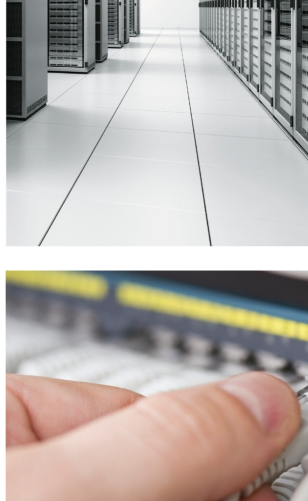




RS420 Series

Installation Manual

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I Related Documents

Windbit Dm929 OSDx Command Line Interface (CLI)

Chapter 1 About This Guide

This installation manual for the **RS420 Series** devices provides instructions on how to properly install the equipment in a working environment.

1.1 Supported Devices

The content in this manual applies specifically to the **RS420** router family.

1.2 Who Should Read This Manual?

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

1.3 When Should You Refer to This Manual?

Consult this guide as soon as you are ready to familiarize yourself with the device and its components.

By reading this manual, you will gain a comprehensive understanding of your new device.

1.4 What Is Included in This Manual?

This installation guide covers the following information:

- A description of the features available in the **RS420** router family.
- Detailed technical specifications.
- Power supply requirements.
- Compatibility of components that can be connected while the router is in operation.
- Step-by-step instructions for installing and uninstalling modules and power sources.
- Detailed descriptions of the device's LEDs and connectors.
- Troubleshooting tips.

1.5 What Is Not Covered in This Manual?

This document does not include information about the device's software or its configuration. For guidance on configuring the device, please refer to the relevant protocol manuals available at:

<http://www.windbit.com>

1.6 How Is the Information Structured?

The information in this manual is organized into chapters, with each chapter focusing on a specific aspect of the hardware and its components. Detailed descriptions, technical specifications, and relevant information for each component are provided in their corresponding chapters.

1.7 Technical Support

To ensure optimal performance and access to the latest features, Windbit provides technical support and regular software updates.

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Chapter 2 RS420 Series



Fig. 1: RS420 Series

2.1 Models

The table below outlines the various models of the **RS420 Series** available:

Models	Sales Code	Wi-Fi	WWAN	RAM
TLDPM00K1	RCRS420H001	No	No	1 GB
TLDPM01K1	RCRS420H002	No	Quectel EC25-E (4G, LTE Cat.4)	1 GB
TLDPM02K1	RCRS420H003	No	Quectel EC25-AU (4G, LTE Cat.4)	1 GB
TLDPM01K1	RCRS420H004	AZW AW-XM458-TPU	No	1 GB
TLDPM01K1	RCRS420H005	AZW AW-XM458-TPU	Quectel EC25-E (4G, LTE Cat.4)	1 GB
TLDPM02K1	RCRS420H006	AZW AW-XM458-TPU	Quectel EC25-AU (4G, LTE Cat.4)	1 GB
TLDPM03K1	RCRS420H007	No	Quectel EG25-GL (4G, LTE Cat.4)	1 GB
TLDPM03K1	RCRS420H008	AZW AW-XM458-TPU	Quectel EG25-GL	1 GB

			(4G, LTE Cat.4)	
TLDPM00K1	RCRS420H021	No	No	2 GB
TLDPM01K1	RCRS420H022	No	Quectel EC25-E (4G, LTE Cat.4)	2 GB
TLDPM02K1	RCRS420H023	No	Quectel EC25-AU (4G, LTE Cat.4)	2 GB
TLDPM01K1	RCRS420H024	AZW AW-XM458-TPU	No	2 GB
TLDPM01K1	RCRS420H025	AZW AW-XM458-TPU	Quectel EC25-E (4G, LTE Cat.4)	2 GB
TLDPM02K1	RCRS420H026	AZW AW-XM458-TPU	Quectel EC25-AU (4G, LTE Cat.4)	2 GB
TLDPM03K1	RCRS420H027	No	Quectel EG25-GL (4G, LTE Cat.4)	2 GB
TLDPM03K1	RCRS420H028	AZW AW-XM458-TPU	Quectel EG25-GL (4G, LTE Cat.4)	2 GB

2.2 Characteristics

2.2.1 Power Supply

To learn more about the **RS420** power supplies, refer to [Components and Power Supply](#) on page 6, specifically [Power Source](#) on page 13.

2.2.2 Hardware Monitoring

The **RS420** router family includes LEDs on both the front and rear panels that function as hardware monitors. These LEDs provide visual indicators of the device's operational status, including connectivity, data flow, and other relevant information.

For more 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 on:

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

3.1 Components

3.1.1 Front Panel

Refer to the figure below for a detailed view of the front panel layout.



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 16 - WWAN Connector on page 29 - Wireless WAN Interface on page 32

The LED panel indicates the status of the components, signaling whether they are active or inactive, and provides 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 -> The system is off or there is a hardware failure. On -> Normal Operation.

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

3.1.2 Rear Panel

Moving on to the rear panel, as shown in the figure, most of the **RS420** connectors are located here:

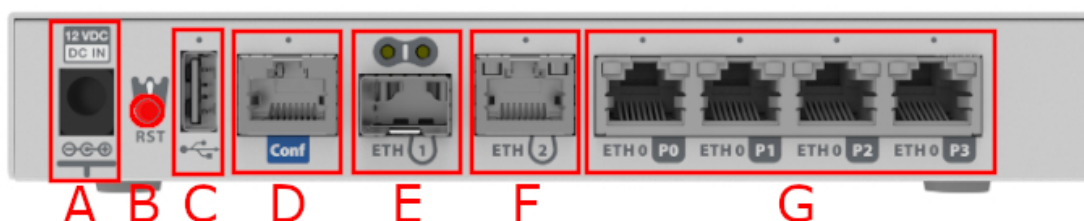


Fig. 3: Rear panel

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

Rear Panel Components

Item	Description
A	Power source connection (DC). For detailed information about the power connection, please refer to Power Source on page 13. The power specifications of the RS420 device can be found in Power Supply on page 34.
B	RESET. Reset button. For further details on the functionality of the reset button, please see RST Button on page 14.
C	USB 2.0 Port. The USB port is intended solely for maintenance purposes and does not provide a data connection. For more information on the USB 2.0 connector, please refer to:

	- on page - USB 2.0 Interface on page 34
D	The CONSOLE feature provides access to the RS420 local console for configuration and monitoring purposes. - Connecting for Configuration on page 18 - Configuration Connector on page 30 - Configuration Interface on page 34
E	ETH1 SFP. For more information on the SFP interface, please refer to: - ETH1: Ethernet SFP Connection on page 15 - ETH-SFP Connector on page 29 - ETH-SFP Interface on page 31
F	ETH2 Gigabit Ethernet. For additional information about the WAN interface, please refer to: - ETH2: Ethernet Connection on page 16 - ETH-RJ45 Connectors on page 29 - ETH-RJ45 Interfaces on page 31
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 15 - ETH-RJ45 Connectors on page 29 - ETH-RJ45 Interfaces on page 31

Furthermore, the rear panel of the device features LEDs 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 -> No link has been detected. Yellow -> Link detected. The right LED indicates speed status. Blinking: Data connection activity is occurring.

		ring.
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:

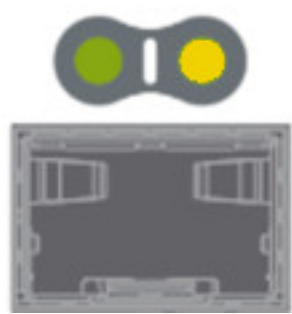


Fig. 5: SFP LEDs
Ethernet SFP LED Indicators

LED	Description
Green (Link)	- Off: Indicates no link or 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 that 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.

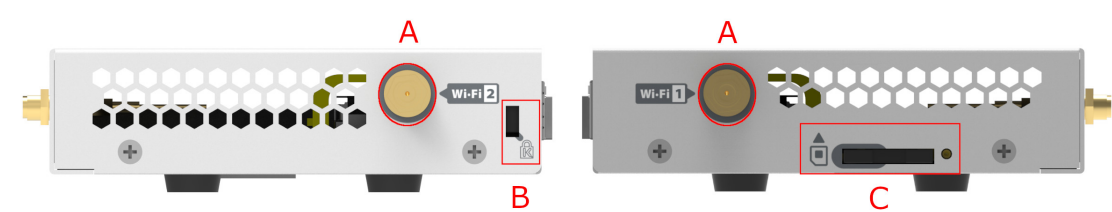


Fig. 6: Side panels

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 18 - WLAN Connector on page 29 - Wireless LAN Interface on page 34
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 18.

3.1.4 Underside Panel

The underside panel includes the following elements:

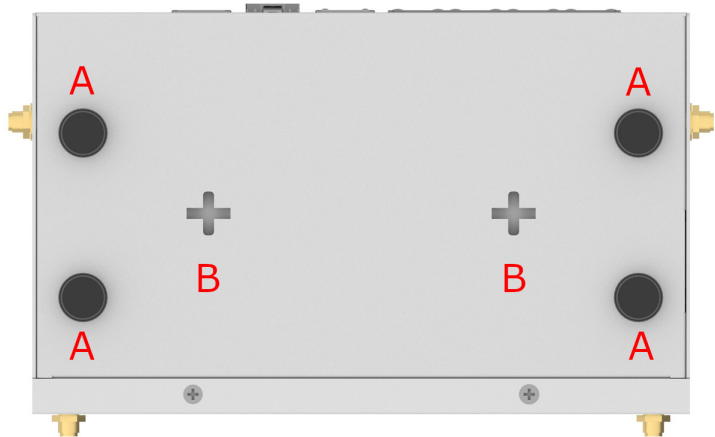


Fig. 7: Underside panel

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

Underside Panel Elements	
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:

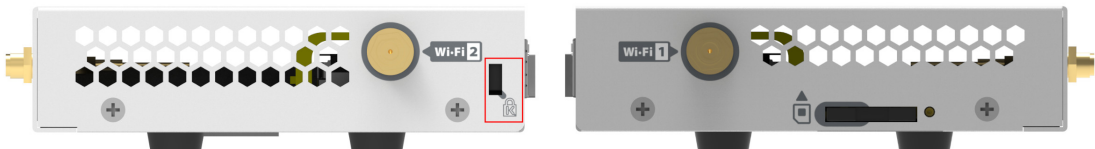


Fig. 8: Security Slot

3.3 Installation

3.3.1 Standalone

The **RS420** router family can be placed as a standalone unit 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.
- Avoid direct exposure to sunlight and other heat sources. Additionally, 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 close 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 for easy wall mounting.

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, 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 should be secured in a wall anchor (wooden) or an appropriate type suited to the wall material. Screws installed directly into drywall lack the necessary strength to support the router.



Warning

Before drilling any holes, ensure there are no concealed pipes or cables in the wall, as damaging electrical wires, gas lines, water pipes, or sewage pipes can cause serious injury or significant damage. Additionally, when selecting the router's installation location, choose a spot that minimizes obstacles or interference from electrical appliances to ensure optimal connection.



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:

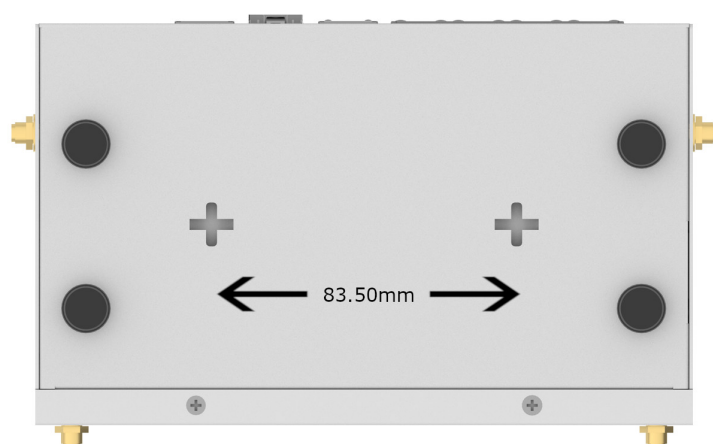


Fig. 11: Wall mount holes

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 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.

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

3.3.3 19" Rack Installation

The **RS420** router family can be easily installed in a 19" rack.



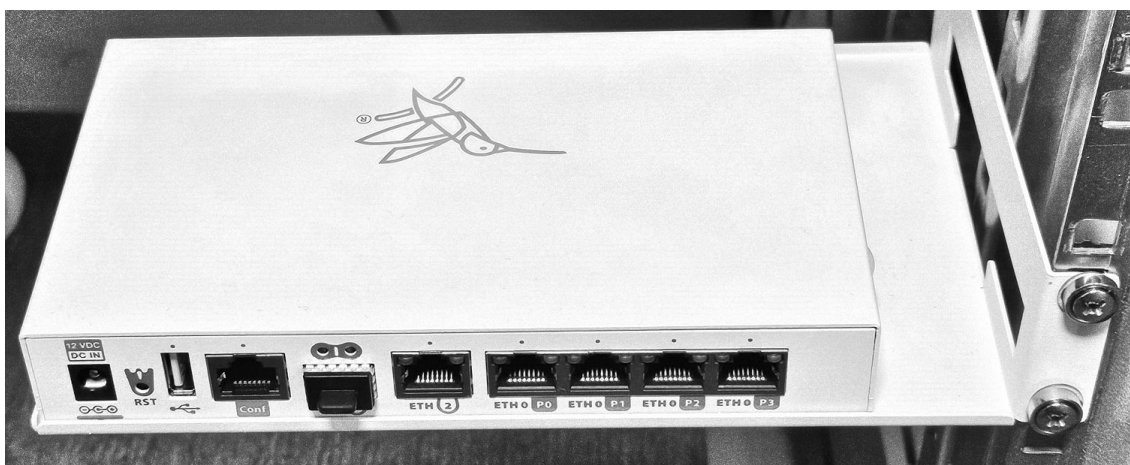
Note

The rack mount kit, consisting of the tray and screws, is not included with the router and needs to be purchased separately.

First fix the tray to the rack using two screws, as shown in figure below:



Then place the device onto the alignment pins of the tray and slide it until it fits securely.



Note

The **RS420** can be installed with the connectors facing either the front or the rear.



3.4 Power Source

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



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 and connect the DC connector.

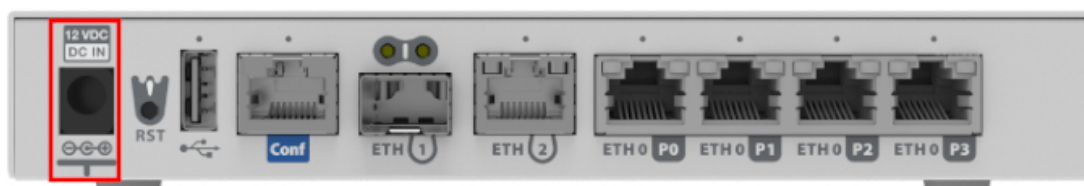


Fig. 15: DC Connector

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

If the installation includes an Uninterruptible Power Supply (UPS) a regulated power supply, or operates independently of other power systems (like lighting), connect all communication equipment to the same power source. This will help prevent operational issues and premature wear of drivers and other components.

3.5 RST Button

The RST button serves several functions, which are detailed below.

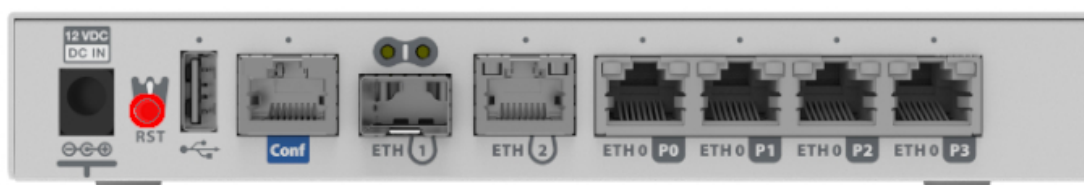


Fig. 16: RST button

3.5.1 Device Reboot

Pressing the RST button will restart the device when it is operating normally.

3.5.2 Default Configuration

The RST button on your device allows you to restore it to its default configuration. Follow these steps to boot the device with default settings:

- 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 begins to blink 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.

Once the default configuration is active, the device will establish the following access IP address and mask settings:

- IP address: 192.168.1.1

- IP mask: 255.255.255.0



Note

Some devices may have customized settings, so the default configuration could differ from the example above.

3.6 Data Connections

The **RS420** router family provides multiple data connection options.

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, be sure to carefully check the labeling on these ports:

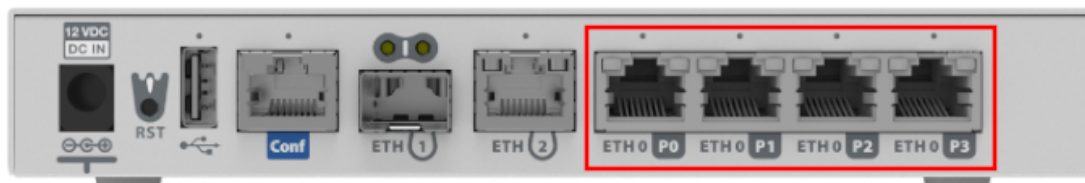


Fig. 17: ETH0Px ports



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 ETH1, which features an SFP (1000-BaseX) connector for WAN connection purposes.

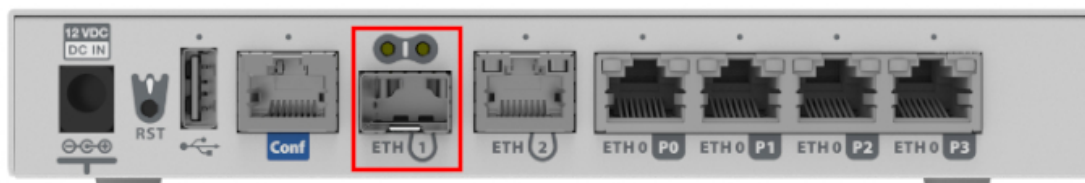


Fig. 18: ETH1-SFP connector



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



Ensure that the SFP transceivers you choose comply with 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 CE marking
- UL and/or CSA certified components for North American use
- 47 CFR Part 15, Class A



Warning

Laser Radiation. Do not use optical instruments directly or without appropriate protection. This is a CLASS 1 LASER PRODUCT.

Only class 1 SFP modules compliant with the IEC/EN 60825-1:2007 standard should be installed in the card socket.

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:

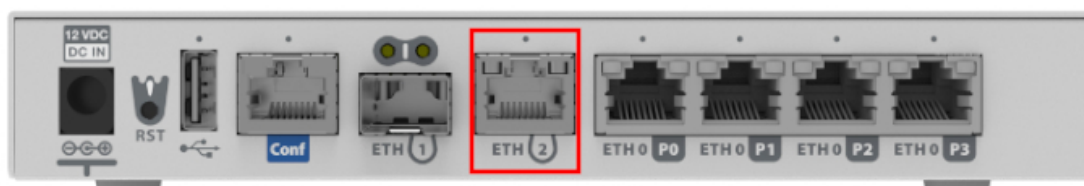


Fig. 19: ETH2-RJ45 connector



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.

Using these antennas with the **RS420** significantly enhances the signal reception and transmission capabilities of 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. 20: WWAN Main and Div antenna connectors

If the antennas are connected via extension cables rather than being directly screwed into the router, they must be positioned at least 7 cm apart. For optimal performance, it is recommended to maintain a maximum distance of 25 cm between the two antennas.

For best results, it is recommended to use radio frequency accessories, such as antennas and cables, specifically endorsed by Windbit.

Windbit offers a range of accessories, including 90° mount antennas, outdoor and ceiling installation antennas, extension cables, and more.

3.6.4.1 Placing the Antenna

The performance of devices can be greatly affected by the orientation and placement of their antennas, especially in relation to other wireless and radiation-emitting devices such as communication devices and personal computers.

Antennas are designed to transmit and receive radio signals, but their efficiency is also influenced by environmental factors like the distance from the base station, physical barriers, and interference from other radio frequencies (RF).

To ensure optimal coverage, follow these guidelines:

- When positioning your antenna, avoid physical obstructions that could block the wireless signal, such as walls or large objects. These can reduce signal quality. Ideally, place the antenna above ground level and directed towards the nearest base station.
- Consider the material density around the antenna. Keep it away from walls, metal screens, mirrors, and other materials that might disrupt signal reception.
- Avoid placing the antenna near columns or other objects that may cast shadows and reduce the coverage area.
- Ensure the antenna is not placed near metal pipes used for heating, air-conditioning, or other similar purposes.
- Be aware that other wireless devices, like telephones and microwaves, may cause temporary radio signal interference.
- Avoid installing antennas near or between racks that contain communication devices or computers. Instead, use an extension cable to position the antenna outside the rack for better signal performance.

The following recommendations apply to all wireless devices:

- Avoid touching or moving the antenna while the device is transmitting or receiving signals.
- Refrain from coming into contact with any equipment that contains radiation-emitting devices when they are in close proximity to exposed parts of the body, especially the face and eyes, during transmission.
- Do not install the device in potentially explosive areas.
- Be aware that wireless devices can interfere with other equipment; therefore, avoid using them in areas where medical devices are present.

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.

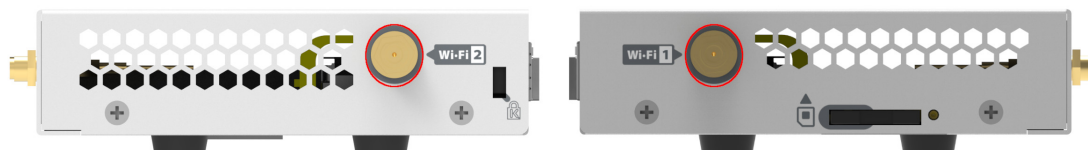


Fig. 21: WLAN antenna connectors

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 [Establishing a Connection to the Router](#) on page 27.

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

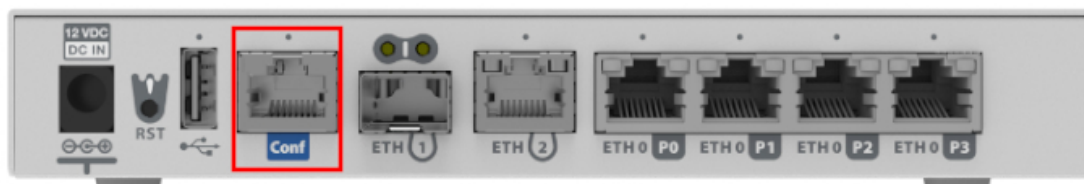


Fig. 22: Conf Connector

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.

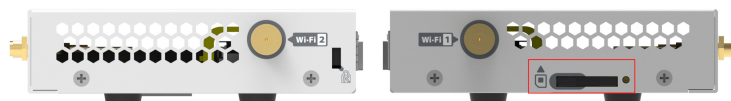


Fig. 23: SIM tray

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

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

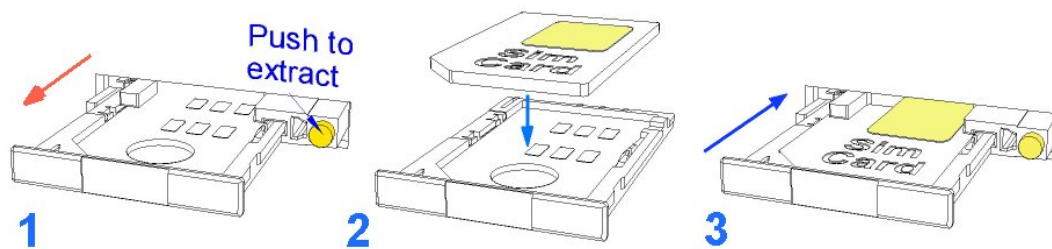


Fig. 24: Inserting the SIM in the external module



Warning

Never install SIM cards while the device is powered on.

Always disconnect the device from the main power supply before inserting or removing SIM cards.

Additionally, ensure the device is disconnected before removing the protective casing to access the trays.

When inserting the SIM cards, take precautions to prevent electrostatic discharges (ESD).

Avoid touching the SIM card connectors.

3.7.1 Checking the SIM Card

After installation, it is important to verify that 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 that you set the appropriate "apn" value according to your specific Carrier. Use the "pin" value 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 that 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 term is used to highlight potentially hazardous situations that, if ignored, could lead to serious injury or loss of life. 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

	Use only the power supply provided by the manufacturer for this 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. Avoid direct exposure with optical instruments. CLASS 1 LASER PRODUCT. SFP modules installed in the card slot must be class 1 devices in accordance with IEC/EN 60825-1:2007.
	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 the SIM cards. Ensure the device is disconnected before removing the casing to access the trays. When inserting SIM cards, take precautions against electrostatic discharge (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 should be secured in a wall anchor (wooden) or an appropriate type suited to the wall material. Screws installed directly into drywall lack the necessary strength to support 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 there are no concealed pipes or cables in the wall, as damaging electrical wires, gas lines, water pipes, or sewage pipes can cause serious injury or significant damage. Additionally, when selecting the router's installation location, choose a spot that minimizes obstacles or interference from electrical appliances to ensure optimal 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 indicates that the device must be disposed of separately from regular household waste. Please take it to an appropriate disposal facility at the end of its service life. 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.
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4.5 REACH

This product complies with the European REACH Regulation (EC) No 1907/2006. The Candidate List of Substances of Very High Concern (SVHC) for authorization is regularly updated by ECHA. The manufacturer ensures that any substances present in concentrations exceeding 0.1% by weight are accounted for. Information is available to consumers upon request.

4.6 PSU Energy Efficiency

In accordance with Commission Regulation (EU) 2019/1782, which sets ecodesign requirements for external power supplies under Directive 2009/125/EC of the European Parliament and 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 certifies that the RS420 telecommunications equipment is compliant with the following European Parliament and Council directives: 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)
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 are available at:

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

4.8 CE Marking

This equipment complies with CE marking procedures and requirements.



4.9 National Restrictions

In accordance with Article 10 of Directive 2014/53/EU, we advise that there may be national restrictions and authorization requirements, which are subject to change. It is recommended that you consult local authorities for the latest information regarding national regulations.

The use of this product in residential areas may cause interference. It is strongly recommended to avoid using it in

such areas unless special measures are taken to reduce electromagnetic emissions and prevent interference with radio and television broadcasts.

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

4.10 Operating Frequency

For more information on operating frequencies and the maximum power transmitted within the radio equipment's frequency bands, please refer to the appendices [RF WAN Specifications](#) on page 35 and [Wi-Fi Specifications](#) on page 39.

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

The table below offers troubleshooting guidance for common device installation issues. If your problem isn't resolved by the steps outlined, please contact your dealer for additional support.

Symptom	Solution
None of the LEDs on the router are lighting up.	Check the router's power supply, including the power source, ON/OFF switch, and main power outlet.
Forgotten router access password.	Reset the configuration using the RST button (refer to the relevant section for instructions).
The <i>ETH0pX</i> connector LEDs are not lighting up.	Check the Ethernet cable and the network connection.
The <i>ETH1</i> connector LEDs are not lighting up.	Check the SFP, fiber cables, and network connection.
The <i>ETH2</i> connector LEDs are not lighting up.	Check the Ethernet cable and the network connection.
The <i>Wi-Fi</i> LED is not lighting up.	If your device has a Wi-Fi interface, check the router configuration and 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 settings, and network configuration. Ensure that the APN and authentication parameters are correctly set.

A.2 Establishing a Connection to the Router

A.2.1 Connecting Via the Local Console (CONSOLE Connector)

The **RS420** features a convenient RJ45 female connector labeled **CONSOLE** on its front panel, providing access to the device's local console.

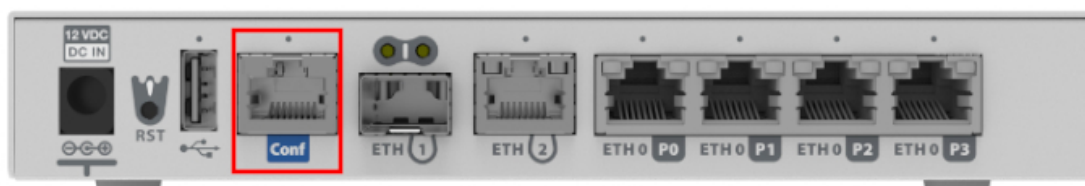


Fig. 25: **CONSOLE Connector**

To use this, 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
- Data bits: 8

- Stop bits: 1
- Parity bits: None
- No flow control

To connect to the configuration port, use the RJ45 to DB9 blue cable included with the router.

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

A.3 Updating the Software

The **RS420** router family supports updating to the latest software releases. For detailed information about available updates, we recommend contacting your distributor.

There are several methods for updating a Windbit router. For step-by-step guidance, please refer to the *Firmware upgrade* section of the “Windbit *Dm929-I OSDx Command Line Interface*” manual.

Example:

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

Once logged in successfully, 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

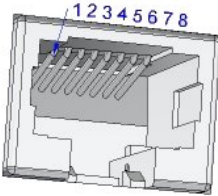
Size check
Copying files
Copying current configuration
Setting up bootloader
Bootloader upgrade check
Updating environment...
Bootloader update NOT needed
Execute additional upgrade steps from new version
Cleaning up

Successful upgrade to Teldat OSDx 202306081215.7a9c446-master-snapshot

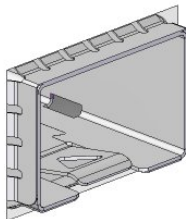
Run "reboot now" to boot from new version
```

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

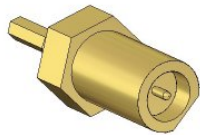
A.4.3 WWAN Connector

Devices with this interface come with two SMA female connectors.

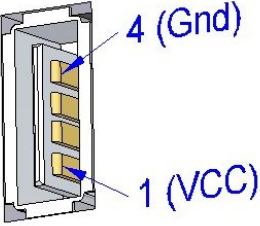
SMA Female	PIN	ANT
	Internal	RF in/out
	External	GND

A.4.4 WLAN Connector

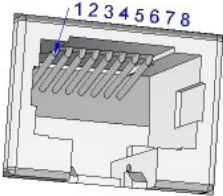
Devices with this interface come with an SMA-RP female coaxial WLAN connector installed.

SMA-RP Female	PIN	ANT
	Internal	RF in/out
	External	GND

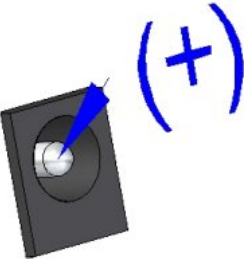
A.4.5 USB Connector

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 or 2 GByte (DDR4). For more information, please see Models on page 4
STORAGE UNIT	eMMC Memory (4 GBytes).

A.5.2 ETH-RJ45 Interfaces

PROTOCOLS	Ethernet (802.3).
PORTS	4-port automatic MDI/MDX 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 the European radio frequencies that meet CE regulatory requirements. If you require country-specific bands, please request them.

B.1 RF WAN Specifications

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

Antennas are included with this product. Please note that using 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 $\pm$ 2 dB
Band 28	Tx: 703–748 MHz Rx: 758–803 MHz	+23 dBm $\pm$ 2 dB
Band 34	Tx:/Rx: 2010–2025 MHz	+23 dBm $\pm$ 2 dB
Band 38	Tx:/Rx: 2570–2620 MHz	+23 dBm $\pm$ 2 dB
Band 39	Tx:/Rx: 1880–1920 MHz	+23 dBm $\pm$ 2 dB
Band 40	Tx:/Rx: 2300–2400 MHz	+23 dBm $\pm$ 2 dB
Band 41	Tx:/Rx: 2496–2690 MHz	+23 dBm $\pm$ 2 dB
Band 66	Tx: 1710–1780 MHz Rx: 2110–2180 MHz	+23 dBm $\pm$ 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 $\pm$ 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 regulations, do not use 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