Teldat K/KF router

Installation Manual

Legal Notice

Warranty

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I Related Documents

Teldat-Dm 748-I *Software Updating*

Chapter 1 About This Manual

This is the installation manual for the **Teldat K** router family and contains information on how to correctly install this device in a working environment.

1.1 Supported Devices

The information provided only applies to the **Teldat K** router family.

1.2 Who should read this manual?

This manual should be read by the support personnel who need to install, configure, maintain and monitor the device.

1.3 When should this manual be read?

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

This manual will help you understand your new device in greater depth.

1.4 What is in this manual?

This installation guide contains the following information:

- A description of the features available in the **Teldat K** family.
- Technical specifications.
- Power supply requirements.
- Elements you can connect to the device while it is running.
- Installation and removal procedures for modules and power supplies.
- A description of the LEDs and connectors of the device.
- Troubleshooting.

1.5 What is not in this manual?

This manual does not contain information on the device software or its configuration. For information on how to configure this device, please see the relevant protocol manuals, which can be found on the Teldat website: http://www.teldat.com .

1.6 How is the information organized?

Each chapter focuses on a specific part of the hardware and its components. All descriptive and technical specifications, or information on a component, can be found in the relevant chapter.

1.7 Technical Support

Teldat S.A. offers a technical support service. Device software can be upgraded on a regular basis for maintenance purposes and for new features.

Contact information:

Web: http://www.teldat.com

Tel.: +34 918 076 565

Fax: +34 918 076 566

Email: support@teldat.com

Chapter 2 Teldat K / Teldat KF Routers

2.1 Features

2.1.1 Power supply

For further information on the different power supplies in the **Teldat K** router family, please see *Components and Power Supply* on page 5 in the section *Power Source* on page 11

2.1.2 Hardware Monitoring

The only way to monitor the **Teldat K** router family hardware is through the LEDs panel. The LEDs provide visual information on what is happening in the device. They indicate the state of the hardware components, if there is connectivity, data flow, etc.

For further information on the LEDs panel, please see section *Components* on page 5.

Chapter 3 Components and Power Supply

The following chapter provides detailed information on the chassis of the **Teldat K** router family and its components. This information includes:

- Components.
- Information on assembly.
- Installation and removal of modules.
- Power supply.
- RST button.
- Data connection.
- SIM card installation.

3.1 Components

3.1.1 Front Panel

The following figure shows the front panel. The only thing to be found here are the 3G antenna connectors.

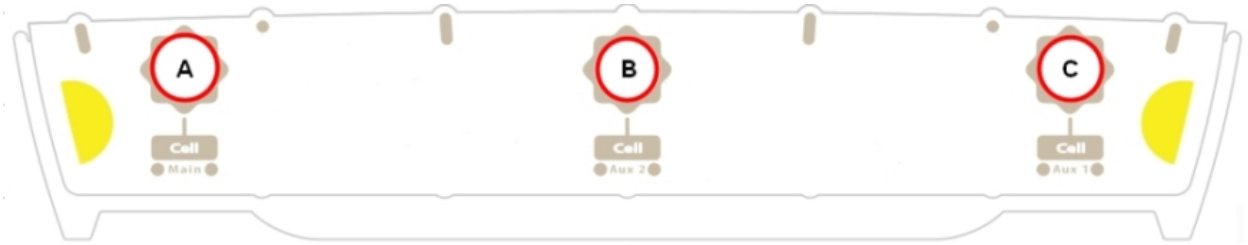


Fig. 1: **Front Panel**

The front panel elements are as follows:
Front panel elements

Item	Description
A	Main antenna for the **Teldat K** cellular module.
B	Auxiliary antenna 2 for the **Teldat K** cellular module.
C	Auxiliary antenna 1 for the **Teldat K** cellular module.

3.1.2 Rear Panel

The following figure shows the rear panel. Here you can see all the connectors for the **Teldat K** router family.

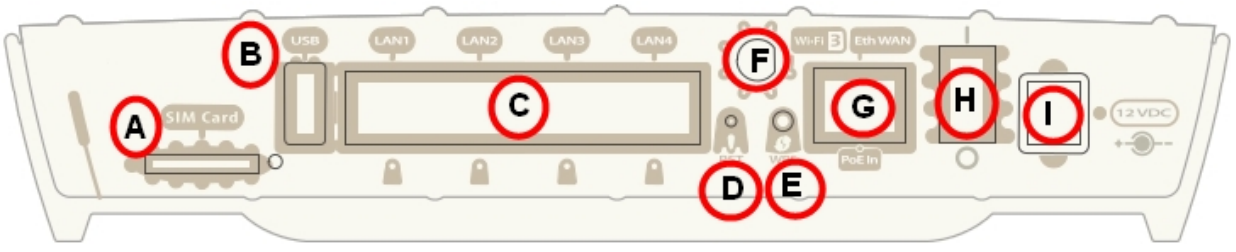


Fig. 2: **Rear panel**

The following table provides information on each connector as well as a description:
Rear panel elements

Item	Description
A	SIM Card. Slot where you can insert the SIM card for the external 3G module.
B	USB. Slot where you can insert a 3G USB modem.
C	4-port Gigabit Ethernet Switch.
D	RST. Reset button. For further information on how the reset button works, please see "*RST Button* on page 13 in this chapter.
E	WPS (Wireless Protected Setup). This allows for easy and secure configuration of the WiFi network parameters.
F	WiFi antenna no. 3. This connector is used or not depending on the WiFi card the router has.
G	Eth WAN/PoE In. WAN Gigabit Ethernet. This is also where the router is powered through PoE.
H	On/Off switch.
I	Power source connection (PSU).

3.1.3 Side Panels

Two WiFi antennas are located on the side panels, one on either side.

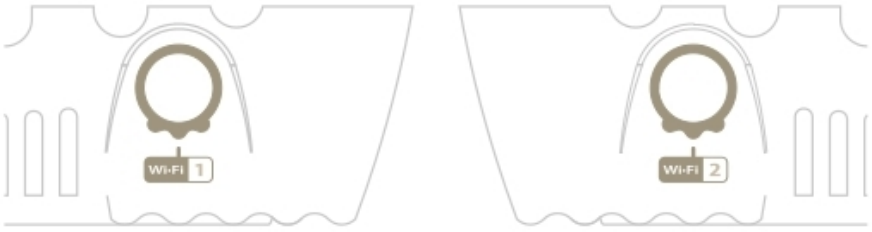


Fig. 3: **Right hand side panel** *and Fig. 4* **Left hand side panel**

3.1.4 Underside Panel

The following elements can be found on the underside panel:

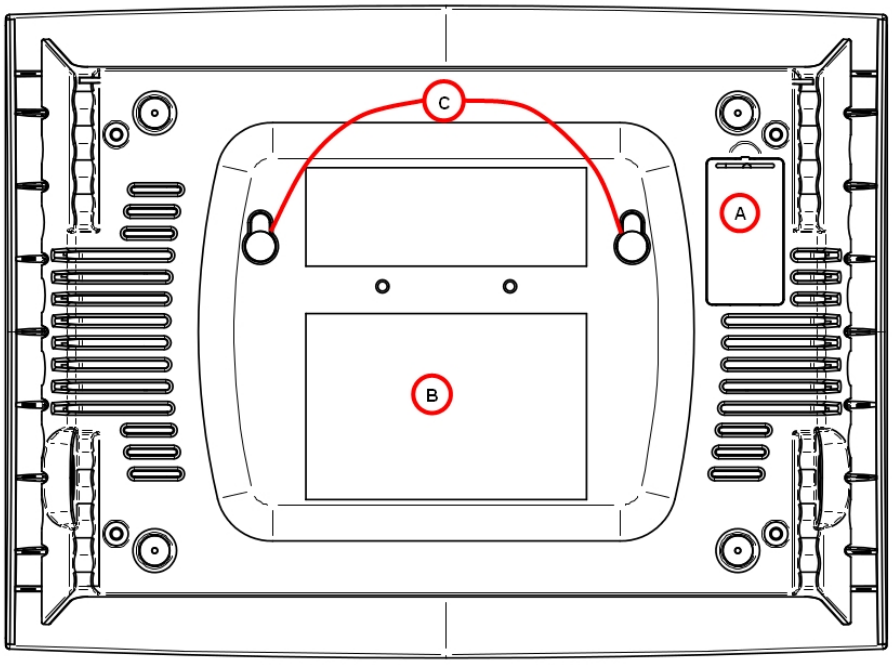


Fig. 5: **Underside panel**

The following table contains details on the significant elements on the underside panel.
Underside panel elements table

Item	Description
A	SIM tray for the internal module. This is only found on the **Teldat K**. It's accessed from the underside of the router.
B	Platform where the label containing the information on the product is placed. This label contains information on the device model, mac, serial number, etc.
C	Slots for wall mount.

3.1.5 Top Panel (LEDs)

The LEDs panel provides information on the state of the components (whether they are active or not) or on the network activity.

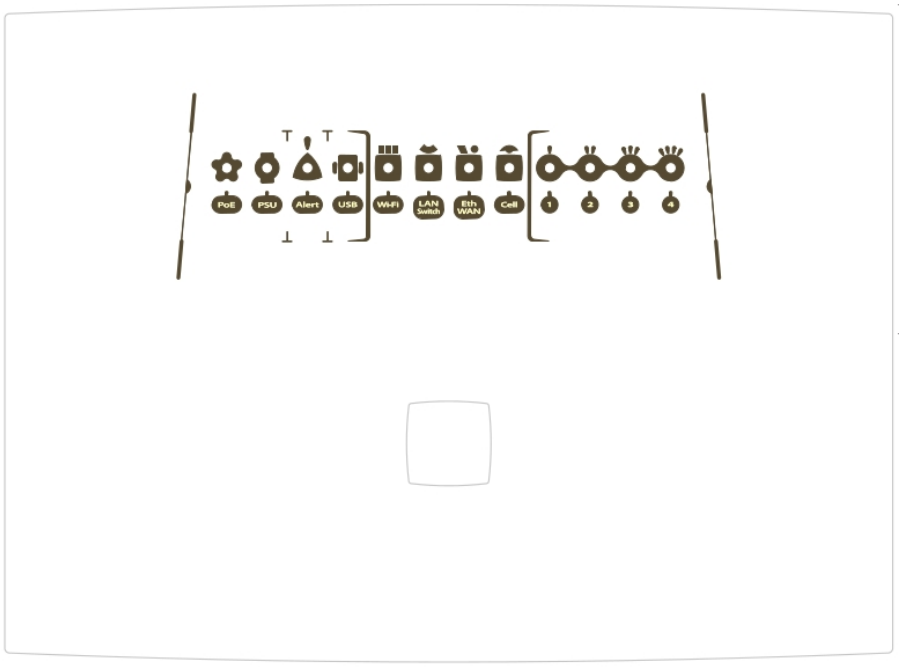


Fig. 6: **Leds panel**

The LEDs for the **Teldat K** router family are shown in the above figure. The table below contains a description on them.

LEDs table

LED	Status	Description
PoE	Monochrome Green	Off -> not being powered through PoE. On -> powered through PoE.
PSU	Monochrome Green	Off -> not being powered through PSU On -> powered through PSU
Alert	-	Not defined.
USB .	Tricolor	Off -> system is powered off. Red -> interface is unavailable because it is installing; it is not enabled (shutdown) or due to auto-test failure. Amber -> idle. • Rapid blinking. It has not registered in the network or the quality is insufficient. • Slow blinking. GSM connection (GPRS). • Steady. WCDMA (UMTS / HSDPA) connection. Green -> connected. Blinking: connection data activity.
Wi-Fi	Bicolor	Red -> interface down. Green -> interface up.

		Blinking (green/red) -> activity/ maintenance.
LAN	Tricolor	Green -> connected. Blinking: connection data activity. Red -> disconnected.
WAN	Tricolor	Green -> connected. Blinking: connection data activity. Amber -> blinking, auto-test. Red -> disconnected.
Cell	Tricolor	Off -> system is powered off. Red -> interface is unavailable because it is installing; it is not enabled (shutdown) or due to auto-test failure. Amber -> idle. • Rapid blinking. It has not registered in the network or the quality is insufficient. • Slow blinking. GSM connection (GPRS). • Steady. WCDMA (UMTS / HSDPA) connection. Green -> connected. Blinking: connection data activity.
Coverage (1, 2, 3, 4)	Monochrome blue	Indicates the coverage level the 3G internal module has. 0 level (all LEDs off) to 4 (all LEDs on).

3.2 Mounting in rack

The **Teldat K** router family cannot be mounted in a rack. However there are other types of mounting.

3.2.1 Standalone

Any router from the **Teldat K** family can be placed as a standalone device on a flat, stable surface.

You need to make sure that there is enough space around the router for ventilation purposes and ensure that the electricity cables can reach it.

3.2.2 Wall mounting

The **Teldat K** can be mounted on the wall. The **Teldat KF** can be as well, but this doesn't make much sense as it doesn't have a 3G module incorporated.

There are two slots on the underside of the device which are used to fix it to the wall. You can see this in section "*Underside Panel* on page 6.

You must provide the screws and wall anchors. We recommend the following accessories for wall mounting, valid for solid wall and Gypsum board (plaster) wall:

- 2 screws: [COACH SCREW HEAD 90 DEGR.POZIDR. 3.5x30]

- 2 wall anchors: [WHITE STRIATED WALL ANCHOR DIAM.8mm]

Warning

The screws must go into a wall stud (wood) or a wall anchor of the appropriate type for the wall. Screws into drywall are not strong enough to mount the router.

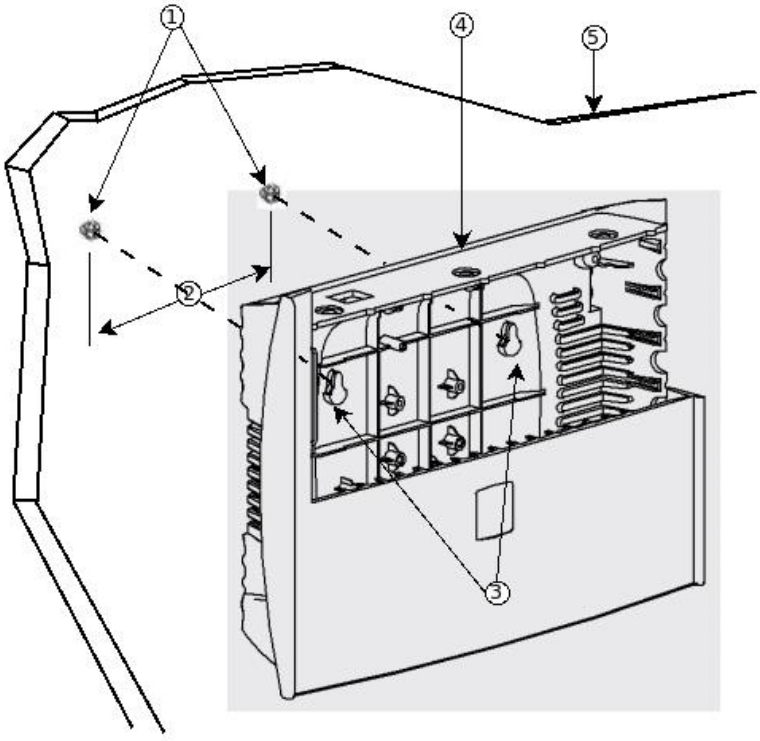


Fig. 7: **Wall-Mounting Features on the Teldat K/KF router**

Figure 7 shows the wall-mounting features on the **Teldat K/KF** routers.

1	Wall screws	2	10.2 cm (4.02 inches)
3	Chassis mounting holes (on bottom)	4	Router chassis
5	Mounting surface		

To mount the router on a wall or other surface, follow these steps:

Procedure

Step 1 Install the two screws (3.5x30) horizontally apart on a wall or any other vertical surface.

The screws should protrude 0.6 cm (0.25 inch) from the surface of the wall.

Warning

If you install the screws in drywall, use hollow-wall anchors (8 mm – 5/16 inch) to secure the screws. If the screws are not properly anchored, the strain of the cables connected to the router back panel could pull the router from the wall.

Step 2 Hang the router on the screws. This is the appropriate orientation for safe use (see *Fig. 7* on page 10).

Note

- The accessories for wall mounting the device are not provided in the package, and have to be acquired separately.
- The accessories must be properly adapted to the kind of wall and must be chosen to ensure that they can support the weight of the device.

3.3 Plug-in Modules

The only module that can be inserted in the device is the USB 3G modem. To view the list of supported 3G modems, please visit the Teldat website: http://www.teldat.com .

3.3.1 Installation

In order to install the USB modem, simply insert it in the USB slot on the rear panel as shown in the following figure:

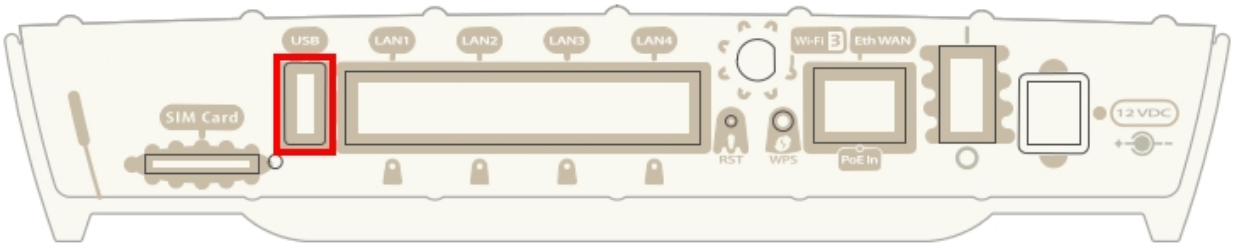


Fig. 8: **USB modem insertion slot**

3.3.2 Uninstall

To remove the device, simply remove it from the slot where it was inserted. See *Fig. 8* on page 11.

3.4 Power Source

The **Teldat K** router family is powered though an external AC/DC source or through an Ethernet cable (if it complies with the POE 802.3at standard).

Warning

The equipment must be used with the power supply provided by the manufacturer, or equivalent.

Workplace Conditions. Main Characteristics

- Avoid humid and or dusty locations.
- Direct exposure to sunlight should be avoided as well as other heat sources. The device should not be placed amongst papers, magazines or other elements that could hinder natural air circulation.
- The device should not be placed very close to strong electromagnetic fields such as speakers, engines, etc.
- Knocks and/or strong vibrations should be avoided during transport, operation and storage.

Warning

The electric current in power cables, telephone lines and communication cables is dangerous. To prevent electric shocks, before installing, handling or opening the equipment covers, connect and disconnect the cables following the steps set in *Connecting* on page 12 and*Disconnect* on page 13.

3.4.1 External Power Source

To connect the power supply to the device, please follow the steps outlined in section " *If the Ethernet cable isn't PoE* on page 13.

To avoid electric shocks, residual current circulation and other unwanted effects, also affecting communications, the following is recommended:

Warning

All interconnected communication devices should be plugged to THE SAME GROUNDED POWER OUTLET, which should at the same time be of good quality (lower than 10 ohms).

Whether the workplace is provided with an uninterrupted power supply system (UPS), regulated supply or it is independent from the rest (such as lighting, etc.); it is highly recommended that all data devices should be connected to the same power source. This will avoid operating and premature aging problems of drivers and other components.

3.4.2 PoE

The **Teldat K** router family can be powered through an Ethernet cable if the latter complies with the POE 802.3at standard. The port enabled for this is the *Eth WAN*.

To connect the Ethernet cable with PoE power to the router, please carry out the steps outlined in section " *If the Ethernet cable is PoE* on page 13.

The following figure illustrates how to connect the PoE injector to the device.

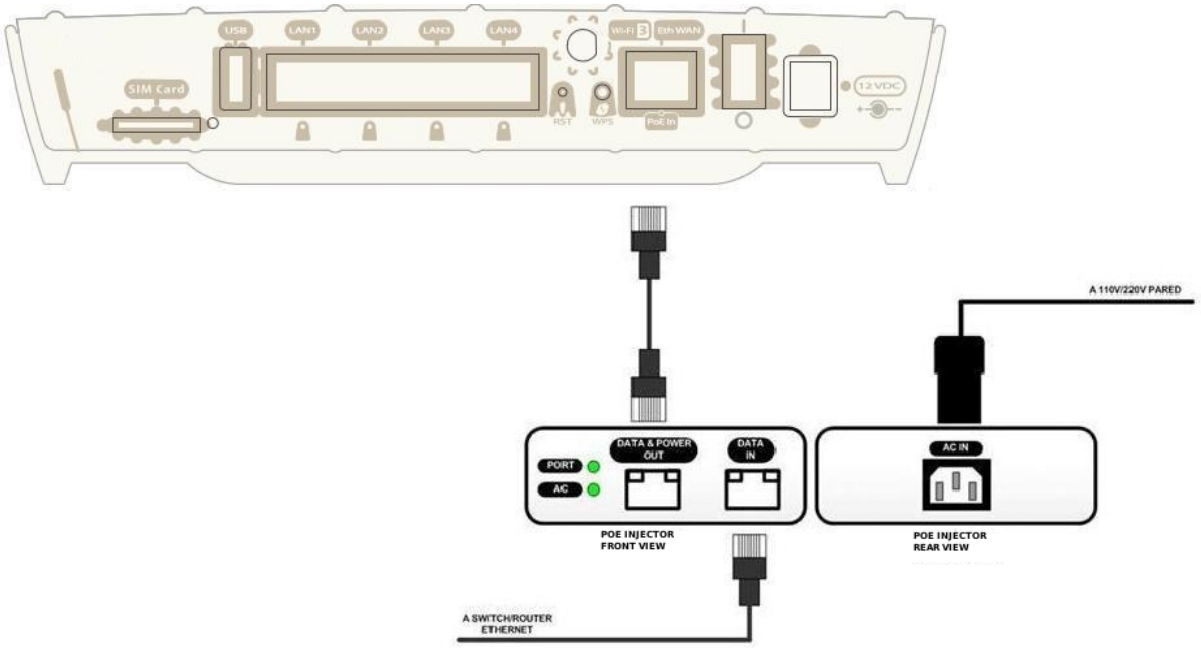


Fig. 9: **Diagram showing how to connect the PoE injector to the device**

3.4.3 Connecting

3.4.3.1 If the Ethernet cable isn't PoE

- Make sure that the router's power supply switch is in the OFF position (0).
- Ensure that the power supply is NOT connected to either the electricity or the router.
- Connect all data cables.
- Connect the power supply cable to the device.
- Connect the power supply cable to the electricity supply.
- Set the router's power supply switch to the ON position (1).

3.4.3.2 If the Ethernet cable is PoE

- Check that the Ethernet cable going to be used for power is NOT connected to the router.
- Make sure that the router's power supply switch is in the OFF position (0).
- Ensure that the power supply is NOT connected to the electricity supply.
- Connect all data cables.
- If you need redundant power, connect the power supply to the device.
- If you need redundant power, connect the power supply to the electricity supply.
- Connect the Ethernet cable.
- Set the router's power supply switch to the ON position (1).

3.4.4 Disconnect

3.4.4.1 If the Ethernet cable isn't PoE

- Make sure that the router's power supply switch is in the OFF position (0).
- Disconnect the power supply from the electricity supply.
- Disconnect the power supply from the router.
- Disconnect the data cables.

3.4.4.2 If the Ethernet cable is PoE

- Disconnect the Ethernet cable.
- Make sure that the router's power supply switch is in the OFF position (0).
- Disconnect the power supply from the electricity supply.
- Disconnect the data cables.

3.5 RST Button

The different features of the RST button are described below.

3.5.1 Rebooting the device

Once the device is operating normally, if you press the RST button, this will restart.

3.5.2 Default Configuration

The RST button allows you to boot the device with its default configuration through the following steps:

- With the device switched off, keep the RST button pressed and switch on the router through the ON/OFF switch (1).
- The PSU LED (green) will light up and the Alert LED will begin to blink (amber). This blinking will continue for 10 seconds.

- So that the device boots with the default configuration, you need to release the RST button while the Alert LED is blinking, i.e. before the 10 second period expires.

The router's default configuration sets the following IP address and mask:

- IP address: 192.168.1.1
- IP mask: 255.255.255.0

Note

Some devices leave the factory with customized settings for a client. This personalization means that the device may have a different default configuration from the one shown above.

3.5.3 Cargalan Mode

Setting the *cargalan* mode enables you to send the router files such as BIOS, a distribution or a configuration file. For the router to enter this mode, you need to follow these steps:

- With the device switched off, keep the RST button pressed and switch on the router through the ON/OFF switch (1).
- The PSU LED (green) will light up and the Alert LED will begin to blink (amber). This blinking will continue for 10 seconds.
- Once the Alter LED stops blinking, it will light up in steady green. At that point the USB LED will begin to blink (amber). This blinking will continue for 3 seconds.
- The router will enter in the *cargalan* mode if you release the RST button while the USB LED is blinking.

Once the device is in this mode, you can start downloading files up to a maximum of 5. The loading procedure is as follows:

- Send a file while the LED is blinking in amber.
- When the whole file has arrived, it is then recorded while the LED blinks in red and green.
- If the file has recorded correctly, the LED will light up in steady green and the next LED will begin to blink in amber indicating that you can send another file. This occurs up to a maximum of five times, when the Cell LED, which is the last one, will then light up in steady green.

3.6 Connecting the data

The **Teldat K** router family has the following data connections.

3.6.1 4-port Ethernet Switch

The **Teldat K** router family incorporates a 4-port 10/100/1000 BaseT Switch with automatic MDI/MDIX to connect to a local area network (LAN).

Please pay careful attention to the labeling so you do not confuse this switch with other types of ports:

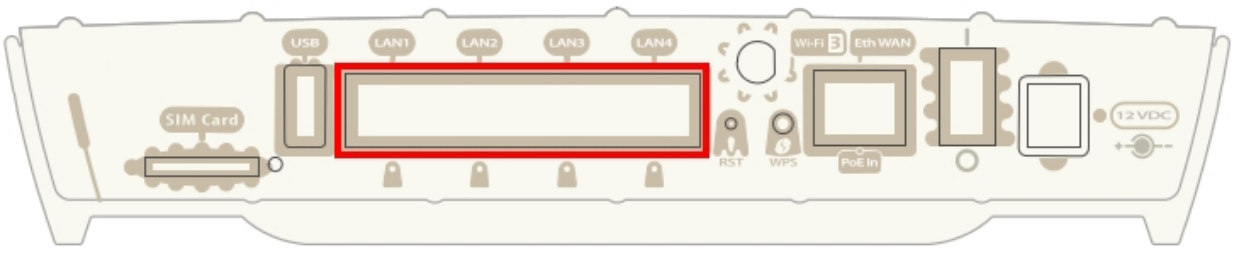


Fig. 10: **LAN switch PORTs**

Note

During booting and in BIOS mode, only the LAN 1 connector is available.

3.6.2 WAN Connection

The **Teldat K** router family incorporates an Ethernet WAN 10/100/1000 BaseT port with automatic MDI/MDIX.

The WAN port is independent from the switch and is managed like any other interface. The **Teldat K** has a special license, the 1GELAN, that deactivates the switch. When doing this, the WAN connection becomes the LAN and its interface, which was previously the switch interface, becomes the Ethernet0/0.

Please pay careful attention to the labeling so you do not confuse this switch with other types of ports:

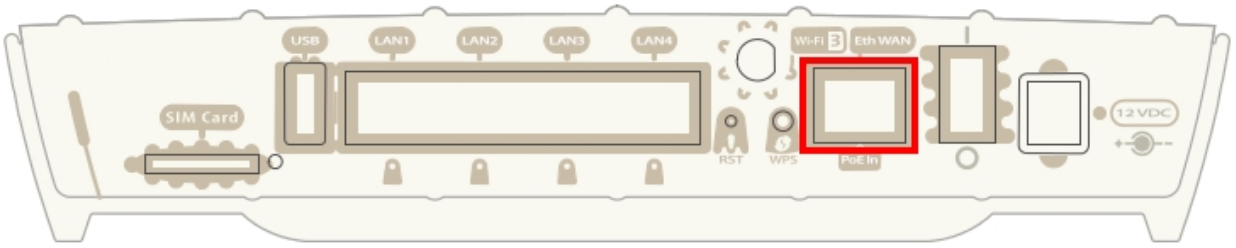


Fig. 11: **WAN PORT**

Note

During booting and in BIOS mode, only the WAN connector is not operative.

3.6.3 WWAN Antenna Connection (Cell connector)

The **Teldat K** router has three connectors to connect 3G antennas. To assemble and disassemble the antennas, simply screw them into the connectors labeled *Cell* (located at the front panel of the router).

The installation of these antennas in the **Teldat K** router is essential in order to improve the quality of the signal received and transmitted by the cellular model.

Note

To obtain a good quality performance, the router should always have the WWAN antennas installed.

For the *cellular* interface to be operative, the router must have the corresponding software license incorporated.

Some cellular telephony technologies use the antenna diversity technique to improve the quality of the signal received (HSUPA, CDMA EV-DO, etc.). Due to this, the **Teldat K** router family incorporates various WWAN connectors.

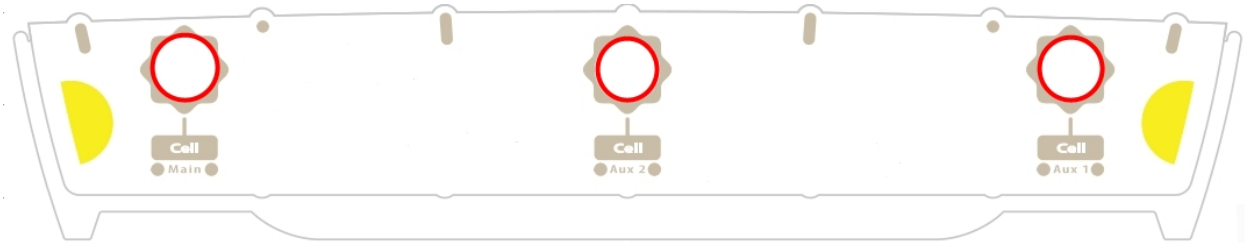


Fig. 12: **WWAN Antennas**

When the Main and Aux 1 antennas are not directly connected to the router but installed through extension cords, the minimum distance between the two of them must be 7 cm. The maximum recommended distance between the two is 25 cm.

To achieve optimum performance, the radio frequency accessories installed (antennas and cables) should be those recommended by Teldat.

Teldat has a series of accessories (90º mount antennas, antennas for outdoor installation, antennas for ceiling in-

stallation, extension cables, etc) that allow you to install the devices in different locations.

3.6.3.1 Placing the Antenna

The orientation of the antenna and its location with respect to other wireless devices or other radiation sources (such as communication devices, personal computers, etc.) can significantly influence the performance level of the equipment.

The antennas transmit and receive radio signals. This performance is also affected by environmental factors such as the distance between the device and the base station, physical obstacles and other interferences due to radio frequencies (RF).

In order to receive better coverage, follow the instructions given below:

- Whenever possible, position the antenna in a place where there are no physical obstacles. Obstacles between the antenna and the base station degrade the wireless signal. Place the antenna above ground level and steer it towards the nearest base station.
- The density of materials also affects the antennas. Place them away from all types of walls, metal screens, mirrors, etc.
- Do not place the antenna near columns that could throw shadows and reduce the coverage area.
- Keep the antenna away from metal ducts such as canalization, air-conditioning etc.
- Bear in mind that other wireless devices (such as telephones, microwaves, etc.) can temporarily interfere with the quality of the wireless signal.
- We do not recommend that you install antennas in racks containing communication devices, computers, etc. Use an extension cord for this and place the antenna outside.

The following recommendations are applicable to all wireless devices:

- Do not touch or move the antenna while the device is transmitting or receiving.
- When the antenna is transmitting, do not touch any equipment that contains devices that radiate very close to, or touching, any exposed part of the body (particularly face and eyes).
- Do not install the device in areas where the atmosphere is potentially explosive.
- Wireless devices can cause interferences with other devices. Do not use the device in environments where medical equipment is installed.
- To ensure the R&TTE 1999/5/EC directive is complied with, the device must be at least 15 cm away from a person's body when operating.

3.6.4 Wireless LAN Antenna Connection (Wi-Fi connectors)

The **Teldat K** router family has three RF antenna connectors for external antennas in order to improve the quality of the signal received and transmitted by the Wireless LAN module.

This module is internal and can be activated by purchasing the corresponding software license. To assemble and disassemble the antennas provided with the device, just screw them into the connectors (labeled *Wi-Fi* and located at the rear and on the side panels of the router).

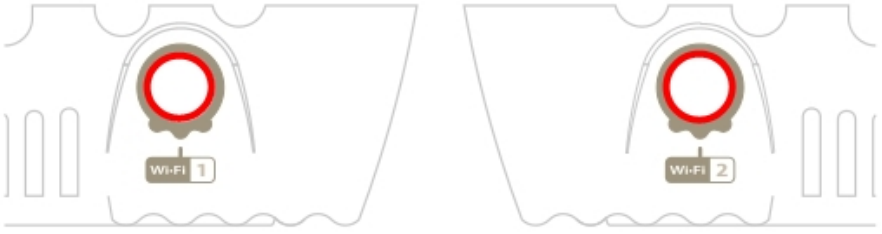


Fig. 13: **Wi-Fi Antenna 1** *and Fig. 14* **Wi-Fi Antenna 2**

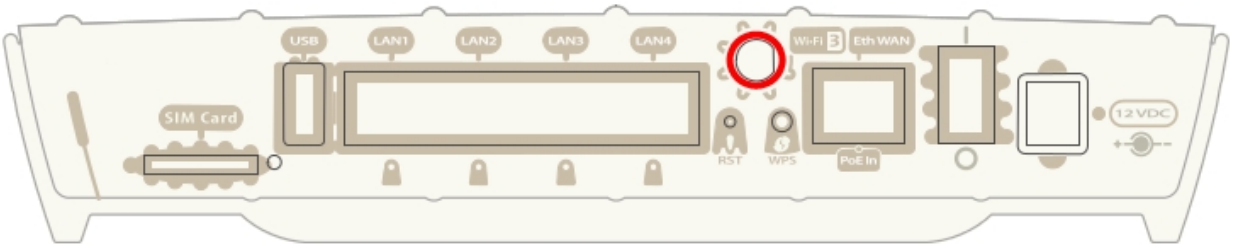


Fig. 15: **Wi-Fi Antenna 3**

3.6.5 Connecting a 3G USB device (USB connector)

The **Teldat K** family has a USB HOST 2.0 Type A connector interface that allows 3G USB modems to be connected. The interface can be activated by purchasing the corresponding software license.

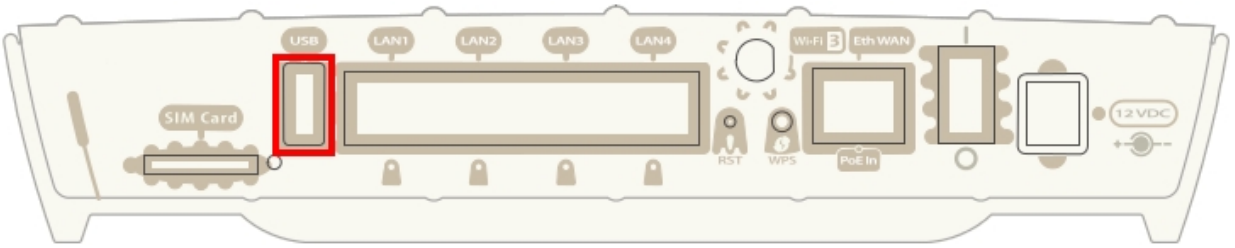


Fig. 16: **USB 3G Connector**

3.7 Installing the SIM card

The **Teldat K** family has a Wireless WAN interface, which means that at least one SIM card must be inserted in the device for it to work. There are certain services (CDMA) provided by several carriers in some countries that do not require SIM cards.

The **Teldat K** has two SIM trays, while the **Teldat KF** only has one; the one in the external module.

One is located on the rear panel of the router, as shown in the following figure.

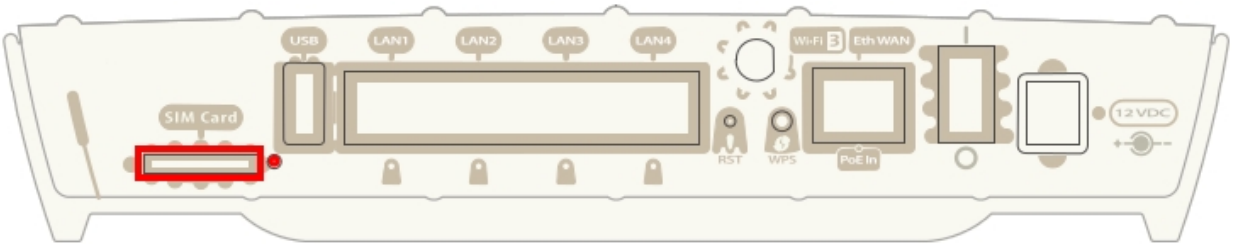


Fig. 17: **External module SIM card**

The procedure to insert the SIM card in the external SIM tray is as follows: first place the device so you can see the rear panel, as shown in figure 17, and then carry out the following steps:

(1) Press the button until the SIM tray comes out.

(2) Place the SIM on the tray.

(3) Insert the tray in the slot and return the tray to its original position.

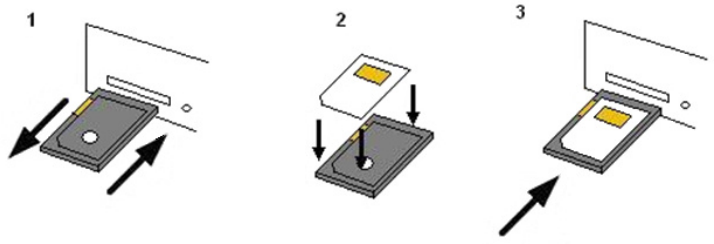


Fig. 18: **Instructions to insert the SIM in the external SIM tray**

The other SIM tray belongs to the internal 3G module, only available in the **Teldat K**. To access it, you need to go to the underside of the router and open the flap that is shown in the following figure to insert the SIM card.

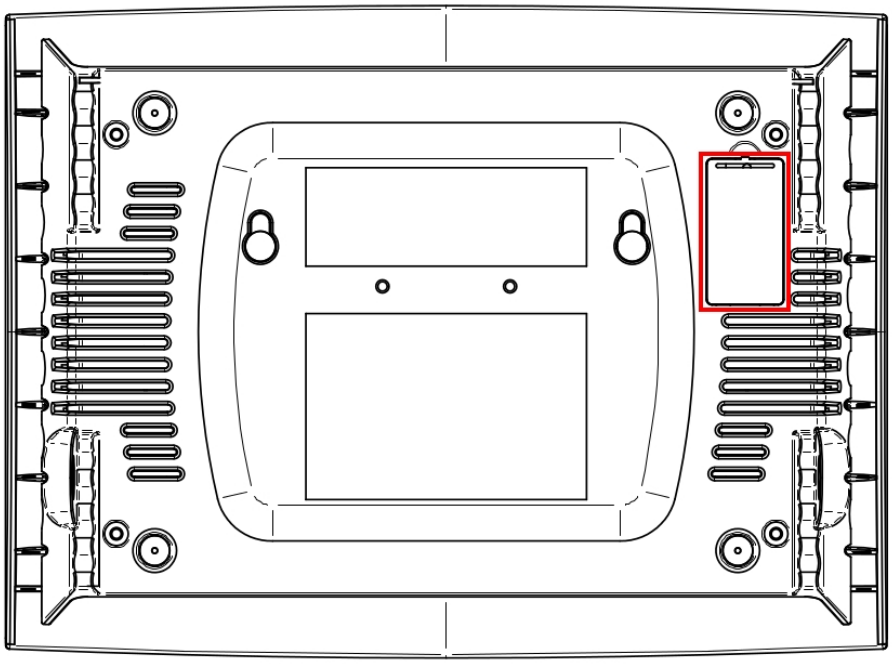


Fig. 19: **Internal module SIM tray**

Follow these instructions to insert the SIM: first locate the slot and remove the flap (at this stage, the SIM tray is visible). Then:

(1) Push the fastening in the direction indicated in the *OPEN* label until the SIM card tray is released.

(2) Lift the upper part of the tray.

(3) Fully insert the SIM card between the guides.

(4) Return the insertion tray to its original position.

(5) Gently press on the insertion tray and push the fastening towards the inside. The card should be fully inserted.

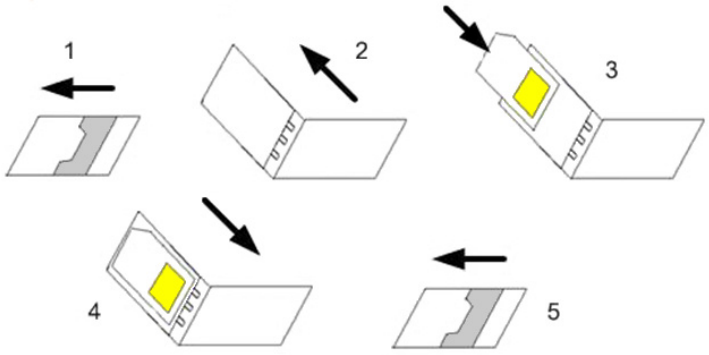


Fig. 20: **Instructions to insert the SIM in the internal module**

Appendix A Technical Information

A.1 Troubleshooting

Below, you will find a table that will help you solve problems during the installation of the router. If you cannot solve the problem, please ask your distributor for additional information.

Symptom	Solution
None of the LEDs lights up on the router.	Check the power supply to the router (power source, ON/OFF switch, main power outlet).
You have forgotten the access password for the router.	Ignore the configuration by using the RST button (as explained in the relevant section).
The *LAN Switch* LED never lights up in green.	Check the Ethernet cable and the connection to the network. Check the appropriate license is available for its use.
The *Eth WAN* LED never lights up in green.	Check the Ethernet cable and the connection to the network.
The *Wi-Fi* LED never lights up in green.	Check the configuration for your device and that for the remote station(s). Check the appropriate license is available for its use.
The *USB* LED never lights up in green.	Check that the device inserted in the USB connector is supported by the router. Please check the Teldat website http://www.teldat.com to view the list of supported 3G USB modems. Check the appropriate license is available for its use.

A.2 Updating the software

The **Teldat K** family can be updated to new releases. Please consult your distributor for further details on new releases.

There are various ways to update a Teldat router: please see the software upgrading manual (“ *Teldat-Dm 748-I Software Updating*”) for further information.

The software required to update Teldat routers is supplied in a format known as **distribution**. This consists of a single file which contains all the files needed to update your device, as well as in-depth information on the content.

A.3 Connecting with the router

As the router doesn’t have a console in order to access the CLI, you need to carry out the following instructions given below.

For the first connection, you need to access the router via telnet using address 192.168.1.1. This is the address established in the Ethernet0/0 interface in the default configuration used to boot the router.

The connection is carried out through the Switch, which has the Ethernet0/0 interface.

If the router is a **Teldat K** with a 1-GE-LAN license, then the connection is via the WAN as the LAN will be inactive and the WAN becomes the Ethernet0/0.

A.4 Licenses

The **Teldat K** router family offers a series of licenses among which the following stand out:

Teldat KF (this does not accept any WWAN module):

Basic: 1xGE-WAN + 4xGE.

Optional: WiFi, USB, hardware encryption.

Teldat K (this always includes the WWAN module):

Basic: 4xGE.

Optional: WiFi, USB, hardware encryption, 1xGE-WAN, 1xGE-LAN (disables 4xGE switch).

Below, you can find the information on the optional licenses for each router in the **Teldat K** family.

WiFi: Activation license for the WLAN 802.11bgn.

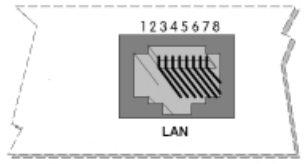
USB: Activation license for the USB port to be used for the WWAN modems.

Hardware encryption: Activation license for the hardware encryption.

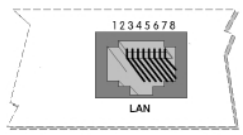
1xGE-LAN: Activation license for the for the GE port as a LAN port, disabling the switch.

A.5 Connectors

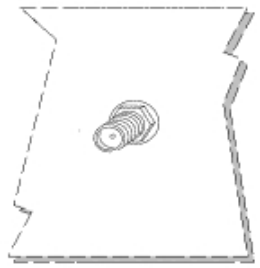
A.5.1 LAN Connector

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.5.2 WAN Connector

RJ45 WAN	RJ45 PIN	FE Signals	GE Signals	POE Signals
	**1**	BI-DA+	BI-DA+	POE+(A)
	2	BI-DA-	BI-DA-	POE+(A)
	3	BI-DB+	BI-DB+	POE-(A)
	4	--	BI-DC+	POE+(B)
	5	--	BI-DC-	POE+(B)
	6	BI-DB-	BI-DB-	POE-(A)
	7	--	BI-DD+	POE-(B)
	8	--	BI-DD-	POE-(B)

A.5.3 WWAN Connector (female)

	PIN	ANT
	**Internal**	RF in/out
	External	GND

A.5.4 WLAN Connector (male)

	PIN	ANT
	**Internal**	RF in/out
	External	GND

A.5.5 USB Connector

USB Type A	PIN	USB
	**1**	VCC
	2	DATA-
	3	DATA+
	4	GND
	Shell	Shield

A.5.6 Power Supply Connector

PIN	ANT
Internal	POSITIVE
External	NEGATIVE

A.6 Technical Specifications

A.6.1 Hardware Architecture

PROCESSORS	Freescale QorQ
MEMORY	128 Mbytes in SDRAM
STORAGE UNIT	FLASH Memory (32 Mbytes)

A.6.2 LAN Interface

PROTOCOLS	Ethernet (802.3)
PORTS	4 port Switch managed with MDI/MDX autodetection.
SPEED	10/100/1000 Mbps (BaseT)
CONNECTOR	RJ45 female

A.6.3 WAN Interface

STANDARDS	Ethernet (802.3)
SPEED	10/100/1000 Mbps (BaseT)
CONNECTOR	RJ45 female

A.6.4 Wireless WAN Interface

STANDARDS	GPRS, UMTS, HSDPA, HSUPA, HSPA+, LTE … Depends on the router's version of Wireless WAN interface.
SPEED	Depends on the router's version of Wireless WAN interface. Please check the module manual.
CONNECTOR	2 RF SMA Female per module.
ANTENNA	Depends on the type of Wireless WAN module. Please check the antenna catalog for cellular interfaces.

A.6.5 Wireless LAN Interface

STANDARDS	802.11abgn
FREQUENCY	2.4 GHz / 5 GHz
SPEEDs	Depends on the Wireless WAN module
CONNECTOR	3 RF SMA Female

A.6.6 USB Interface

3G USB MODEMS	Please see the Teldat website http://www.teldat.com to get a list of the supported 3G USB modems.
SPEED	The interface complies with the USB 2.0 (480 Mbps) standard; the end speed depends on the 3G USB modem used.
CONNECTOR	USB Type A

A.6.7 Configuration Interface

LOCAL TERMINAL	This does not have a configuration interface.
CONNECTOR	

A.6.8 Power Supply

INPUT VOLTAGE	+12V DC
INPUT CURRENT	1200 mA
JACK	5.5 mm
INTERNAL PIN	2.5 mm

A.6.9 External Power Supply

INPUT VOLTAGE	100-240 V AC
INPUT CURRENT	1.0 A
INPUT FREQUENCY	50-60 Hz

A.6.10 Dimensions and weight

TYPE	Desktop
LENGTH x WIDTH x HEIGHT	242 x 179 x 48 mm
WEIGHT	0.8 kg

A.6.11 Environmental Specifications

TEMPERATURE	OPERATING NORMALLY: 0 °C to 45 °C STORED: -30 °C to 85 °C
RELATIVE HUMIDITY	On: 5 % to 90 %

Appendix B Regulatory compliance and safety information

B.1 Recycling and the Environment

Please do not, under any circumstances, throw away any **Teldat K/KF** with normal domestic waste. Ask your local town hall for information on how to correctly dispose of them in order to protect the environment against e-waste. Always respect the current laws regarding waste material. Anyone found violating the environmental laws will be subject to fines and any additional steps established by law.

All the packing materials i.e. the cardboard box, plastic and any other packaging, together with the pieces making up a **Teldat K/KF**, must be recycled complying with the current active laws regarding recycling materials.

The below symbol with a cross over the rubbish container can be seen on the device. This means that, when a device reaches the end of its life, it must be taken to the official recycling/disposal centers where it must be disposed of in an environmentally responsible manner and separately from normal domestic waste.

B.2 Translated Safety Warnings

	The screws must go into a wall stud (wood) or a wall anchor of the appropriate type for the wall. Screws into drywall are not strong enough to mount the router.
	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 install the screws in drywall, use hollow-wall anchors (8 mm – 5/16 inch) to secure the screws. If the screws are not properly anchored, the strain of the cables connected to the router back panel could pull the router from the wall.
	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.
	The equipment must be used with the power supply provided by the manufacturer, or equivalent.
	El equipo debe ser usado con la fuente de alimentación proporcionada por el fabricante, o una equivalente.
	The electric current in power cables, telephone lines and communication cables is dangerous. To prevent electric shocks, before installing, handling or opening the equipment covers, connect and disconnect the cables following the steps set forth in *Connecting* on page 12 and *Disconnect* on page 13.
	La tensión eléctrica de los cables de alimentación, de los cables de la línea telefónica y de los cables de comunicación es peligrosa. Para evitar descargas, antes de instalar, mover o abrir las cubiertas de este equipo, conecte y desconecte los cables siguiendo el orden que se detalla en los apartados “Conectar” y “Desconectar”.
	All interconnected communication devices should be plugged to THE SAME GROUNDED POWER OUTLET, which should at the same time be of good quality (lower than 10 ohms). Whether the workplace is provided with an uninterrupted power supply system (UPS), regulated supply or it is independent from the rest (such as lighting, etc.); it is highly recommended that all data devices should be connected to the same power source. This will avoid operating and premature aging problems of drivers and other components.
	Todos los equipos de comunicaciones interconectados deberán estar unidos al UNA MISMA TOMA DE TIERRA, a ser posible de buena calidad (inferior a 10 ohmios). Si la instalación está dotada de un Sistema de Alimentación Ininterrumpida (SAI), alimentación estabilizada, o bien es independiente del resto (alumbrado, etc.), conecte todos los equipos de comunicaciones a la misma fuente de alimentación. Así, se ahorrará problemas de funcionamiento y envejecimiento prematuro de drivers y demás componentes.

B.3 Declaration of Conformity

Compliance Information for the **Teldat K/KF** routers relevant to the European Union and other countries following the EU Directive 1999/5/EC (R&TTE Directive)

This section contains compliance information for **Teldat K/KF**routers. This information is relevant to the European Union and other countries that are following the EU Directive1999/5/EC. You will find the following information in this section:

- Declaration of Conformity with Regard to the EU Directive 1999/5/EC (R&TTE Directive).
- Countries where the equipment is intended to be used.
- CE Marking.

  Standards.

  National Restrictions.
- Product Usage Restrictions.

  2.4 GHz Restrictions.

5 GHz Restrictions.

- Third-Party Software or Firmware.
- Technical Documents on http://www.teldat.com

B.3.1 Declaration of Conformity with regard to the EU Directive 1999/5/ED (R&TTE Directive)

Български [Bulgarian]	Това оборудване отговаря на съществените изисквания и приложими клаузи на Директива 1999/5/EC.
Česky [Czech]:	Toto zařizeni je v souladu se zakladnimi požadavky a ostatnimi odpovidajicimi ustanovenimi Směrnice 1999/5/EC.
Dansk [Danish]:	Dette udstyr er i overensstemmelse med de vasentlige krav og andre relevante bestemmelser i Direktiv 1999/5/EF.
Deutsch [German]:	Dieses Gerat entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
Eesti [Estonian]:	See seade vastab direktiivi 1999/5/EU olulistele nouetele ja teistele asjakohastele satetele.
English:	This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]:	Este equipo cumple con los requisitos esenciales asi como con otras disposiciones de la Directiva 1999/5/CE.
Ελληνική [Greek]:	Αυτός ο εξοπλισμός είναι σε συμμόρφωση με τις ουσιώδεις απαιτήσεις και άλλες σχετικές διατάξεις της Οδηγίας 1999/5/EC.
Francais [French]:	Cet appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la Directive 1999/5/EC.
Islenska [Icelandic]:	Tetta taki er samkvamt grunnkrofum og odrum videigandi akvadum Tilskipunar 1999/5/EC.
Italiano [Italian]:	Questo apparato e conforme ai requisiti essenziali ed agli altri principi sanciti dalla Direttiva 1999/5/CE.
Latviski [Latvian]:	Šī iekārta atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]:	Šis įrenginys tenkina 1999/5/EB Direktyvos esminius reikalavimus ir kitas šios direktyvos nuostatas.
Nederlands [Dutch]:	Dit apparaat voldoet aan de essentiele eisen en andere van toepassing zijnde bepalingen van de Richtlijn 1999/5/EC.
Malti [Maltese]:	Dan l-apparat huwa konformi mal-ħtiġiet essenzjali u l-provedimenti l-oħra rilevanti tad-Direttiva 1999/5/EC.
Magyar [Hungarian]:	Ez a keszulek teljesiti az alapvető kovetelmenyeket es mas 1999/5/EK iranyelvben meghatarozott vonatkozo rendelkezeseket.
Norsk	Dette utstyret er i samsvar med de grunnleggende krav og andre relevante bestemmelser i

[Norwegian]:	EU-direktiv 1999/5/EF.
Polski [Polish]:	Urządzenie jest zgodne z ogolnymi wymaganiami oraz szczegolnymi warunkami określonymi Dyrektywą UE: 1999/5/EC.
Portugues [Portuguese]:	Este equipamento esta em conformidade com os requisitos essenciais e outras provisoes relevantes da Directiva 1999/5/EC.
Română [Romanian]	Acest echipament este in conformitate cu cerintele esentiale si cu alte prevederi relevante ale Directivei 1999/5/EC.
Slovensko [Slovenian]:	Ta naprava je skladna z bistvenimi zahtevami in ostalimi relevantnimi pogoji Direktive 1999/5/EC.
Slovensky [Slovak]:	Toto zariadenie je v zhode so zakladnymi požiadavkami a inymi prislušnymi nariadeniami direktiv: 1999/5/EC.
Suomi [Finnish]:	Tama laite tayttaa direktiivin 1999/5/EY olennaiset vaatimukset ja on siina asetettujen muiden laitetta koskevien maaraysten mukainen.
Svenska [Swedish]:	Denna utrustning ar i overensstammelse med de vasentliga kraven och andra relevanta bestammelser i Direktiv 1999/5/EC.

Note: A copy of the signed Declaration of Conformity can be obtained from this postal address:

TELDAT Madrid. Isaac Newton, 10 ~ (Parque Tecnológico de Madrid)

28760 Tres Cantos, Madrid (Spain)

Tel.: +34 918 076 565 ~ Fax: +34 918 076 566 ~ International Tel.: +34 918 076 630

B.3.2 Counties where the equipment is intended to be used

This equipment may be operated in							
AT	BE	CY	CZ	DK	EE	FI	FR
DE	GR	HU	IE	IT	LV	LT	LU
MT	NL	PL	PT	SK	SI	ES	SE
GB	IS	LI	NO	CH	BG	RO	TR

B.3.3 CE Marking

For the **Teldat K/KF**, the following CE mark and class 2 identifier are added to the equipment.

B.3.3.1 Standards

The following standards were applied during the assessment of the product against the requirements of the Directive 1999/5/EC:

- Radio: EN 300 328.
- EMC & Immunity: EN 301 489-1, EN 301 489-4, EN 301 489-7, EN 301 489-17, EN 301 489-24.
- Safety: EN 600950-1 y EN 50385.

B.3.3.2 National Restrictions

This product may be used in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Ce produit peut être utilisé dans tous les pays de l'UE (et dans tous les pays ayant transposés la directive 1999/5/CE) sans aucune limitation, excepté pour les pays mentionnés ci-dessous:

Questo prodotto è utilizzabile in tutte i paesi EU (ed in tutti gli altri paesi che seguono le direttive EU 1999/5/EC) senza nessuna limitazione, eccetto per i paesii menzionati di seguito:

Das Produkt kann in allen EU Staaten ohne Einschränkungen eingesetzt werden (sowie in anderen Staaten die der EU Direktive 1999/5/CE folgen) mit Außnahme der folgenden aufgeführten Staaten:

In the majority of the EU and other European countries, the 2.4 and 5 GHz bands has been made available for the use of wireless local area networks (LANs). Table 11 provides an overview of the regulatory requirements applicable for the 2.4 and 5 GHz bands.

Later in this paragraph you will find an overview of countries in which additional restrictions and/or requirements are applicable.

The requirements for any country may evolve. Teldat recommends that you check with the local authorities for the latest status of their national regulations for 2.4 and 5 GHz wireless LANs.

Table 11. Overview of Regulatory Requirements for 2.4 and 5 GHz Wireless LANs

Frequency Band (MHz)	Max Power Level (EIRP) (mW)	Indoor ONLY	Indoor & Outdoor
2400-2483,5	100		X
5150-5350	200	X	
5470-5725	1000		X

The following countries have restrictions and/or requirements in addition to those given in the Table 11:

Belgium

For 2.4 GHz, the product should not be used outdoors in the band 2400 - 2454 MHz.

France

For 2.4 GHz, the product should not be used outdoors in the band 2454 – 2483.5 MHz. There are no restrictions when used in other parts of the 2.4 GHz band OR when used indoors. Check http://www.arcep.fr/ for more details.

Pour la bande 2,4 GHz, l'équipement ne doit pas être utilisé en extérieur dans la bande 2454- 2483,5 MHz. Il n'y a aucune restriction pour son utilisation dans d'autres parties de la bande des 2,4 GHz ainsi que pour une utilisation en intérieur. Consultez http://www.arcep.fr/ pour de plus amples détails.

Applicable Power Levels in France (2.4 GHz only)		
Location	Frequency Range (MHz)	Power (EIRP)
Indoor (No restriction)	2400-2483,5	100 mW (20dBm)
Outdoor	2400-2454 2454-2483,5	100 mW (20 dBm) 10 mW (10 dBm)

Italy

This product meets the National Radio Interface and the requirements specified in the National Frequency Allocation Table for Italy. Unless this 2.4-GHz wireless LAN product is operating within the boundaries of the owner's property, its use requires a "general authorization." Please check http://www.comunicazioni.it/it/ for more details.

Questo prodotto è conforme alla specifiche di Interfaccia Radio Nazionali e rispetta il Piano Nazionale di ripartizione delle frequenze in Italia. Se non viene installato all'interno del proprio fondo, l'utilizzo di prodotti Wireless LAN a 2,4 GHz richiede una "Autorizzazione Generale". Consultare http://www.comunicazioni.it/it/ per maggiori dettagli.

Denmark

In Denmark, the band 5150 – 5350 MHz is also allowed for outdoor usage.

I Danmark må frekvensbåndet 5150 - 5350 også anvendes udendørs.

Latvia

The outdoor usage of the 2.4 GHz band requires an authorization from the Electronic Communications Office. Please check http://www.esd.lv for more details.

2.4 GHz frekve#u joslas izmantošanai #rpus telp#m nepieciešama at#auja no Elektronisko sakaru direkcijas. Vair#k inform#cijas: *http://www.esd.lv* .

Note

(1) Although Norway, Switzerland and Liechtenstein are not EU member states, the EU Directive 1999/5/EC has also been implemented in those countries.

(2) The regulatory limits for maximum output power are specified in EIRP.

The EIRP level of a device can be calculated by adding the gain of the antenna used (specified in dBi) to the output power available at the connector (specified in dBm).

B.3.4 Product Usage Restrictions

This product is designed for indoor usage only. Outdoor usage is not recommended, unless otherwise noted.

Frequency Bands and Restrictions		
Frequency Band	Restrictions	RF - Radiated Power
2400 - 2454 MHz	None	100 mW e.i.r.p.
2400 - 2483.5 MHz	None	10 mW e.i.r.p.
2454 - 2483.5 MHz	Yes	100 mW e.i.r.p.
5150 - 5250 MHz	Yes	200 mW e.i.r.p.
5250 - 5350 MHz	Yes	200 mW e.i.r.p.
5470 - 5725 MHz	Yes	1000 mW e.i.r.p.

B.3.4.1 2.4 GHz Restrictions

This product is designed for use with the standard, integral or dedicated (external) antenna(s) that is/are shipped together with the equipment.

B.3.4.2 5 GHz Restrictions

This product has been designed for indoor use only when using channels 36, 40, 44, 48, 52, 56, 60 or 64 (5150-5350 MHz).

The dynamic frequency selection (DFS) and the transmission power control (TPC) are enabled to guarantee that the product complies with the EU directives.

This product is designed to be used with the antennas defined by the manufacturer.

B.3.5 Third Party Software or Firmware

The use of software or firmware not supported/provided by Teldat may result in the equipment no longer being compliant with the regulatory requirements.

B.3.6 Technical Documents on http://www.teldat.com

For further information on how to find technical documents on the Teldat website, please insert the following corporate page in your browser: http://www.teldat.com

B.4 Standards Compliance

B.4.1 FCC Regulatory Approval and Compliance

B.4.1.1 Modification statement

Teldat S.A. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

B.4.1.2 Interference statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

B.4.1.3 Wireless notice

This equipment complies with FCC exposure limits set forth for an uncontrolled environment. The antennas should be installed and operated with minimum distance of 20 cm between the radiator and your body. Antenna gain must be below:

Technology	**Frequency (MHz)**	**Maximum Antenna Gain (dBi)**
LTE Band 17	706.5	5.0
GPRS 1 UL	824	3.5
UMTS	824	3.5
LTE Band 4	1710.7	5.0
UMTS (AWS)	1700	5.0
GPRS 1 UL	1850	3.0
UMTS	1850	3.0

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The distance between different transmitter antennas must be greater than 20 cm.

B.4.1.4 FCC Class A digital device notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.