna connection on page 15 - WWAN connector on page 28 - Wireless WAN interface on page 31

The LED panel displays the status of the components, signaling whether they are active or inactive, as well as providing information on network activity.

LEDs

LED	Definition	Status Indication
Power 	Power (Green)	Off -> Power off. On -> Power on.
SYS 	General Status (Green) / Default Configuration Process	Off -> System off or HW failure. On -> Normal Operation.

		Blinking (0.1s/0.1s) -> Failure Blinking (0.1s/1s) -> Coredumps detected.
Wi-Fi 	WLAN Status (Green)	Off -> radio module is deactivated and/or all assigned SSIDs are either deactivated or experiencing failures. Blinking (1s/1s) -> SSID is active, but no client is currently connected. Blinking (0.5s/0.5s) -> SSID is active and one or more clients have successfully authenticated. Flicker -> SSID is active, one or more clients have authenticated, and data is being transmitted. Heartbeat -> SSID connecting (client mode) or Channel Availability Check (CAC).
LTE 	WWAN Status (Green)	Off -> radio module is deactivated or experiencing failures (SIM Error). Blinking (1s/1s) -> Connected. Connection data activity. Flicker -> Connected, traffic. Heartbeat -> Connecting.

3.1.2 Rear panel

Moving on to the rear panel, as illustrated in the figure, the majority of **RS420** connectors can be found here:

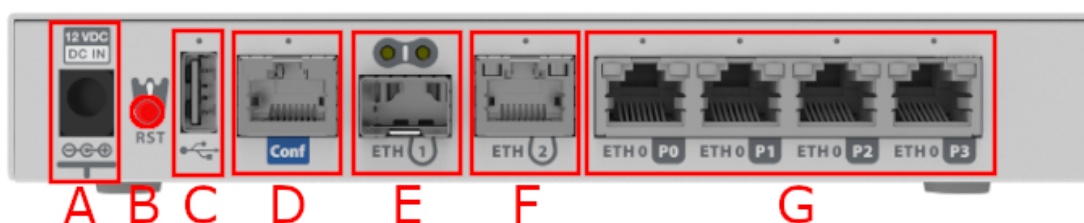


Fig. 3: Rear panel

The table below provides detailed information and descriptions for each connector:

Rear panel components

Item	Description
A	Power source connection (DC). For detailed information regarding the power connection, please refer to Power source on page 12. The power specifications applicable to the RS420 device can be found in Power supply on page 33.
B	RESET. Reset button. To understand how the reset button works, please see RST button on page 13 for further information.
C	USB 2.0 Port. The USB Port is solely intended for maintenance purposes and does not provide data connection. For more information on the USB 2.0 connector, please refer to: - on page

	- USB 2.0 interface on page 33
D	The CONSOLE feature allows access to the RS420 local console for configuration and monitoring purposes. - Connecting for configuration on page 17 - Configuration connector on page 29 - Configuration interface on page 33
E	ETH1 SFP. To learn more about the SFP interface, please refer to: - ETH1: Ethernet SFP connection on page 14 - ETH-SFP connector on page 28 - ETH-SFP interface on page 30
F	ETH2 Gigabit Ethernet. To gain additional information about the WAN interface, please refer to: - ETH2: Ethernet connection on page 15 - ETH-RJ45 connectors on page 28 - ETH-RJ45 interfaces on page 30
G	ETH0P0 to ETH0P3 4-port Gigabit Ethernet switch. For more information on the LAN interface, please refer to: - ETH0P0 to ETH0P3: 4-port Ethernet switch connections on page 14 - ETH-RJ45 connectors on page 28 - ETH-RJ45 interfaces on page 30

Furthermore, the rear panel of the device features LEDs that are connected to the ETH Ethernet interfaces.

3.1.2.1 LEDs

The following figure shows the LED indicators for the router's Ethernet RJ45 connectors:



Fig. 4: RJ45 LEDs

Ethernet RJ45 LED indicators

LED	Description	State
Right	Ethernet link connection and activity	Off -> Link has not been detected. Yellow -> Link detected. Right LED indicates speed status. Blinking: Data connection activity.

Left	Ethernet link speed	Off -> No link or 10/100M link. Green -> 1000M link.
------	---------------------	---

The following figure shows the LED indicators for the router's Ethernet SFP connector:

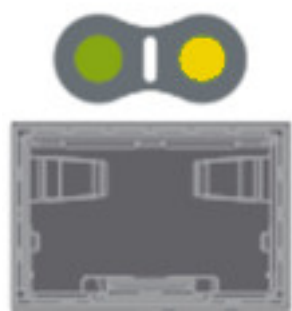


Fig. 5: SFP LEDs
Ethernet SFP LED indicators

LED	Description
Green (Link)	- Off: indicates no link or no configuration. - Steady: indicates that a link is up and running.
Yellow (Link/ACT)	- Off: indicates no data transfer. - Steady: indicates that a link is up and running. - Blinking: indicates data is being transferred.

3.1.3 Side panels

On the side panels of the device, the Wi-Fi antennas, SIM holder and Kensington slot are conveniently located.

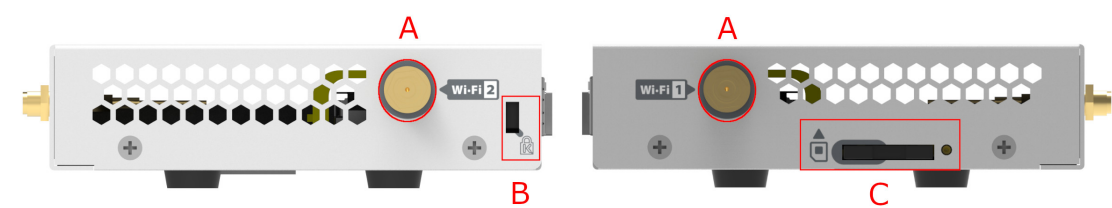


Fig. 6: Side panels

The connectors are as follows:

Side panel connectors

Item	Description
A	WLAN connectors: Wi-Fi 1 and Wi-Fi 2. To learn more about the WLAN interface, please refer to: - Wireless LAN antenna connection on page 17 - WLAN connector on page 28 - Wireless LAN interface on page 33
B	Kensington security slot For more information, please see on page .

C	SIM Card. This is the slot where you can insert your SIM card. For detailed instructions on how to install the SIM card, please refer to Installing the SIM card on page 17.
---	--

3.1.4 Underside panel

The underside panel includes the following elements:

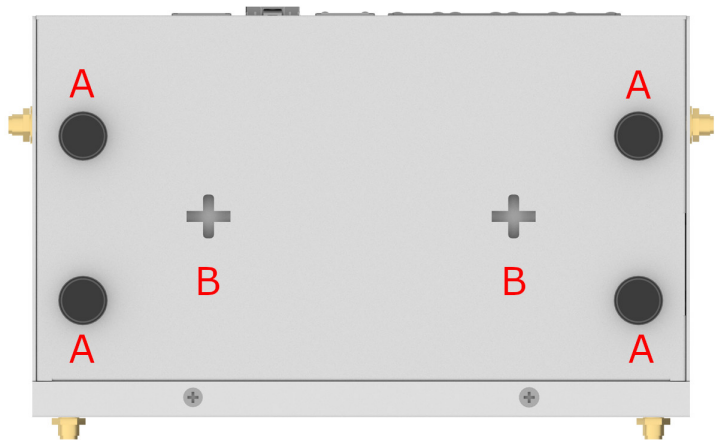


Fig. 7: Underside panel

The following table contains information about the relevant elements located on the underside panel.

Underside panel elements table

Item	Description
A	Rubber feet.
B	Slots for wall mounting. For more information, please see Wall mounting on page 11.

3.2 Mounting an anti-theft security cable

The **RS420** router family is equipped with a standard Kensington security slot. This slot allows you to attach a security cable to prevent potential theft. The T-bar lock of the security cable can be attached to an anchor point, securing the device.

The security slot is located on the side panel of the housing, as indicated in the figure below:

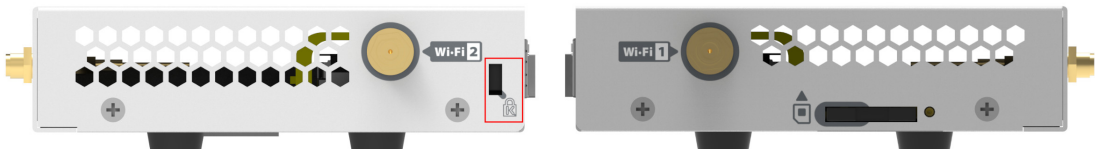


Fig. 8: Security Slot

3.3 Installation

3.3.1 Standalone

The **RS420** router family can be placed as a standalone on a flat, stable surface.

To prevent slipping and enhance stability, attach the provided rubber feet to the bottom of the device.

Ensure there is ample space around the router to facilitate proper ventilation. Additionally, check that both the power cord and data cables can easily reach the device.

Workplace conditions. Main characteristics:

- Avoid humid and/or dusty areas.
- Direct exposure to sunlight and other heat sources should be avoided. Furthermore, refrain from placing the device amidst papers, magazines, or other objects that could impede natural air circulation.
- To prevent interference, do not place the router in close proximity to strong electromagnetic fields, such as speakers or engines.
- Avoid subjecting the router to knocks or strong vibrations during transportation, operation, and storage.

3.3.2 Wall mounting

The **RS420** router family is designed to be easily wall-mounted.

It features two slots on the bottom of the device that allow for secure attachment to the wall.

To ensure proper installation, we recommend using the following accessories for wall mounting. These accessories are suitable for both solid and Gypsum board (plaster) walls:

- 2 screws: M4x20, with a diameter of 6.50-7mm, a head size of 2.0mm, and a length of 20mm.



Fig. 9: Screw

- 2 white striated wall anchors: 1/4X1, with a diameter of 8 mm and a length of 25mm.



Fig. 10: Wall anchor



Warning

When wall mounting the router, it is important to consider the installation height, which should be below 2 meters.



Warning

The screws must be inserted into a wooden wall stud or a wall anchor suitable for the specific wall type. It is not recommended to mount the router using screws directly into drywall, as they may not provide enough strength.



Warning

Before drilling any mounting holes, carefully check for concealed pipes and cables to avoid any potential damage to electricity cables, gas lines, water pipes, or sewage pipes. Such damage can be dangerous and result in serious consequences. Select an installation location that minimizes any interference or disturbance from obstacles or electrical appliances.



Note

The screws and anchors needed for wall mounting are not included with the router.

You can refer to the following figure to visualize the two slots on the bottom of the device designed for wall mounting:

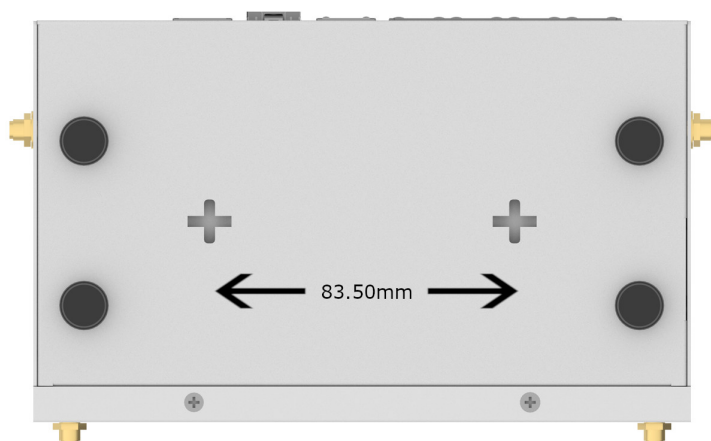


Fig. 11: Wall mount holes

To mount the router securely on a wall or any other vertical surface, please follow these steps:

Procedure

Step 1. Begin by aligning two screws horizontally on the chosen surface. Ensure that they are spaced 8.35 cm (3.28 inches) apart.

It is important to have the screws protrude 0.6 cm (0.25 inch) from the surface of the wall.



Warning

If you are mounting the router on drywall, use hollow-wall anchors (8 mm – 5/16 inch) to securely fasten the screws. Failure to properly anchor the screws may result in the cables connected to the router's back panel exerting strain, potentially causing the router to become dislodged from the wall.

Step 2. Once the screws are securely in place, hang the router on them.

3.4 Power source

The **RS420** router family requires an external AC/DC power adapter for power.



Warning

It is important to use the power supply provided by the manufacturer.

To power the router, simply plug the power supply into the mains supply and the DC connector.

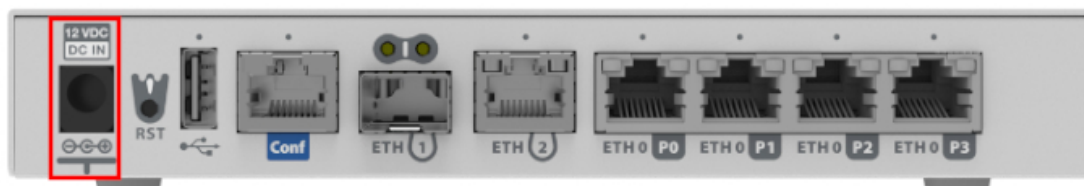


Fig. 12: DC Connector

To ensure the safety of both users and communication systems, it is highly recommended to take precautions against electric shocks, residual current circulation, and other unwanted effects that can impact communications. By following the guidelines below, you can minimize the risks associated with these issues:



Note

Connect all data devices to the same power source, regardless of whether the workplace has an uninterrupted power supply system (UPS), a regulated supply, or operates independently from other power supplies (such as lighting). This will help prevent malfunctions and premature aging of drivers and other components.

3.5 RST button

The RST button offers the features described below.

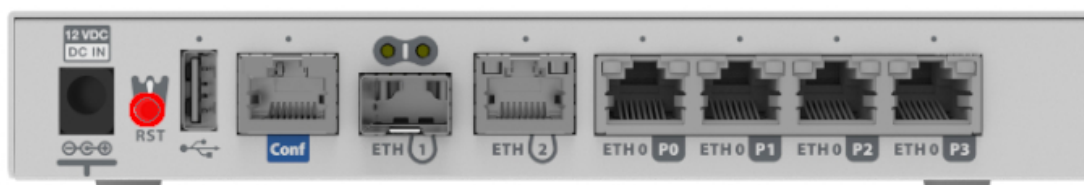


Fig. 13: RST button

3.5.1 Device reboot

Pressing the RST button will initiate a restart of the device when it is functioning normally.

3.5.2 Default configuration

The RST button can be used to boot the device with its default configuration by following these steps:

- Ensure the device is powered off. Press and hold the RESET button until the device powers on and the SYS LED blinks rapidly (5 times per second).
- Release the Reset button while the SYS LED is blinking to initiate the booting process with the default configuration.



Note

Please note that this operation is destructive, as it will delete all previous data and configurations, replacing them with the default settings.

After the router is initially set up, it will have a default configuration that includes the following access IP and mask address:

- IP address: 192.168.1.1
- IP mask: 255.255.255.0

**Note**

Certain devices might come with customized settings out of the factory, which means that the default configuration of your router may differ from the example given above.

3.6 Data connections

The **RS420** router family offers several data connections.

3.6.1 ETH0P0 to ETH0P3: 4-port Ethernet switch connections

The **RS420** router family includes a built-in switch that offers four ports with support for 10/100/1000 Base-T connections. These ports are equipped with automatic MDI/MDIX functionality, making it easier to connect to your local area network (LAN).

To avoid confusion, make sure to carefully check the labeling on these ports:

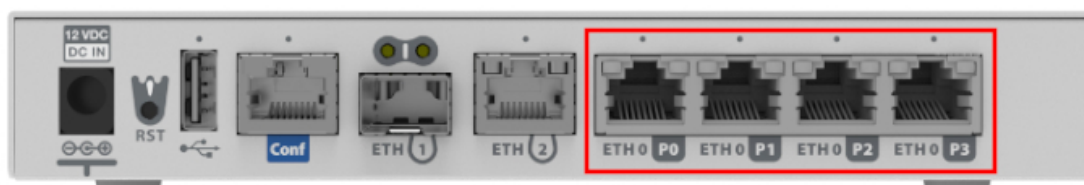


Fig. 14: ETH0Px ports

**Note**

During the booting process and in BIOS mode, the ETH0Px ports will not be operational.

3.6.2 ETH1: Ethernet SFP connection

The **RS420** router family includes one Gigabit Ethernet interface, labeled as ETH1, which features an SFP (1000-BaseX) connector for WAN connection purposes.

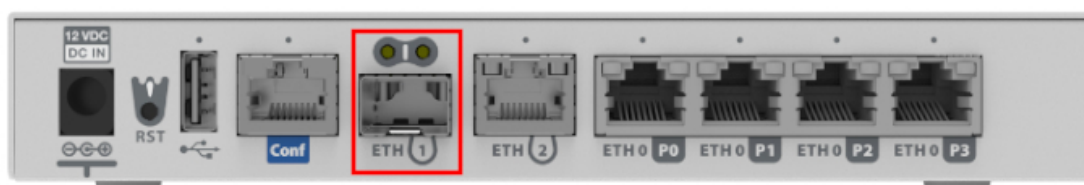


Fig. 15: ETH1-SFP connector

**Note**

If this interface is not configured, it will remain physically deactivated (Admin state down). Additionally, the status LEDs on ETH1 will not provide any information.

**Note**

The ETH1-SFP connector does not work during booting and in BIOS mode.

3.6.2.1 Laser information



Please ensure that the SFP transceivers you choose adhere to the following regulations:

- Class 1
- IEC/EN60825-1:2007 2nd Edition or any later European standard
- FCC 21 CFR Chapter 1, Subchapter J (in accordance with FDA and CDRH requirements)
- 2014/30/EU EMC Directive and the 2014/35/EU Low Voltage Directive for the application of CE marking
- UL and/or CSA registered components for use in North America
- 47 CFR Part 15, Class A



Warning

Laser Radiation. Do not use optical instruments directly or without proper protection. CLASS 1 LASER PRODUCT.

The SFP modules that will be installed in the card socket must be class 1 devices and should comply with the IEC/EN 60825-1:2007 standard.

3.6.3 ETH2: Ethernet connection

The **RS420** router family is equipped with a single Gigabit Ethernet interface featuring an RJ45 (10/100/1000 Base-T) connector interface for WAN connection.

It is important to carefully observe the labeling to ensure proper identification and avoid confusing this port with others:

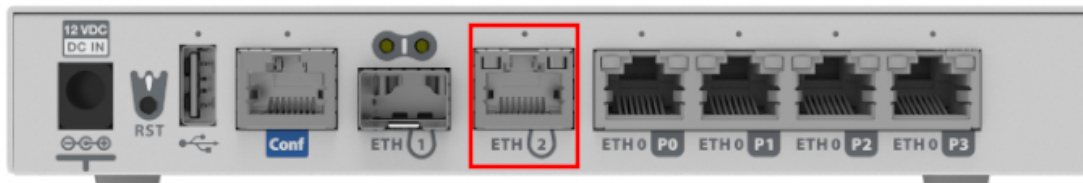


Fig. 16: ETH2-RJ45 connector



Note

If this interface is not configured, it will remain physically deactivated (Admin state down). Additionally, the status LEDs will not provide any information.



Note

Only the ETH2 connector is available during booting and in BIOS mode.

3.6.4 WWAN antenna connection

The **RS420** router family provides two connectors for WWAN antennas, allowing users to easily install or remove the provided antennas.

These antennas can be assembled or dismantled by screwing or unscrewing them into or out of the SMA connectors located on the front panel of the router.

Installing these antennas in the **RS420** is crucial, as it significantly enhances the quality of the signal transmitted and received by the cellular model.



Note

In order to ensure high-quality performance, it is important to always have the WWAN antennas properly installed on the router.

Some cellular telephony technologies utilize antenna diversity to enhance signal quality. The **RS420** router family includes a designated connector, labeled "Div" to facilitate this technique.



Fig. 17: WWAN Main and Div antenna connectors

When installing antennas via extension cords rather than directly connecting them to the router, it is crucial to maintain a minimum distance of 7 cm between the two components. The maximum recommended distance between them should not exceed 25 cm.

For optimal performance, it is advised to use radio frequency accessories (such as antennas and cables) that are recommended by Windbit.

Windbit offers a variety of suitable accessories for different locations, including 90° mount antennas, antennas specifically designed for outdoor installation, antennas suitable for ceiling installation, and extension cables, among others.

3.6.4.1 Placing the antenna

The performance of devices can be significantly influenced by the orientation and location of their antennas relative to other wireless and radiation devices, such as communication devices and personal computers.

Antennas serve to transmit and receive radio signals, but their effectiveness is also impacted by various environmental conditions, including the distance between the device and the base station, physical obstructions, and interferences caused by radio frequencies (RF).

To achieve optimal coverage, please adhere to the following guidelines:

- When selecting a location for your antenna, try to avoid any physical obstacles that may obstruct the wireless signal. These obstacles, such as walls or objects, can degrade the signal quality. It is recommended to place the antenna above ground and facing the nearest base station.
- Take into consideration the density of materials surrounding the antenna. Keep it away from walls, metal screens, mirrors, and any other materials that may interfere with the signal reception.
- Avoid placing the antenna near columns or other objects that may cast shadows and reduce the coverage area.
- Ensure that the antenna is not in close proximity to metal pipes used for heating, air-conditioning, and other similar purposes.
- Please note that other wireless devices, such as telephones and microwaves, may cause temporary interference with radio signal quality.
- It is not advisable to install antennas in close proximity to racks that contain communication devices, computers, and similar equipment. To address this issue, we recommend using an extension cable to position the antenna outside of the rack.

The following recommendations apply to all wireless devices:

- Avoid touching or moving the antenna while the device is transmitting or receiving.
- Refrain from touching any equipment that contains radiation-emitting devices with antennas that are very close to or in contact with any exposed part of the body, especially the face and eyes, when it is transmitting.

- Do not install the device in potentially explosive areas.
- Be aware that wireless devices may cause interference with other devices. Avoid using the device in areas where medical equipment is installed.

3.6.5 Wireless LAN antenna connection

The **RS420** router family features two RF antenna connectors for improved signal quality on the Wireless LAN module.



Note

These connectors are only available on the Wi-Fi models.

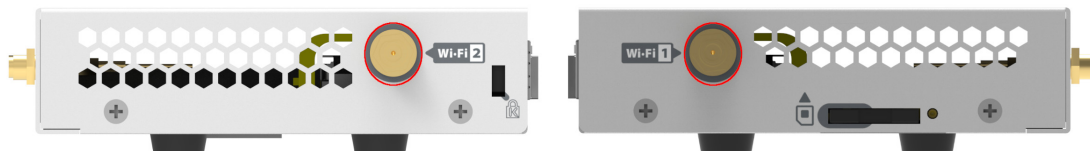


Fig. 18: WLAN antenna connectors

This module is internal and can only be activated on the Wi-Fi models. To attach or detach the provided antennas, simply screw them into the WLAN connectors located on the side panels of the router.

3.6.6 Connecting for configuration

The **RS420** router family includes an RJ45 female connector labeled "Conf" on the rear panel. This connector grants access to the device's local console

For additional details, please refer to [Connecting to the device](#) on page 26.

Please pay careful attention to the labeling to avoid mistaking this port for other port types.

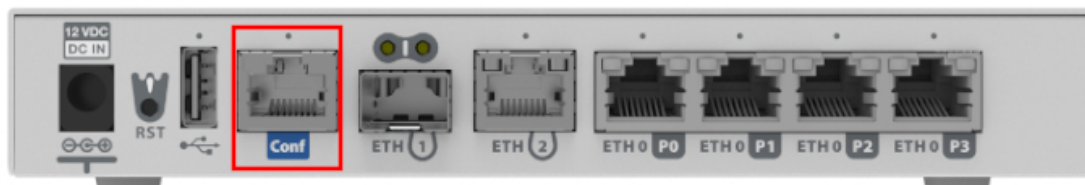


Fig. 19: Conf Connector

3.7 Installing the SIM card

The **RS420** router family features a Wireless WAN interface, which may require a SIM card for proper functionality.

Located on the side panel, the **RS420** has a single SIM tray, as shown in the following figure.

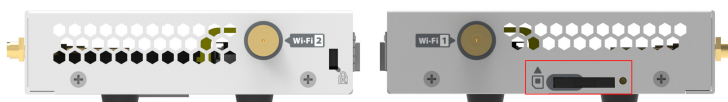


Fig. 20: SIM tray

Follow these steps to insert the SIM card into the SIM tray:

- (1) Press the button until the SIM tray extends outward.
- (2) Place the SIM onto the tray.
- (3) Insert the tray into the designated slot and firmly push it back in.

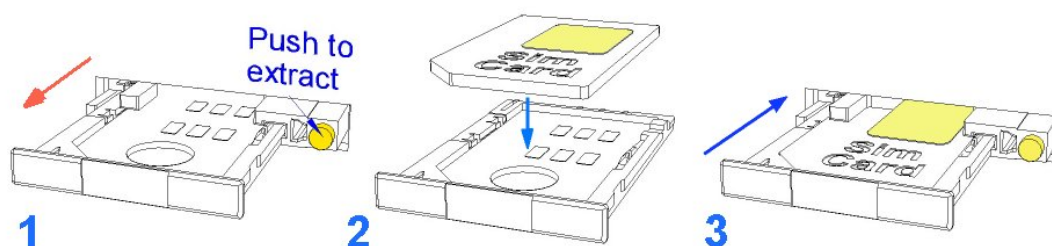


Fig. 21: Inserting the SIM in the external module



Warning

Never install the SIM cards while the device is powered on.

Prior to inserting the SIM cards, always disconnect the device from the main power supply.

Additionally, make sure to disconnect the device before removing the protective casing to access the trays.

When inserting the SIM cards, please take precautions to guard against electrostatic discharges (ESD).

Do not touch the SIM card connectors.

3.7.1 Checking the SIM card

After installation, it is important to verify if the SIM card is detected correctly.

To perform this verification, please follow the steps outlined below:

- Turn on the router.
- If the WWAN interface has not been configured previously, you will need to create a cellular profile and a cellular interface using the following configuration commands:

```
set interfaces cellular cell0 profile CELPROFILE
set interfaces cellular cell0 address dhcp
set cellular profile CELPROFILE apn internet
set cellular profile CELPROFILE pin XXXX
```

Ensure to set the appropriate "apn" value according to your specific Carrier. Use the "pin" value that is provided with your SIM card.

For more detailed instructions on configuring the router, please consult the "Windbit Dm929-I OSDx Command Line Interface" manual.

- Run the following command.

```
admin@osdx$ interfaces cellular cell0 show device-info
```

- Verify if the IMSI and ICCID values are present in the output.

```
Module Manufacturer      = Quectel
Module Model             = EC25E
Module Firmware          = EC25EFAR06A12M4G
Hardware Revision        = 10000
IMEI                     = 862348050583491
IMSI                     = 214075519082727
ICCID                    = 8934076700110220643F
Radio Interfaces         = gsm, umts, lte
Data Service Capability  = non-simultaneous-cs-ps
Maximun TX/RX rate supported = 50000/100000 Kbps
Temperature              = 48
```

- Additionally, you can obtain further information regarding the SIM status by executing the following command:

```
admin@osdx$ interfaces cellular cell0 show network-status
```

- Check the output, and locate the SIM status.

```
SIM status = OK
Registration state = registered
Public Land Mobile Network code = 21407
Public Land Mobile Network name = Movistar
Network technology currently in use = lte
Current Service Domain registered = cs-ps (capable cs-ps)
Current Roaming status = off
3GPP Cell ID = 28195870
Radio Band = eutran-3
Channel = 1301
LTE Tracking Area Code (TAC) = 11091
RX level (dBm) = -68
Coverage level = 4 (**** )
```

- Possible SIM status values are:

- LOCKED (Incorrect password)
- SIM not inserted
- SIM PIN required
- SIM PUK required

Chapter 4 Compliance

4.1 Manufacturer information

<i>Brand</i>	Windbit
<i>Manufacturer</i>	Teldat S.A
<i>Country</i>	Spain
<i>Postal Address</i>	Isaac Newton, 10 Parque Tecnológico de Madrid 28760, Tres Cantos, Madrid, Spain
<i>International Phone</i>	+34 91 807 6565

4.2 Risk identification

	WARNING: This signal word is used to indicate a potentially hazardous situation that could result in serious injuries or death if not avoided. WARNUNG: Signalwort zur Bezeichnung einer potenziell gefährlichen Situation, die zu schweren Verletzungen oder zum Tod führen kann, wenn sie nicht vermieden wird. ADVERTENCIA: Palabra de advertencia utilizada para indicar una situación potencialmente peligrosa que, si no se evita, podría provocar la muerte o lesiones graves.
--	--

4.3 Safety warnings

	Only use the power supply provided by the manufacturer for the equipment.
	Das Gerät muss mit dem vom Hersteller gelieferten Netzteil betrieben werden.
	El equipo debe ser usado con la fuente de alimentación proporcionada por el fabricante.
	Laser Radiation. Do not use optical instruments directly or without proper protection. CLASS 1 LASER PRODUCT. The SFP modules to be installed in the card socket should be class 1 devices that comply with the IEC/EN 60825-1:2007 standard.
	Laserstrahlung. Nicht direkt mit optischen Instrumenten hineinsehen. LASERPRODUKT DER KLASSE 1. SFP-Module, die im Kartenschacht installiert werden sollen, sollten Klasse-1-Geräte in Übereinstimmung mit IEC/EN 60825-1:2007 sein.
	Radiación laser. No mirar directamente con instrumentos ópticos. Producto LASER CLASE

	1. Los módulos SFP que se instalan en el socket de la tarjeta deben ser dispositivos de CLASE 1 de acuerdo con la norma IEC/EN 60825-1:2007.
	Never install SIM cards while the device is powered on. Always disconnect the device from the main power supply before installing SIM cards. Prior to removing the casing to access the trays, always disconnect the device. When inserting SIM cards, take precautions against electrostatic discharges (ESD). Avoid touching the SIM card connectors.
	Installieren Sie keine SIM-Karten, solange das Gerät eingeschaltet ist. Trennen Sie das Gerät immer von der Stromversorgung, bevor Sie eine SIM-Karte installieren. Trennen Sie das Gerät immer von der Stromversorgung, bevor Sie das Gehäuse für einen Zugang zu den SIM-Halterungen öffnen. Schützen Sie sich gegen elektrostatische Entladung (ESD), wenn Sie eine SIM-Karte installieren. Berühren Sie die SIM-Karten-Kontakte nicht.
	No instale nunca las tarjetas SIM con el equipo encendido. Desconecte siempre el equipo de la red antes de instalar las tarjetas SIM. Desconecte siempre el equipo antes de desmontar la carcasa para acceder a las bandejas. Al insertar las tarjetas SIM, protéjase contra descargas electroestáticas (ESD). No toque los conectores de las tarjetas SIM.
	The installation height for wall mounting must be less than 2 meters.
	Montagehöhe bei Wandmontage muss < 2 m sein.
	La altura de instalación para el montaje en la pared debe ser < 2 m.
	The screws must be secured into a wooden wall stud or a suitable wall anchor for the type of wall. It is important to note that screws inserted directly into drywall do not provide sufficient strength for supporting the router.
	Die Schrauben müssen in einen Dübel oder Wandanker geschraubt werden, der für die jeweilige Art der Wand geeignet ist. Schrauben in einer Trockenbauwand sind nicht stabil genug, um den Router zu halten.
	Los tornillos deben ir atornillados en un taco de pared (de madera) o del tipo adecuado según la clase de pared. Los tornillos que se montan directamente en los paneles de yeso no son lo bastante resistentes para soportar el router.

	If you are installing the screws into drywall, use hollow-wall anchors with a diameter of 8 mm (or 5/16 inch) to properly secure the screws. It is essential to anchor the screws correctly to prevent any strain from the cables connected to the router's back panel, as this could potentially dislodge the router from the wall.
	Wenn Sie die Schrauben in eine Trockenbauwand schrauben wollen, verwenden Sie Hohlraumdübel (8 mm – 5/16 Zoll), um die Schrauben zu sichern. Wenn die Schrauben nicht angemessen verankert sind, kann Zug auf die Verkabelung an der Rückseite des Routers diesen aus der Wand reißen
	Si instala los tornillos en paneles de yeso, utilice tacos de pared hueca (8 mm - 5/16 pulgadas) para fijar los tornillos. Si los tornillos no están bien anclados, la tensión de los cables conectados al panel posterior del router podría hacer que el router se cayera de la pared.
	Before drilling any holes, ensure that there are no concealed pipes or cables in the wall. Damaging electricity cables, gas lines, water pipes, or sewage pipes can result in fatal consequences or significant material damage. Additionally, when selecting the installation location for the router, choose a spot that minimizes the presence of obstacles or electrical appliances that may interfere with the router's connection.
	Vergewissern Sie sich vor dem Bohren, dass sich an der Bohrstelle keine Hausinstallationen befinden. Im Schadensfall können Gas-, Strom-, Wasser- und Abwasserleitungen Tod oder Sachschaden verursachen. Wählen Sie den Installationsort so, dass möglichst wenig Hindernisse oder elektrische Geräte den Anschluss stören.
	Antes de taladrar, asegúrese de que no hay conductos o instalaciones. Roturas en tuberías de agua, gas, instalaciones eléctricas, o desagües pueden causar importantes daños materiales y hasta la muerte. Elija bien el lugar de instalación para que no haya obstáculos o electrodomésticos que perturben la conexión.

4.4 WEEE information

	The crossed-out wheeled bin symbol on the device signifies that it should be disposed of separately from regular household waste when it is no longer useful. Please ensure that you use an appropriate waste disposal facility for this purpose. Das auf dem Gerät befindliche Symbol mit dem durchgekreuzten Müllcontainer bedeutet, dass das Gerät am Ende der Nutzungsdauer bei den hierfür vorgesehenen Entsorgungsstellen getrennt vom normalen Hausmüll zu entsorgen ist. El símbolo del contenedor con la cruz, que se encuentra en el aparato, significa que cuando el equipo haya llegado al final de su vida útil, deberá ser llevado a los centros de recogida previstos, y que su tratamiento debe estar separado del de los residuos urbanos.
---	--

4.5 REACH

This product meets the requirements of the European REACH Regulation (EC) No 1907/2006. The Candidate List of substances of very high concern for Authorization is regularly updated by ECHA. The manufacturer ensures that substances present in a concentration exceeding 0.1% by weight are taken into account. Information is currently provided to consumers upon request.

4.6 PSU energy efficiency

In accordance with Commission Regulation (EU) 2019/1782, which establishes ecodesign requirements for external power supplies under Directive 2009/125/EC of the European Parliament and the Council and repeals Commission Regulation (EC) No 278/2009, the instruction manuals for end-users must include the following information:

<i>Model</i>	WB-24M12R
<i>Manufacturer Name</i>	ASIAN POWER DEVICES INC. (APD)
<i>Manufacturer Address</i>	NO.5 LANE 83. LUNG-SOU ST, TAO-YUAN CITY, TAIWAN R.O.C.
<i>Input Voltage</i>	100-240 VAC
<i>Input AC frequency</i>	50-60 Hz
<i>Output voltage</i>	12.0 V
<i>Output current</i>	2.0 A
<i>Output power</i>	24.0 W
<i>Average active efficiency</i>	88.0 %
<i>Efficiency at low load (10%)</i>	89.0 %
<i>No-load power consumption</i>	0.07 W

4.7 EC declaration of conformity

English (EN)	Teldat S.A hereby confirms that the RS420 telecommunications equipment fully complies with: Directive 2014/53/EU (RED) or Directive 2014/30/EU (EMC) Directive 2014/35/EU (LVD) Directive 2009/125/EC (ErP) Directives 2011/65/EU and 2015/863/EU (RoHS) of the European Parliament and Council.
German (DE) Deutsch	Hiermit erklärt Teldat S.A die Übereinstimmung des Geräts RS420 mit: Richtlinie 2014/53/EU (RED) oder Richtlinie 2014/30/EU (EMC) Richtlinie 2014/35/EU (LVD) Richtlinie 2009/125/EG (ErP) Richtlinien 2011/65/EU und 2015/863/EU (RoHS) des Europäischen Parlaments.
Spanish (ES) Español	Por la presente, Teldat S.A declara que el tipo de equipo de telecomunicaciones RS420 cumple con: Directiva 2014/53/EU (RED) o Directiva 2014/30/UE (EMC) Directiva 2014/35/UE (LVD) Directiva 2009/125/CE (ErP) Directivas 2011/65/UE y 2015/863/UE (RoHS) del Parlamento Europeo y del Consejo.

The EC declaration of conformity and additional product documentation can be accessed here:

<http://www.windbit.com/conformity>

4.8 CE marking

This equipment conforms to CE procedures and marking requirements.



4.9 National restrictions

In accordance with Article 10 of 2014/53/EU, we would like to inform you that there may be national restrictions and requirements for authorization purposes that can change over time. It is recommended that you check with local authorities for the most up-to-date information on national regulations.

The use of this product in residential areas may cause interference. It is strongly advised to avoid using it in such areas unless special measures are taken to lower electromagnetic emissions and prevent interference with radio and television broadcasts.

This product is supplied with antennas specifically designed to meet local regulations. It is important not to use any other antennas with this product. When installing the antennas, to comply with power limits and RF exposure requirements, make sure they are positioned in such a way that they are always at least 20 cm away from any nearby individuals.

4.10 Operating frequency

For more information on operating frequencies and the maximum power transmitted within the frequency bands of the radio equipment, please refer to appendix [RF WAN specifications](#) on page 34 and [Wi-Fi specifications](#) on page 38.

4.11 Intended use of the equipment

The **RS420** is suitable for deployment as a Customer Premises Equipment (CPE) in enterprise branch offices or in environments managed by the service provider.

This product is intended for indoor use only.

Appendix A Technical Information

A.1 Troubleshooting

If you encounter any issues during the device installation process, please consult the table below which provides troubleshooting solutions. If the problem persists, please contact your dealer for further assistance.

Symptom	Solution
No LEDs are lighting up on the router.	Check the power supply to the router by verifying the power source, ON/OFF switch, and main power outlet.
You have forgotten the router's access password.	Ignore the configuration through the RST button (as described in the appropriate section).
The LEDs for the <i>ETH0pX</i> connector are not lighting up.	Check the Ethernet cable and the connection to the network.
The LEDs for the <i>ETH1</i> connector are not lighting up.	Check the SFP, fiber cables, and network connection.
The LEDs for the <i>ETH2</i> connector are not lighting up.	Check the Ethernet cable and the connection to the network.
The <i>Wi-Fi</i> LED is not lighting up.	If your device has a Wi-Fi interface, check the router configuration and also ensure that the remote station(s) are properly configured.
The <i>LTE</i> LED is not lighting up.	If your device has a cellular interface, check the SIM installation, PIN setting, and network configuration. Ensure that the APN and Authentication parameters are set correctly.

A.2 Connecting to the device

A.2.1 Connecting using the local console (CONSOLE connector)

The **RS420** router offers a convenient RJ45 female connector called **CONSOLE** on its front panel, allowing access to the device's local console.

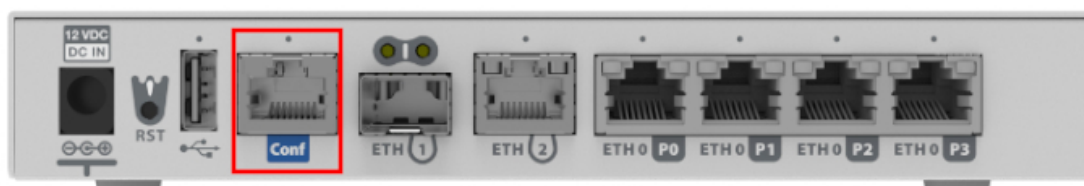


Fig. 22: **CONSOLE Connector**

To configure this feature, connect the **Aux** port to an asynchronous terminal or a PC with terminal emulation software.



Note

The configuration for the terminal must be:

- Speed: 115200 bps.

- Eight data bits.
- One stop bit.
- No parity bit.
- No type of flow control.

To establish a connection with the configuration port, use the RJ45 to DB9 blue cable supplied with the device.

For further information, please consult the “Windbit *Dm929-I OSDx Command Line Interface*” manual.

A.3 Updating the software

The **RS420** router family is equipped with the capability to update to new releases. For detailed information on the latest updates, we recommend contacting your distributor.

To update a Windbit router, there are multiple methods available. For comprehensive instructions, please refer to the *Firmware upgrade* section of the “Windbit *Dm929-I OSDx Command Line Interface*” manual.

Example:

To gain access to the **RS420** CLI, you can log in via the local console or utilize SSH or Telnet on any enabled interface. Please ensure you have a valid user (admin) and corresponding password (admin).

Once successfully logged in, you can upload a new image by entering the *image add <imagefile>* command:

```
admin@osdx$ image add http://madrid.storage.id.teldat.com/osdx_images/ci_builds/master-latest/tyrion/
os_tyrion.img
using firmware update url: http://madrid.storage.id.teldat.com/osdx_images/ci_builds/master-latest/tyrion/
os_tyrion.img
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 161M  100 161M    0     0  53.8M      0  0:00:03  0:00:03 --:--:--  53.8M
Signature OK

Starting upgrade to Teldat OSDx 202306081215.7a9c446-master-snapshot

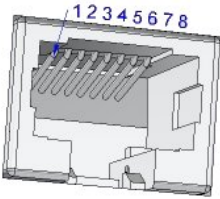
Size check
Copying files
Copying current configuration
Setting up bootloader
Bootloader upgrade check
Updating environment...
Bootloader update NOT needed
Execute additional upgrade steps from new version
Cleaning up

Successful upgrade to Teldat OSDx 202306081215.7a9c446-master-snapshot

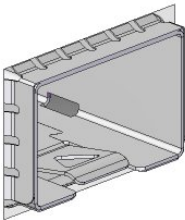
Run "reboot now" to boot from new version
```

A.4 Connectors

A.4.1 ETH-RJ45 connectors

RJ45 LAN	RJ45 PIN	FE Signals	GE Signals
	1	BI-DA+	BI-DA+
	2	BI-DA-	BI-DA-
	3	BI-DB+	BI-DB+
	4	--	BI-DC+
	5	--	BI-DC-
	6	BI-DB-	BI-DB-
	7	--	BI-DD+
	8	--	BI-DD-

A.4.2 ETH-SFP connector

SFP	
	Standard SFP connector

A.4.3 WWAN connector

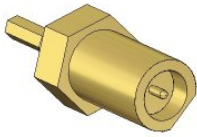
Devices featuring this interface are equipped with two SMA female connectors.

SMA Female	PIN	ANT
	Internal	RF in/out
	External	GND

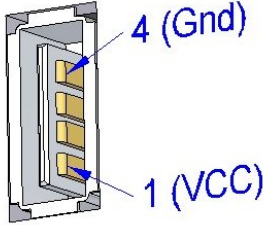
A.4.4 WLAN connector

Devices featuring this interface are equipped with an SMA-RP female coaxial WLAN connector installed.

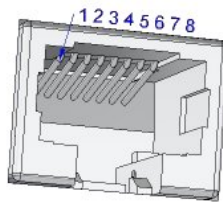
SMA-RP Female	PIN	ANT
---------------	-----	-----

	Internal	RF in/out
	External	GND

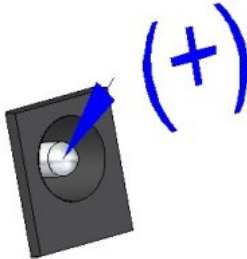
A.4.5 USB connector

Type-A	PIN	Signal
	1	VBUS
	2	D- (USB 2.0)
	3	D+ (USB 2.0)
	4	GND
	Shell	Shield

A.4.6 Configuration connector

RJ45 CONFIGURATION	RJ45 PIN	CONF
	1	--
	2	--
	3	TxD
	4	GND
	5	GND
	6	RxD
	7	--
	8	--

A.4.7 Power supply connector

Jack 5.5/2.5mm	PIN
	Internal -> POSITIVE
	External -> NEGATIVE

A.5 Technical specifications

A.5.1 Hardware architecture

PROCESSORS	MARVELL ARMADA 3700 Family
MEMORY	1 GByte (DDR4)
STORAGE UNIT	eMMC Memory (4 GBytes).

A.5.2 ETH-RJ45 interfaces

PROTOCOLS	Ethernet (802.3).
PORTS	4-port MDI/MDX auto-detection.
SPEED	10/100/1000 Mbps (Base-T).
CONNECTOR	RJ45 female.

A.5.3 ETH-SFP interface

STANDARDS	802.1Q (VLAN). 1000-Base-X. MSA and SFF 8472 compliant.
SPEED	1000 Mbps full duplex.
TYPES	LX/LH (single-mode 1310 nm). SX (multi-mode 850 nm). ZX (single-mode 1550 nm).
CONNECTOR	Standard SFP connector.

A.5.4 Wireless WAN interface

WWAN Standard/Bands	EC25-E: • LTE: • FDD. B1, B3, B5, B7, B8, B20 • TDD: B38, B40, B41 • WCDMA: B1, B5, B8 • GSM/GPRS/EDGE: 900/1800 MHz EC25-AU: • LTE: • FDD. B1, B2, B3, B4, B5, B7, B8, B28 • TDD. B40 • WCDMA: B1, B2, B5, B8 • GSM/GPRS/EDGE: 850/900/1800/1900 MHz EG25-GL: • LTE: • FDD. B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66 • TDD. B34, B38, B39, B40, B41 • WCDMA: B1, B2, B4, B5, B6, B8, B19 • GSM/GPRS/EDGE: 850/900/1800/1900 MHz
Speed (DL/UL)	EC25-E: • LTE Cat 4. • FDD. 150Mbps/50Mbps • TDD: 130Mbps/35Mbps • HSPA+ Cat 24/6: 42Mbps/5.76Mbps • EDGE: 236Kbps EC25-AU: • LTE Cat 4. • FDD. 150Mbps/50Mbps • HSPA+ Cat 24/6: 42Mbps/5.76Mbps EG25-GL: • LTE Cat 4. • FDD. 150Mbps/50Mbps • TDD: 130Mbps/35Mbps • HSPA+ Cat 24/6: 42Mbps/5.76Mbps • EDGE: 236Kbps
CONNECTOR	Two SMA female connectors.
SIM Slots	1 Mini-SIM (2FF) ISO/IEC 7810:2003, ID-000 (1.8V / 3V)

A.5.5 Wireless LAN interface

WLAN standards	802.11 a/b/g/n/ac/ax MIMO 2x2 Dual-Band, Dual-Concurrent						
Concurrent 2.4 and 5 GHz supported modes		2.4 GHz	5 GHz				
	Scn	Mode	Tech	B/W	Mode	Tech	B/W
	1	2x2	802.11n	40MHz	2x2	802.11ax	80MHz
	2	2x2	802.11n	40MHz	1x1 1Rx	802.11ax	80MHz 80MHz
	3	2x2	802.11ax	40MHz	2x2	802.11ac	40MHz
2.4 GHz frequency bands, indoor and outdoor (EU)	2400-2483.5 MHz: max. 100 mW EIRP (20dBm).						
2.4 GHz frequency bands, indoor and outdoor (USA)	2400-2473 MHz: max. 100 mW EIRP (20dBm).						
5 GHz frequency bands, indoor (EU), indoor and outdoor (USA)	5170-5330 MHz; max. 200 mW EIRP allowed						
5 GHz frequency bands, indoor and outdoor (EU/USA)	5490-5710 MHz; max. 1000 mW EIRP allowed						
5 GHz frequency bands, indoor and outdoor (USA)	5735-5835 MHz; max. 1000 mW EIRP allowed						
Modulation Techniques	DSSS, OFDM, DBPSK, DQPSK, CCK, 16 QAM, 64 QAM.						
Automatic Rate Selection (ARS)	Available.						
Transmission rate	Automatic.						
Data rates	802.11b: 1, 2, 5.5, 11Mbps. 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: up to 150Mbps-single 802.11n: up to 300Mbps-2x2 MIMO 802.11ac: up to 192.6Mbps (20MHz channel) 802.11ac: up to 400Mbps (40MHz channel). 802.11ac: up to 866.7Mbps (80MHz channel) 802.11ax: 2.4GHz up to 458Mbps, 5GHz up to 1.2Gbps.						
Output power limitation	Adjustable						
Output Power	@2.4GHz: Max. 16,35 dBm @5GHz: Max. 18,12 dBm						
Bandwidth	802.11n: 20/40 MHz						

	802.11ac: 20/40/80 MHz 802.11ax: 20/40/80 MHz
Antenna	Integrated directional dual-band MIMO array

A.5.6 USB 2.0 interface

TERMINAL	One USB 2.0 (High Speed) host port.
CONNECTOR	Type-A.

A.5.7 Configuration interface

LOCAL TERMINAL	RS-232 115200-8-N-1 without flow control.
CONNECTOR	RJ45 female on the rear panel.

A.5.8 Power supply

INPUT VOLTAGE	+12V DC.
INPUT CURRENT	2 A.
CONNECTOR	Jack 5.5/2.5 mm.

A.5.9 Dimensions and weight

TYPE	Desktop enclosure.
DIMENSION	180mm X 110mm X 28mm (excluding antenna connectors)
WEIGHT	0.6 Kg

A.5.10 Environmental specifications

TEMPERATURE	OPERATING NORMALLY: 0 °C to 45 °C. STORED: -10 °C to 50 °C.
RELATIVE HUMIDITY	5 % to 90 %.

Appendix B CE Radio Information

In this section, we have listed European radio frequencies that meet CE regulatory requirements. If you require county-specific bands, kindly request them.

B.1 RF WAN specifications

To provide LTE/WCDMA/GSM connectivity, the router is equipped with an additional module. The specific module you receive will depend on your router model.

Antennas are included with this product. Please note that choosing other antennas may violate regulations and should be avoided.

Technology: LTE. EC25-E specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110-2170 MHz	
Band 3	Tx: 1710-1785 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1805-1880 MHz	
Band 7	Tx: 2500-2570 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2620-2690 MHz	
Band 20	Tx: 832-862 MHz	+23 dBm $\pm$ 1 dB
	Rx: 791-821 MHz	

Technology: LTE. EC25-AU specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110-2170 MHz	
Band 2	Tx: 1850-1910 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1930-1990 MHz	
Band 3	Tx: 1710-1785 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1805-1880 MHz	
Band 4	Tx: 1710-1755 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110-2155 MHz	
Band 5	Tx: 824-849 MHz	+23 dBm $\pm$ 2 dB
	Rx: 869-894 MHz	
Band 7	Tx: 2500-2570 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2620-2690 MHz	

Band 8	Tx: 880–915 MHz	+23 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	
Band 28	Tx: 703–748 MHz	+23 dBm $\pm$ 2 dB
	Rx: 758–803 MHz	
Band 40	Tx:/Rx: 2300–2400 MHz	+23 dBm $\pm$ 2 dB

Technology: LTE. EG25-GL specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110-2170 MHz	
Band 2	Tx: 1850-1910 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1930-1990 MHz	
Band 3	Tx: 1710–1785 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1805–1880 MHz	
Band 4	Tx: 1710–1755 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110–2155 MHz	
Band 5	Tx: 824–849 MHz	+23 dBm $\pm$ 2 dB
	Rx: 869–894 MHz	
Band 7	Tx: 2500–2570 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2620–2690 MHz	
Band 8	Tx: 880–915 MHz	+23 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	
Band 12	Tx: 699–716 MHz	+23 dBm $\pm$ 2 dB
	Rx: 729–746 MHz	
Band 13	Tx: 777–787 MHz	+23 dBm $\pm$ 2 dB
	Rx: 746–756 MHz	
Band 18	Tx: 815–830 MHz	+23 dBm $\pm$ 2 dB
	Rx: 860–875 MHz	
Band 19	Tx: 830–845 MHz	+23 dBm $\pm$ 2 dB
	Rx: 875–890 MHz	
Band 20	Tx: 832–862 MHz	+23 dBm $\pm$ 2 dB
	Rx: 791–821 MHz	
Band 25	Tx: 1850–1915 MHz	+23 dBm $\pm$ 2 dB

	Rx: 1930–1995 MHz	
Band 26	Tx: 814–849 MHz Rx: 859–894 MHz	+23 dBm ± 2 dB
Band 28	Tx: 703–748 MHz Rx: 758–803 MHz	+23 dBm ± 2 dB
Band 34	Tx:/Rx: 2010–2025 MHz	+23 dBm ± 2 dB
Band 38	Tx:/Rx: 2570–2620 MHz	+23 dBm ± 2 dB
Band 39	Tx:/Rx: 1880–1920 MHz	+23 dBm ± 2 dB
Band 40	Tx:/Rx: 2300–2400 MHz	+23 dBm ± 2 dB
Band 41	Tx:/Rx: 2496–2690 MHz	+23 dBm ± 2 dB
Band 66	Tx: 1710–1780 MHz Rx: 2110–2180 MHz	+23 dBm ± 2 dB

Technology: UMTS(WCDMA)/ HSDPA/ HSUPA/ HSPA+/ DC-HSPA+. EC25-E specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz Rx: 2110-2170 MHz	+24 dBm +1/-3 dB
Band 8	Tx: 880–915 MHz Rx: 925–960 MHz	+24 dBm +1/-3 dB

Technology: UMTS(WCDMA)/ HSDPA/ HSUPA/ HSPA+/ DC-HSPA+. EC25-AU specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz Rx: 2110-2170 MHz	+24 dBm +1/-3 dB
Band 2	Tx: 1850-1910 MHz Rx: 1930-1990 MHz	+24 dBm +1/-3 dB
Band 5	Tx: 824-849 MHz Rx: 869-894 MHz	+24 dBm +1/-3 dB
Band 8	Tx: 880–915 MHz Rx: 925–960 MHz	+24 dBm +1/-3 dB

Technology: UMTS(WCDMA)/ HSDPA/ HSUPA/ HSPA+/ DC-HSPA+. EG25-GL specifications.

Bands	Frequencies	Transmit Power Conducted
Band 1	Tx: 1920-1980 MHz Rx: 2110-2170 MHz	+23 dBm ±2 dB

Band 2	Tx: 1850-1910 MHz	+23 dBm $\pm$ 2 dB
	Rx: 1930-1990 MHz	
Band 4	Tx: 1710–1755 MHz	+23 dBm $\pm$ 2 dB
	Rx: 2110–2155 MHz	
Band 5	Tx: 824-849 MHz	+23 dBm $\pm$ 2 dB
	Rx: 869-894 MHz	
Band 6	Tx: 830–840 MHz	+23 dBm $\pm$ 2 dB
	Rx: 875–885 MHz	
Band 8	Tx: 880–915 MHz	+23 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	
Band 19	Tx: 830–845 MHz	+23 dBm $\pm$ 2 dB
	Rx: 875–890 MHz	

Technology: GSM / GPRS / EDGE. EC25-E specifications.

Bands	Frequencies	Transmit Power Conducted
EGSM 900 (900 MHz)	Tx: 880–915 MHz	+33 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	+27 dBm $\pm$ 3 dB (8-PSK)
DCS 1800 (1800 MHz)	Tx: 1710–1785 MHz	+30 dBm $\pm$ 2 dB
	Rx: 1805–1880 MHz	+26 dBm $\pm$ 3 dB (8-PSK)

Technology: GSM / GPRS / EDGE. EC25-AU specifications.

Bands	Frequencies	Transmit Power Conducted
GSM 850 (850 MHz)	Tx: 824–849 MHz	+33 dBm $\pm$ 2 dB
	Rx: 869–894 MHz	+27 dBm $\pm$ 3 dB (8-PSK)
EGSM 900 (900 MHz)	Tx: 880–915 MHz	+33 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	+27 dBm $\pm$ 3 dB (8-PSK)
DCS 1800 (1800 MHz)	Tx: 1710–1785 MHz	+30 dBm $\pm$ 2 dB
	Rx: 1805–1880 MHz	+26 dBm $\pm$ 3 dB (8-PSK)
PCS 1900 (1900 MHz)	Tx: 1850–1910 MHz	+30 dBm $\pm$ 2 dB
	Rx: 1930–1990 MHz	+26 dBm $\pm$ 3 dB (8-PSK)

Technology: GSM / GPRS / EDGE. EG25-GL specifications.

Bands	Frequencies	Transmit Power Conducted
GSM 850 (850 MHz)	Tx: 824–849 MHz	+33 dBm $\pm$ 2 dB
	Rx: 869–894 MHz	+27 dBm $\pm$ 3 dB (8-PSK)

EGSM 900 (900 MHz)	Tx: 880–915 MHz	+33 dBm $\pm$ 2 dB
	Rx: 925–960 MHz	+27 dBm $\pm$ 3 dB (8-PSK)
DCS 1800 (1800 MHz)	Tx: 1710–1785 MHz	+30 dBm $\pm$ 2 dB
	Rx: 1805–1880 MHz	+26 dBm $\pm$ 3 dB (8-PSK)
PCS 1900 (1900 MHz)	Tx: 1850–1910 MHz	+30 dBm $\pm$ 2 dB
	Rx: 1930–1990 MHz	+26 dBm $\pm$ 3 dB (8-PSK)

B.2 WI-FI specifications

This product is supplied with antennas. To comply with the regulations, do not choose other antennas.

Technology: WLAN 802.11a/b/g/n/ac/ax.

Number of Channels	• 2.4GHz. • EU, 1 ~ 13 • USA: 1 ~ 11 • 5GHz • EU, USA: 36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140,149,153,157,161,165
Tx Power	• 2.4GHz. • 11b (11Mbps): 18 dBm • 11g (54Mbps): 17 dBm • 11n (HT20 MCS7): 16 dBm • 11n (HT40 MCS7): 16 dBm • 11ax (HE20 MCS11): 14 dBm • 11ax (HE40 MCS11): 14 dBm • 5GHz • 11a (54Mbps): 16 dBm • 11n (HT20 MCS7): 16 dBm • 11n (HT40 MCS7): 16 dBm • 11ac(VHT20 MCS8): 15 dBm • 11ac(VHT40 MCS9): 15 dBm • 11ac(VHT80 MCS9): 15 dBm • 11ax(HE20 MCS11): 12 dBm • 11ax(HE40 MCS11): 12 dBm • 11ax(HE80 MCS11): 12 dBm
Receiver Sensitivity	• 2.4GHz. • 11b(11Mbps): -88 dBm • 11g(54Mbps): -75 dBm • 11n(HT20 MCS7): -72 dBm • 11n(HT40 MCS7): -70 dBm • 11ax(HE20 MCS11): -62 dBm • 11ax(HE40 MCS11): -59 dBm • 5GHz

- 11a(54Mbps): -68 dBm
- 11n(HT20 MCS7): -66 dBm
- 11n(HT40 MCS7): -64 dBm
- 11ac(VHT20 MCS8): -61 dBm
- 11ac(VHT40 MCS9): -58 dBm
- 11ac(VHT80 MCS9): -55 dBm
- 11ax(HE20 MCS11): -56 dBm
- 11ax(HE40 MCS11): -53 dBm
- 11ax(HE80 MCS11): -51 dBm