



Regesta PLC

Installation Manual

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I Related Documents

Teldat Dm748-I *Software Updating*

Teldat Dm781-I *Cellular Interface*

Chapter 1 About this Manual

This is the installation manual for the Regesta PLC router and contains information on how to correctly install this device in a working environment.

1.1 Supported devices

The information provided in this installation manual only applies to the **Regesta Compact PLC** router, models 2G / 3G.

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 available features in the Regesta PLC.
- Technical specifications.
- Power supply requirements.
- A description of the device LEDs and connectors.
- Troubleshooting.

1.5 What is not in this manual?

This document does not contain information about the device software or its configuration. For information on how to configure this device, please see the relevant protocol manuals found in 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, as well as information on a given 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 Regesta PLC Router

2.1 Features

The Regesta PLC router family is a range of IP routers especially designed to operate in hostile and extreme environments. Thanks to their ruggedized mechanics and special characteristics, which allow them to bear extreme temperatures, these routers are particularly suited for: industrial environments, industrial telecontrol, distribution installations for electricity, gas, water, etc.

The main feature that this router family offers is allowing a virtual concentrator integrated in a management system (i.e., a system software that includes a DLMS client) and the smart meters registered on a PLC PRIME network (controlled by the Regesta PLC) to communicate. In this scenario, the Regesta PLC works as Base Node. The main communication method is a TCP transport layer for DLMS, with extensions for optimal multiplexing of IEC 61334-4-32 connections (also known as Ticket 67) over a Wireless WAN (WWAN) data network on private or public networks or a LAN connection. The number of smart meters controlled depends on the license.

The Regesta PLC can also act as Service Node. In this case, the Regesta PLC allows PRIME communications to be transferred over an Ethernet interface using the specifications defined at the PRIME Auxiliary nodes connection proposal for Multi transformer Substations (also known as Ticket 65).

Thanks to its modular design, this device can quickly adapt to the latest WWAN technologies. The Regesta PLC is compatible with wireless technologies such as GPRS, EDGE, UMTS, HSDPA, HSUPA, HSPA+, LTE, CDMA 2000 1xRTT, CDMA Ev-Do. The basic license makes connection through the GPRS/EDGE technology possible. Additional licenses allow technologies with a wider bandwidth to be supported. The device also has space for 2 SIM cards: one active SIM and the other for backup.

As for LAN networks, this device incorporates two port 10/100 BaseT LAN Ethernet ports (one of them is optional and can support up to 10KV of voltage isolation).

The device's RS-232 console port can be used as a DCE asynchronous serial communications port with a maximum speed of 38400 bps and without control signals. The device can incorporate two additional asynchronous serial ports with a maximum speed of 115200 with DCE RS-232 technology or with 2-4 wire RS-485/RS-422. The serial port connections are based on pluggable connectors.

The device incorporates a protective casing that prevents the connectors from being touched while the device is powered.



Fig. 1: Regesta PLC

2.1.1 Power supply

For further information on the Regesta PLC power supply, please see [Power source](#) on page 14.

2.1.2 Hardware monitoring

The quickest way to monitor the state of the Regesta PLC hardware is through the LEDs on the front panel. The LEDs provide visual information on the state of the hardware components, indicating connectivity, data flow, etc.

For further information on the LED panel, please see section [Front panel](#) on page 6.

Chapter 3 Components and Power Supply

The following chapter provides detailed information on the chassis of the Regesta PLC and its components. This information includes:

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

3.1 Components

3.1.1 Front panel

The front panel includes the status LEDs.

The following figure shows the front panel.



Fig. 2: Front Panel

While the device is in startup mode, LED L lights up in green. Once the device has started up, the LEDs indicate the following:

Table 1: LEDs

LED	Associated Interface	Status	Description
ON	Power	Off	Device is not powered.
		Green	Device is powered.
P	PLC interface	Off	For Base Node operation mode: PRIME PLC interface is disabled, unavailable or not installed.
		Red	PRIME PLC is running but no SNs are currently detected.
		Amber	PRIME PLC is running and SNs are detected, but the DC (Data Concentrator) connection is not established.

		Green	PRIME PLC is running, SNs are detected and DC connection is working. PRIME traffic can be sent through PLC interface.
		Off	PRIME PLC interface is disabled, unavailable or not installed.
		Red	PRIME PLC interface is running, but SN is not connected to BN.
		Green	PRIME PLC is running and connection to BN is established. PRIME traffic from UDP/IP can be sent to PLC interface.
			<ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred. <p>For Service Node operation mode:</p>
S	Cellular interface	Green	SIM1 operating SIM. This is processing traffic through the carrier for the SIM installed in this tray.
		Amber	SIM2 operating SIM. This is processing traffic through the carrier for the SIM installed in this tray.
C	Cellular interface	Red	Cellular interface is unavailable, not installed or not registered.
		Amber	The device has registered in the network and is establishing the PDP connection.
		Green	The device is registered, PDP connection is established and IP traffic can be sent through the CELLULAR interface.
			<ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred.
L	Cellular interface corresponding to the active SIM.	Off	Cellular interface is not active.
		Red	Coverage level below -100dBm.
		Amber	Coverage level between -90dBm and -100dBm.
		Green	Coverage level above -90dBm.
E1	Ethernet (LAN) interface 1	Off	Ethernet port 1 is disabled or connection is not established.
		Green	Ethernet connection (link) established: <ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred.
S1	Multi standard serial interface 1	Off	Serial port 1 is disabled or not initialized.
		Green	Port is in active state, shows interface activity: <ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred.
E2	Ethernet (LAN) interface 2	Off	Ethernet port 2 is disabled or connection is not established.
		Green	Ethernet connection (link) established:

			<ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred.
S2	Multi standard serial interface 2	Off Green	<p>Serial port 2 is disabled or not initialized.</p> <p>Port is in active state, shows interface activity:</p> <ul style="list-style-type: none"> • Steady: Data is not being transferred. • Flashing: Data is being transferred.

Please note that some LEDs may behave differently depending on how the device is configured.

3.1.2 Connector panel

The connector panel is covered by a protective casing. To access the connection panel you need to remove the protection. For further information on how to remove/install the protective casing, please, see [Removing/Installing the connector cover](#) on page 10.

The following figure shows the connector panel. This panel includes all Regesta PLC router connectors.

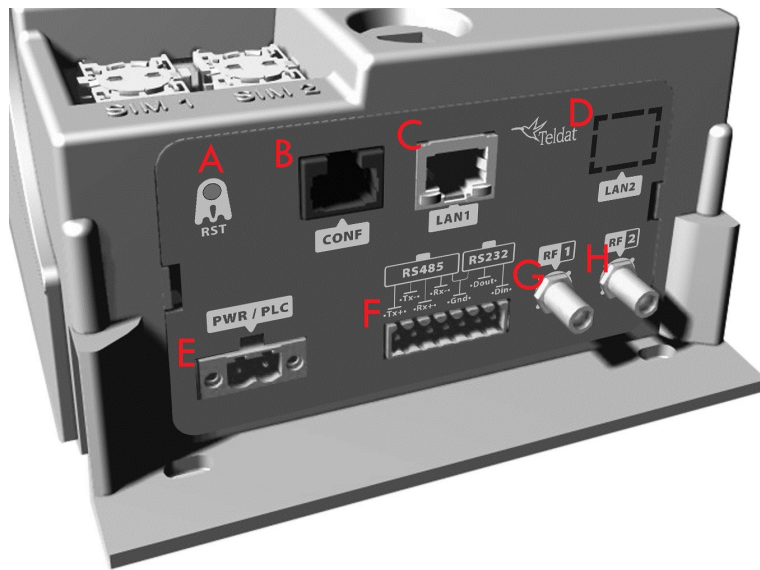


Fig. 3: Connector Panel

The connector panel components are as follows:

Table 2: Connector panel components

Item	Description
A	RST. Reset button. For further information on how the reset button works, please see RST button on page 15.
B	CONF. RJ-45 connector providing access to the device's local console for configuration and monitoring purposes. (This connector can also be used as an RS-232 asynchronous DCE serial port.)
C	Fast Ethernet Port 1.
D	Fast Ethernet Port 2 (Optional). This port can support up to 10 KV of voltage isolation, depending on model.
E	POWER/PLC. Power connection and PLC signal injection. For further information on the power connection, please see Power source on page 14.
F	RS485,RS232. For more information on the connector for serial ports, 2-4 wire RS-485/RS-422 and DCE RS-232, see Connecting the serial ports on page 18.

G	RF1. WWAN antenna connector.
H	RF2. WWAN antenna connector.

3.1.3 Underside panel

The router identification label is located on the underside panel. It has several perforations for different mounting options. The following figure shows the underside panel:

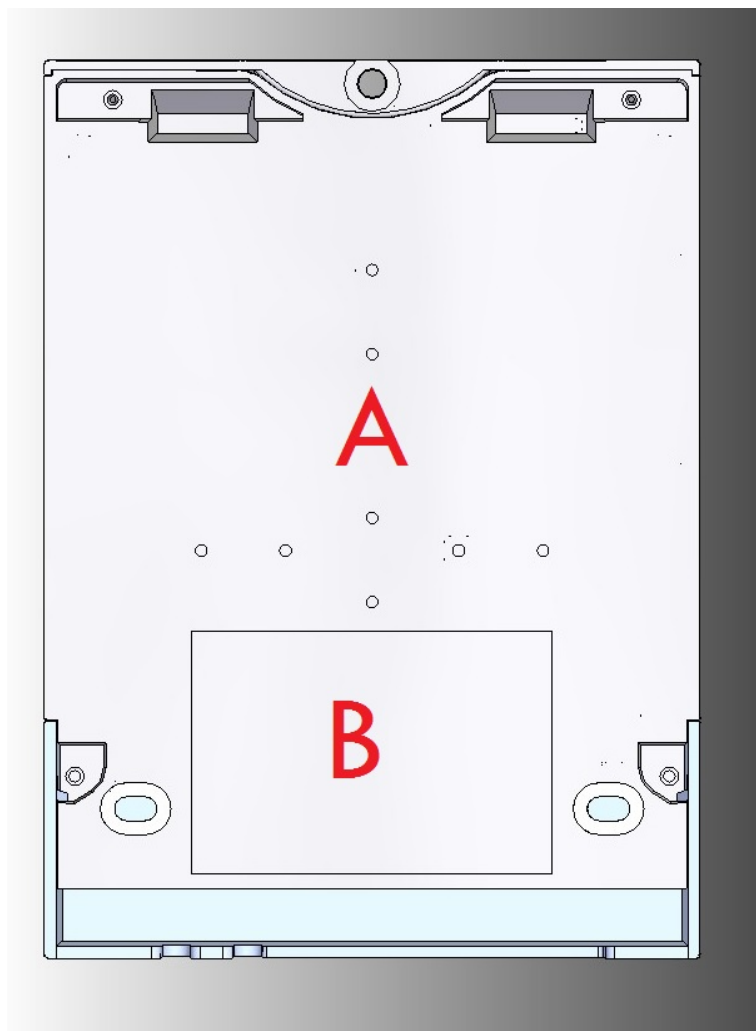


Fig. 4: Underside Panel

The following components can be found on the underside panel:

Table 3: Underside panel components

Item	Description
A	Slots for the accessories to attach the device to a DIN rail mount. For further information on this accessory, please see section Installing a DIN rail mount accessory on page 12.
B	Flat area where the product information label is placed. This label contains information on the device model, MAC, serial number, etc.

3.2 Assembly

3.2.1 Removing/Installing the connector cover

The Regesta PLC includes a protective case for the connectors. The main function of the protective case is to protect against accidental electrical discharge, which can prove dangerous. Thus, direct contact with the connectors is avoided while the device is operating.

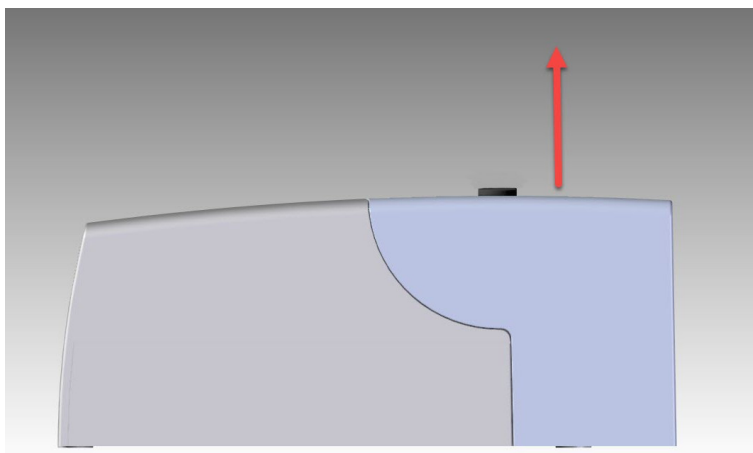
To remove the protective case, carry out the following steps:

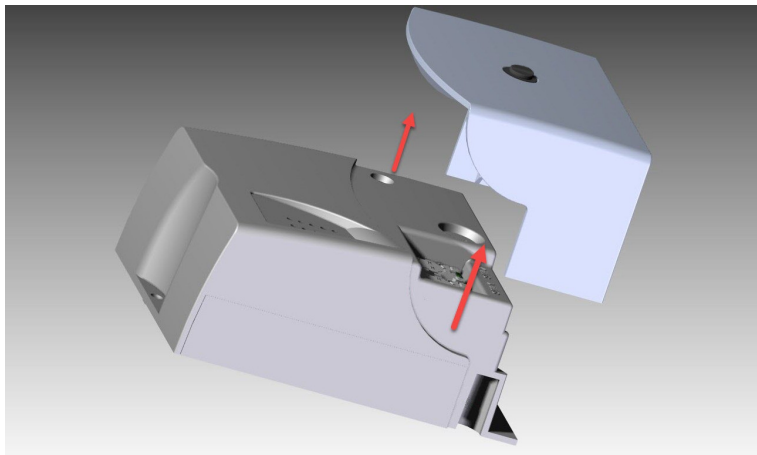
The middle of the front panel contains a fastening mechanism to lock the protective case in place. To remove the case, rotate the fastening 90° to the right or left.

The following figure shows you how to remove the protective case from the device.



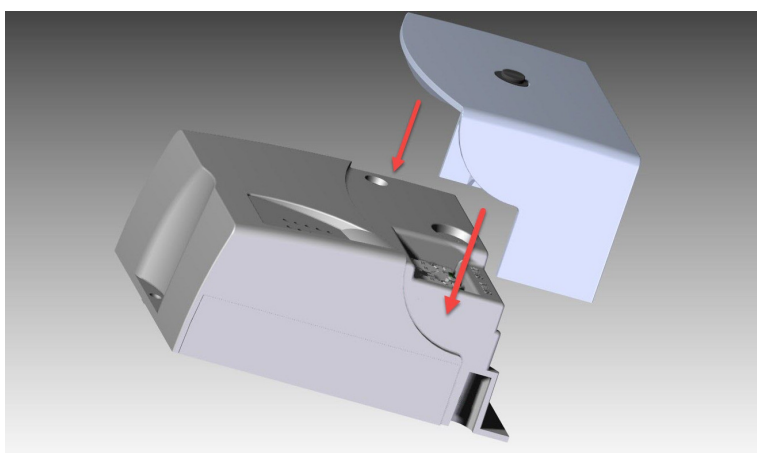
Slide the case up as shown:





To replace the protective case, follow the steps below.

First, slide the case down into the correct position on the device:



To lock the case into place, move the fastening mechanism to a horizontal position and push down. You should hear a little click.

**Warning**

The connector cover should be in place before the device is powered on.

3.2.2 Installing a DIN rail mount accessory

The Regesta PLC can be installed on a standard DIN rail. A special kit is needed to mount the device on a DIN rail. This kit must be ordered from the router provider. The DIN rail kit allows the device to be installed in several different positions.

The kit contains 2 screws to fix the rail mount to the underside of the device. There are two sets of holes on the underside that allow you to place the DIN rail mount in two different positions:

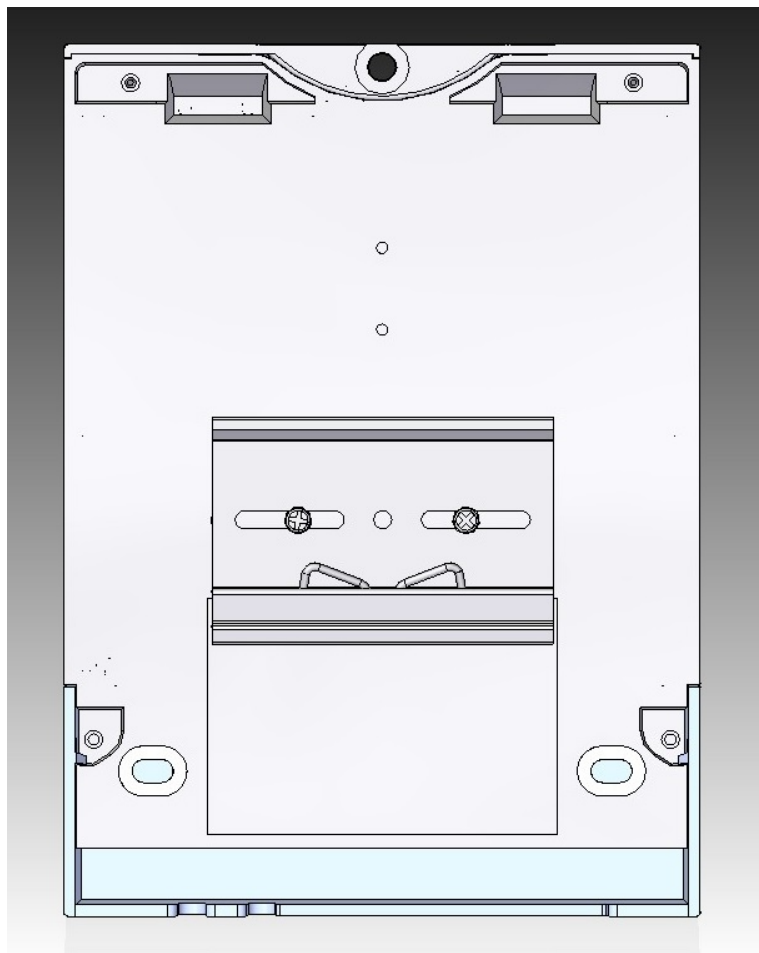


Fig. 10: DIN rail mount: Position 1

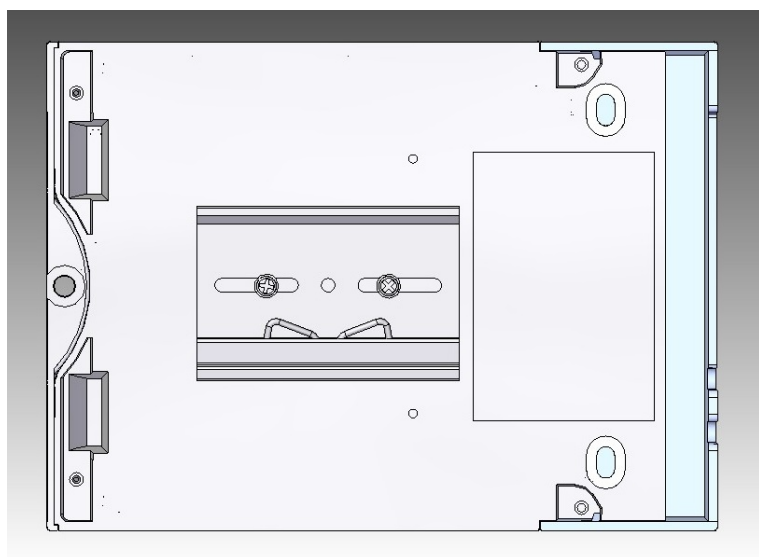


Fig. 11: DIN rail mount: Position 2

3.2.3 Wall mounting

The Regesta PLC has 3 holes for mounting the device on the wall. To ensure it is properly fastened, screws must be inserted through the holes and secured to the wall. Before mounting the device on the wall, remove the protective casing.

The following image shows the position of the fastening holes:

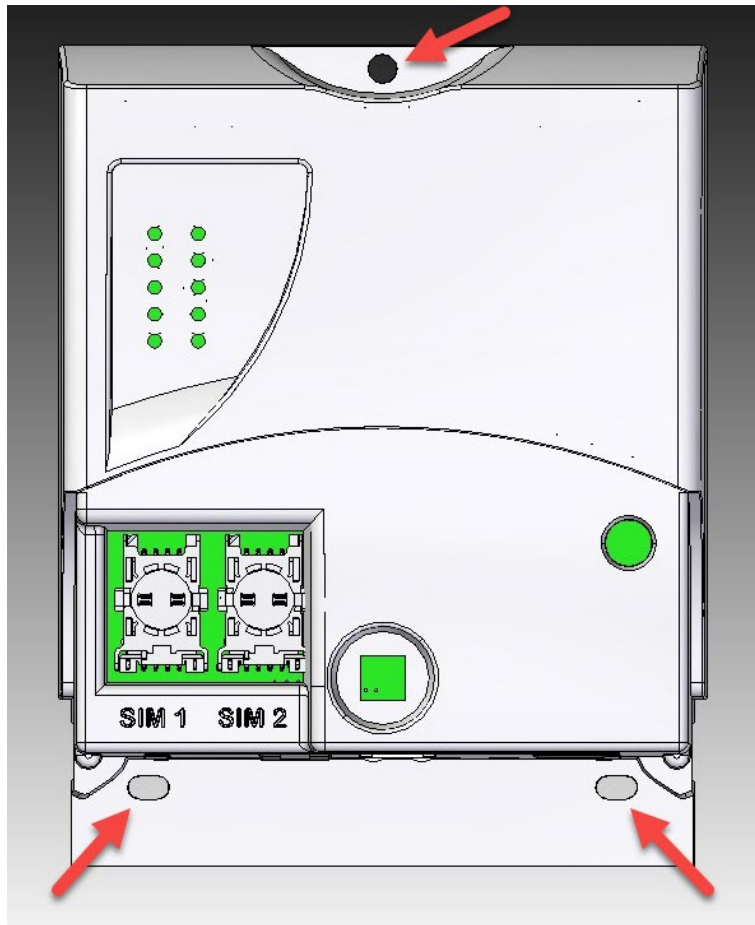


Fig. 12: Holes for wall mounting.

3.3 Power source

The Regesta PLC is powered with an external AC source. Nominal power voltages are 100-240 V AC.



Note

Before connecting the router, please take time to read the following instructions carefully!

3.3.1 Workplace conditions. Main characteristics

- The device should not be placed amongst papers, magazines or other elements that could hinder natural air circulation.
- 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 forth in [Connecting](#) on page 15 and [Disconnecting](#) on page 15.

3.3.2 Connecting the power supply

To connect the power supply to the device, please follow the steps set forth in section [Connecting](#) on page 15.



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).

We recommend connecting all data devices to the same power source regardless of whether the workplace is provided with an uninterrupted power supply (UPS), a regulated supply or it is independent of other power supplies (such as lighting, etc.). This will help to prevent malfunctions and a premature aging of the drivers and other components.

3.3.3 Connecting

- Ensure that the power supply is NOT connected to either the electricity supply or the router.
- Connect all data cables.
- Connect the power supply cable to the device.
- Install the protective case for the connectors.
- Connect the power supply cable to the electricity supply.

3.3.4 Disconnecting

- Disconnect the power supply from the electricity supply.
- Remove the protective case.
- Disconnect the power supply from the router.
- Disconnect the data cables.

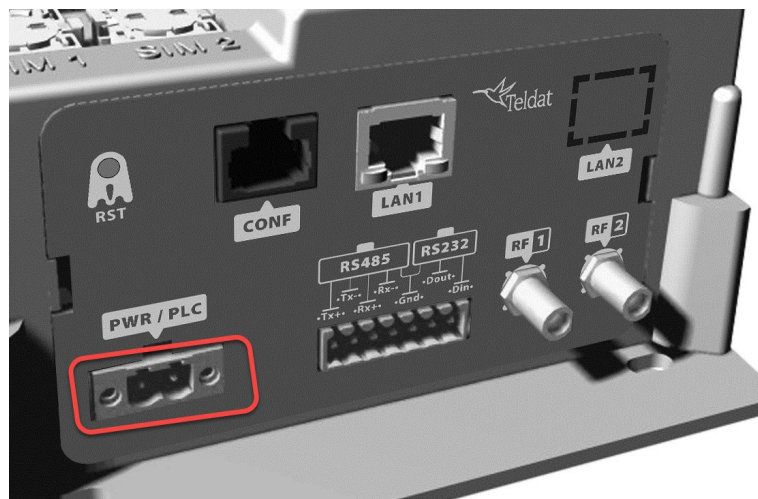


Fig. 13: Power supply connector

The connector has 2 terminals for powering.

To connect the power to the device, please follow the steps set out in [Connecting](#) on page 15: check the power source is NOT connected to the electricity network; find the Power Supply connector (located on the front panel) and insert the power cable connector.

3.4 RST button

The Regesta PLC has a button that can be accessed from the outside and is labeled “RST”. It is located on the connector panel and has two functions.

- To trigger a reboot.
- To restart the device with the default configuration. The default configuration has IP 192.168.1.1 assigned to all

switch ports.

The external button is physically protected so it cannot be accidentally pushed. You need a sharp-pointed object to activate it.

3.4.1 Restarting the device

Carry out the following steps to restart the device:

- (1) Press the RST button. Device restart is indicated by the S,C and L LEDs in off state and the ON LED lighting in green.
- (2) Stop pressing the RST button as soon as the S, C and L LEDs go to off state.
- (3) The device will begin the restart with LEDs S and C off and LEDs L and ON in green.

3.4.2 Default configuration

By following these steps, the RST button allows you to boot the device with its default configuration:

- (1) Press the RST button. Device restart is indicated by the S,C and L LEDs in off and the ON LED lights up in green.
- (2) Keep pressing the RST button. The S LED flashes green and the L LED lights up in green while you are still pressing the RST button. This state indicates the device configuration has changed to the default configuration.
- (3) Stop pressing the RST button to allow the device to restart.
- (4) The device will begin the restart with LEDs S and C off and LEDs L and ON in green.
- (5) As the device now has the default configuration, you can access it through the IP (bearing in mind that the default address for the equipment is 192.168.1.1 and that it is accessible from any switch port).

3.5 Connecting the data

The Regesta PLC has the following data connections.

3.5.1 Ethernet ports

The Regesta PLC incorporates up to two 10/100 BaseT Ethernet ports with automatic MDI/MDIX to connect to a local area network (LAN). Two LEDs, labeled "E1" and "E2", indicate the physical connection state. The LAN2 (E2) port is optional and the device may not include said port.

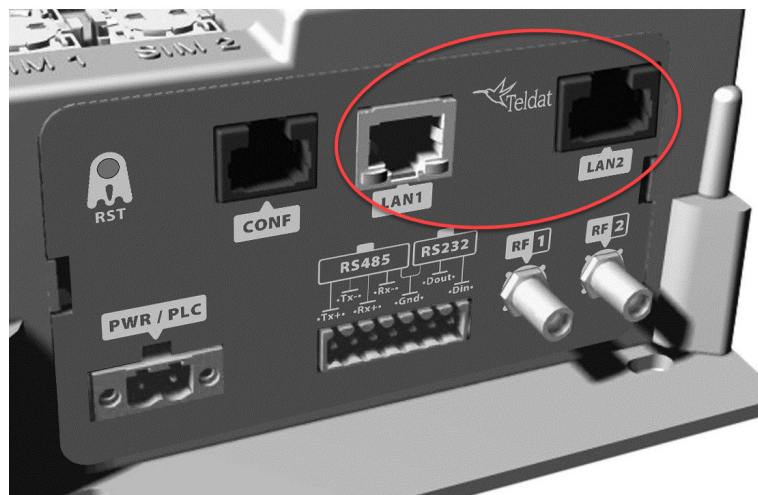


Fig. 14: LAN ports

3.5.2 WWAN antenna connection (RF connectors)

The Regesta PLC has two connectors for RF antennas. To assemble and disassemble the antennas, simply screw them into the connectors labeled RF1/RF2 (located on the connector panel of the device).

The RF1 connector is connected to the module's MAIN connector and the RF2 connector to the AUX connector.

Installing these antennas in the Regesta PLC router is necessary to improve the quality of the signal received and transmitted by the WWAN module (GPRS, UMTS, HSDPA, HSUPA, etc.).

Some WWAN radio technologies (like GPRS or UMTS) only need one antenna to work properly. Depending on the WWAN module installed, the Regesta PLC may only incorporate an RF1 connector. Regardless of the configuration, the antenna on RF1 must be always installed while installing the one on RF2 is optional.

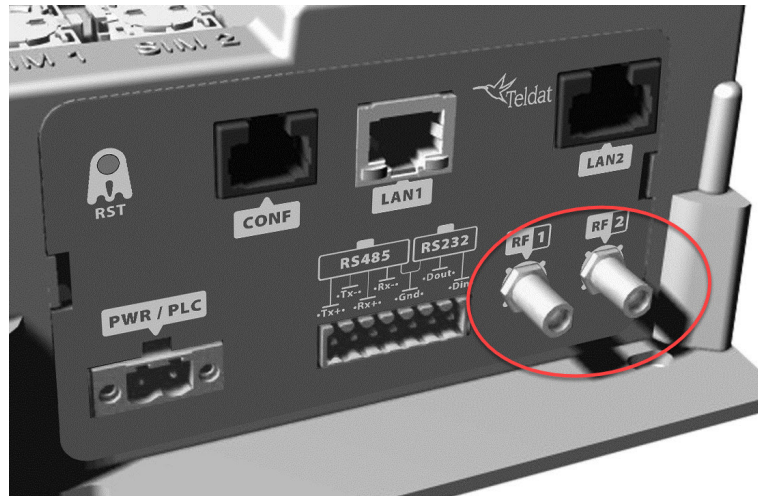


Fig. 15: WWAN antenna connectors



Note

WWAN antennas have to be installed for high-quality performance. All devices in this range run WWAN interfaces with access to the 2G network (GPRS/EDGE). To access the 3G network (UMTS/HSDPA/HSUPA) or HSPA+ the device must have additional licenses installed.

When the RF1 and RF2 antennas are connected via extension cords instead of being directly connected to the router, the minimum distance between them must be 7 cm. The maximum recommended distance between the two antennas is 25 cm.

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

Teldat offers a series of accessories (90° mount antennas, antennas for outdoor installation, antennas for ceiling installation, extension cables, etc.) that allow you to install the devices in different locations.

3.5.2.1 Placing the antenna

Antenna orientation, its location with respect to other wireless devices and radiation devices, such as communication devices, personal computers, etc., can significantly influence device performance.

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

For optimum coverage, carry out the following instructions:

- Whenever possible, place the antenna where there are no physical obstacles. Obstacles between the antenna and the base station degrade the wireless signal. Place the antenna above ground level facing the nearest base station.
- Density of materials also affects antennas. Place them away from any type of wall, metal screens, mirrors, etc.
- Do not place the antenna near columns, which may throw shadows and reduce the coverage area.
- Keep the antenna away from metal pipes, such those used for heating, air-conditioning, etc.
- Please bear in mind that other wireless devices, such as telephones, microwaves, etc., can temporarily interfere with the quality of the radio signal.
- We do not recommend installing antennas near, or between, racks containing communication devices, computers,

etc. Use an extension cable and place the device outside.

The following recommendations are applicable to all wireless devices:

- Do not touch or move the antenna while the device is transmitting or receiving.
- Do not touch any equipment containing devices that radiate, where the antenna is very close to or touching any exposed part of the body (particularly the face and eyes), when it is transmitting.
- Do not install the device in areas where the atmosphere is potentially explosive.
- Wireless devices can cause interference with other devices. Do not use the device in areas where medical equipment is installed.
- To ensure the RED 2014/53/EU directive is complied with, the device must be at least 20 cm away from a person's body when operating.

3.5.3 Connecting the serial ports

The Regesta PLC includes a RJ45 and a 7 pin pluggable connector to provide serial ports. Depending on the model, the 7 pin pluggable connector may be inoperative.

3.5.3.1 Console connector as serial port (CONF connector)

The console port can be converted into an RS-232 asynchronous DCE serial port. This port has the following characteristics:

- (1) DCE port.
- (2) RS-232 norm.
- (3) Maximum speed of 38400 bps.
- (4) Only the following signals are available: RxD (pin 2), TxD (pin 3) and GND (5).
- (5) RJ45 connector.

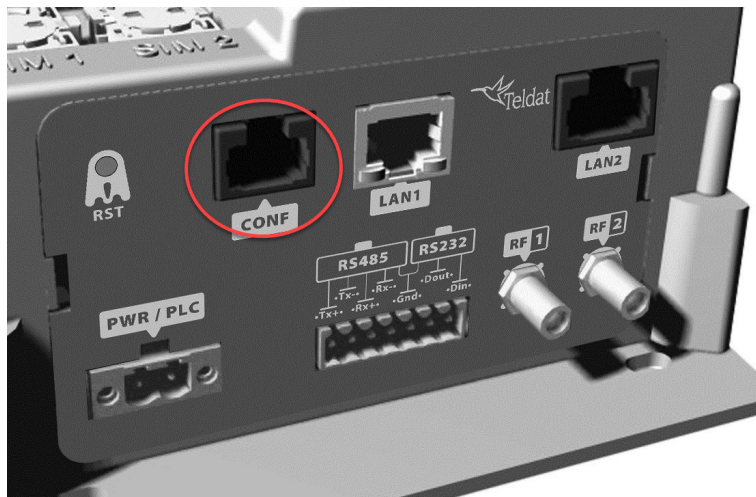


Fig. 16: Console connector

3.5.3.2 Asynchronous serial ports

The Asynchronous Serial Port feature is optional and requires some additional hardware components. Some models are equipped with 2 additional serial ports. The Regesta PLC includes a 7 pin pluggable connector to provide these serial ports. This connector may not work, depending on the model. Check the label to verify whether serial ports are included on the device.

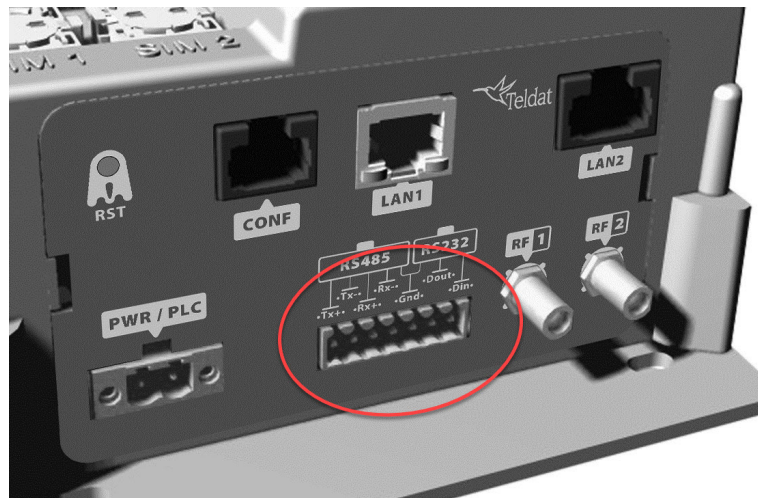


Fig. 17: Asynchronous serial connectors

These serial ports are one RS-232 and one RS-485/RS-422. They have the following characteristics:

3.5.3.2.1 RS-232

- (1) DCE port.
- (2) Maximum speed of 115200 bps.
- (3) Only the following signals are available: Rx, Tx and GND.
- (4) 7 pin pluggable connector, only 3 pins on the right.

3.5.3.2.2 RS-485/RS-422

- (1) 2/4 wires configurable through software.
- (2) Bus termination configurable through software.
- (3) Maximum speed of 115200 bps.
- (4) 7 pin pluggable connector, only 4 pins on the left.

3.5.4 PLC interface

The Regesta PLC incorporates a Power Line Communication (PLC) interface. This interface allows the device to communicate with several compatible PLC devices through the power line. PLC signal injection is made inside the device through the power supply connector. A LED labeled "P" indicates the connection state.

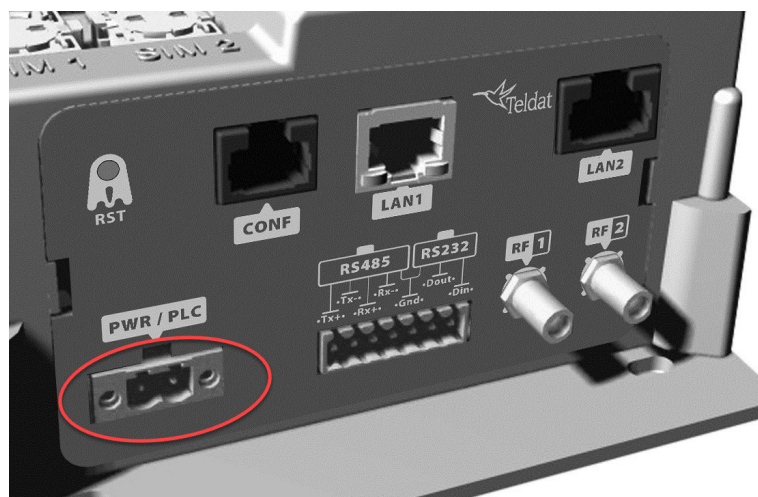


Fig. 18: PLC and power connector

3.6 Installing the SIM card

The Regesta PLC has a Wireless WAN interface that, in order to operate, may require at least one SIM card to be inserted into the device. Some carriers in certain countries provide services (CDMA) that do not require SIM cards.

The Regesta PLC has two SIM trays. Both trays are located under the device's protective case and are labeled SIM1 and SIM2.

In installations where only one SIM card is required, we recommend installing it in the main SIM1 tray.



Warning

Never install the SIM cards when the device is switched on.

Always disconnect the device from the main power supply before installing the SIM cards.

Always disconnect the device before removing the connectors protective casing to access the trays.

When inserting the SIM cards, please protect yourself against electrostatic discharges (ESD).

Do not touch the SIM card connectors.

To access the SIM trays, you need to remove the protective case. Please refer to [Removing/Installing the connector cover](#) on page 10 to learn how to remove the casing.

3.6.1 Identifying the SIM trays

Once you have removed the case, you will be able to see the different components illustrated below.

The Regesta PLC incorporates 2 SIM cards, which allow you to execute some special configurations. For example, when installing two SIM cards one can be used as backup. To carry out this type of configuration, you must assign a tray to each SIM (since they require different configuration parameters).

The SIM trays are identified as SIM1 and SIM2 (i.e., socket 1 and socket 2).



Fig. 19: Location of the SIM1 and SIM2 trays

3.6.2 Procedure to install the SIM

To insert a SIM card in a tray, locate the retaining flap (fastening with OPEN and LOCK on it) so you can open the tray and place the SIM card inside. The steps are as follows:

- (1) Push the fastening in the direction indicated by the arrow with the word *OPEN*.
- (2) Open the upper part of the tray.
- (3) Fully insert the SIM card using the guides; the SIM's notch must be on the right side (as shown).
- (4) Return the tray to its original position.
- (5) While pressing on the tray, push the fastening towards the word *LOCK* until it is firmly in place.

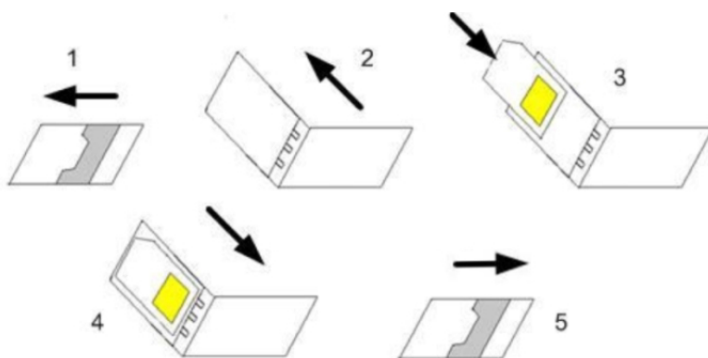


Fig. 20: Inserting the SIM



Chapter 4 Compliance

4.1 Manufacturer information


Brand	Teldat
Manufacturer	Teldat S.A.
Country	Spain
Postal Address	Isaac Newton, 10 Parque Tecnológico de Madrid, 28760 Tres Cantos, Madrid, Spain
International Phone	+34 91 807 65 65

4.2 Safety warnings

	<p>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 15 and on page .</p>
	<p>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 Connecting on page 15 y on page .</p>
	<p>The Regesta PLC is a permanently connected Class II device. Pursuant to safety regulations on electrical overloads, the device must be connected to the main power supply through a thermomagnetic circuit breaker of 1 A min and CE marking.</p>
	<p>Regesta PLC es un equipo de Clase II permanentemente conectado. Para cumplir con las normas de seguridad eléctrica en materia de sobrecargas, este equipo deberá conectarse a la fuente de alimentación a través de un interruptor magnetotérmico de 1 A que cuente con marcado CE.</p>
	<p>The power cable is not supplied with the router. The estimated peak consumption for 230V AC operation is of 100 mA. Any cable with a cable gauge greater than, or equal to, a 0.75 mm² section (AWG18 conductor) and approved by IEC 60227 is acceptable.</p>
	<p>El cable de alimentación no se suministra con el router. El consumo máximo a 230V AC es de, aproximadamente, 100 mA. Cualquier cable con una sección mayor o igual a 0,75 mm² (AWG 18) y aprobado por la IEC 60227 es válido.</p>
	<p>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).</p> <p>It is highly recommended that all data devices be connected to the same power source regardless of whether the workplace is provided with an uninterrupted power supply (UPS), a regulated supply or is independent of other power supplies (such as lighting, etc.). This will help to prevent malfunctions and premature aging of the drivers and other components.</p>
	<p>Todos los equipos de comunicaciones interconectados deberán estar unidos a UNA MISMA TOMA DE TIERRA, a ser posible de buena calidad (inferior a 10 ohmios).</p> <p>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.</p>
	<p>Never install the SIM cards when the device is switched on.</p> <p>Always disconnect the device from the main power supply before installing the SIM cards.</p> <p>Always disconnect the device before removing the casing to access the trays.</p> <p>When inserting the SIM cards, please protect yourself against electrostatic discharges (ESD).</p> <p>Do not touch the SIM card connectors.</p>
	<p>No instale nunca las tarjetas SIM con el equipo encendido.</p>

	<p>Desconecte siempre el equipo de la red antes de instalar las tarjetas SIM.</p> <p>Desconecte siempre el equipo antes de desmontar la carcasa para acceder a las bandejas.</p> <p>Al insertar las tarjetas SIM, protéjase contra descargas electroestáticas (ESD).</p> <p>No toque los conectores de las tarjetas SIM.</p>
	<p>The equipment is intended to be installed by service personnel and only handled by qualified personnel. If not, the device may be damaged and malfunction.</p>
	<p>El equipo está diseñado para ser instalado por personal del servicio técnico y su manejo debe realizarlo personal cualificado. De lo contrario, el equipo puede resultar dañado y quedar inservible.</p>
	<p>The screws must go into wall studs (wood) or wall anchors that are appropriate for the type of wall. Screws into drywall are not strong enough to mount the router.</p>
	<p>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.</p>

4.3 WEEE information

	<p>The crossed-out wheeled bin symbol indicates that the device must be disposed of separately from normal domestic waste at an appropriate waste disposal facility at the end of its useful service life.</p> <p>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.</p>
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4.4 REACH

In compliance with the REACH Candidate List, the delivered product and product packaging do not contain chemical substances above a concentration limit of 0.1% weight by weight (w/w). This declaration will be updated whenever any changes occur or other chemical substances are added to the REACH Candidate List. Information is currently provided to consumers upon request.

4.5 EC declaration of conformity

English (EN)	<p>Teldat S.A. hereby declares that the radio equipment type Access Router is in compliance with:</p> <p>Directive 1999/5/EC (R&TTE)*</p> <p>Directive 2014/30/EU (EMC)</p> <p>Directive 2014/35/EU (LVD)</p> <p>Directive 2009/125/EC (ErP)</p> <p>Directive 2011/65/EU (RoHS)</p>
Spanish (ES) Español	<p>Por la presente, Teldat S.A., declara que el tipo de equipo radioeléctrico Router de Acceso es conforme con:</p> <p>Directiva 1999/5/CE (R&TTE)*</p> <p>Directiva 2014/30/UE (EMC)</p> <p>Directiva 2014/35/UE (LVD)</p> <p>Directiva 2009/125/CE (ErP)</p> <p>Directiva 2011/65/UE (RoHS)</p>

* Will be replaced by Directive 2014/53/EU (RED)

The full text of the EU declaration of conformity is available at the following Internet address:

<http://www.teldat.com>

4.6 CE marking

This equipment is in conformity with the CE procedures and marking.



4.7 National restrictions

In accordance with Article 6(3) of 1999/5/EC R&TTE, we inform you that national restrictions and requirements may apply when it comes to authorization. These can evolve with time. Teldat S.A. recommends that you check with local authorities for the latest status of national regulations.

This product is supplied without antennas. The choice of antennas is left to the discretion of the operator, who is responsible for ensuring they comply with local regulations.

Make sure that the characteristics of the antennas used match the regulations applicable to the installation location.

4.8 Operating frequency

For the operating frequencies working in the device, see Appendix *Radio Information* on page 32.

Appendix A Technical Information

A.1 Troubleshooting

The following table can help you solve problems when installing the device. If you cannot solve the problem, contact your dealer for more information.

Symptom	Solution
None of the LEDs light up on the router.	Check the power supply to the router (power source, main power outlet).
The local console does not respond.	<p>Check the console cable is the right one and it is connected to the device and the asynchronous terminal.</p> <p>Check the terminal has the correct port configured.</p> <p>Check the terminal configuration is 9600 8N1.</p> <p>Check the console is not an events process.</p>
The local console only displays rubbish.	<p>Check the terminal has the correct port configured.</p> <p>Check the terminal configuration is 9600 8N1.</p>
You have forgotten the access password for the router.	Ignore the configuration through the RST button (as explained in the relevant section).
Date and time in the device are lost after reboot.	Parameters configured through the time set command will be lost when the device restarts. Use the NTP protocol to keep the date and time configuration.
The LAN LEDs (E1-E2) do not light up in green.	Check the Ethernet cable and the connection to the network (you may need a crossover cable).
The S LED is red.	<p>Check the SIM card has been inserted correctly,</p> <p>or</p> <p>Check the SIM PIN is correct,</p> <p>or</p> <p>Check the antenna is properly installed (i.e., that it is screwed in correctly),</p> <p>or</p> <p>Get your technical service to check the device is in the optimum position for the service.</p>

A.2 Updating the software

The Regesta PLC router can be updated to new releases. Please contact your distributor for further details on new releases.

There are various ways to update one of our routers: For further information, please see manual *Dm 748-I Software Updating*.

The software required to update one of our 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 contents of the files.

The Regesta PLC incorporates independent modules for the Wireless WAN interface. You can pick modules from different manufacturers or choose several modules from the same provider, depending on the technology used. Generally, the firmware is independent from the device's software. There is an UPGRADE file for each Wireless WAN module. Please ask your distributor for the correct UPGRADE file (according to the module in your device). The manual describing the Cellular interface (Dm781-I) explains how to upgrade the module.

The Regesta PLC also incorporates a PLC module, which needs its own firmware. This PLC module can operate in several modes. To change operating mode, you usually need to change the PLC firmware. This firmware is independent of all other software in the device. Please ask your distributor for the correct PLC UPGRADE file. The manual describing the PLC Gateway (Dm 823-I) explains how to upgrade the module.

A.2.1 Connecting to the router

There are two ways of accessing the device CLI:

- Through the CONF connector.
- Through the Telnet protocol.

A.2.1.1 Connecting through the local console (CONF connector)

The Regesta PLC has a RJ45 female connector on the front panel known as CONF., which provides access to the device local console. To configure this, connect the CONF. port to an asynchronous terminal (or to a PC with terminal emulation).

- Speed: 9600 bps.
- Eight data bits.
- One stop bit.
- No parity bit.
- No type of flow control.

To connect to the configuration port, use the RJ45 cable (provided with the router) and the female RJ45-female DB9 adapter (also provided with the router). If the terminal has DB25 connectors, an additional adapter will be needed.

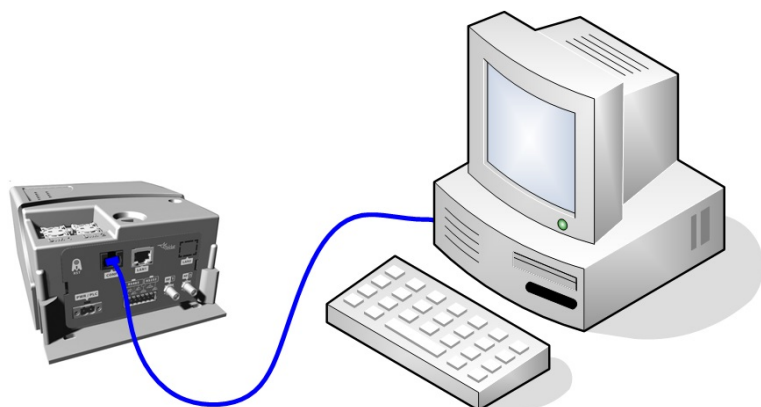


Fig. 23: Connecting for configuration

A.2.1.2 Connecting through an IP terminal (LAN connector)

The Regesta PLC includes a default configuration that activates if you haven't preconfigured anything.

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

- IP address: 192.168.1.1
- IP mask: 255.255.255.0



Note

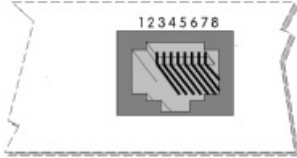
Some devices leave the factory with customized settings. This personalization can mean that the default configuration is different from the one shown above.

This initial configuration allows you to access the device configuration console through the Telnet IP protocol. To do this, carry out the following steps:


- Configure the IP terminal (normally a PC) Ethernet interface with an IP address within the range [192.168.1.2, 192.168.1.254] and with mask 255.255.255.0. For example, 192.168.1.2, 255.255.255.0.
- Connect the IP terminal Ethernet interface to the Regesta PLC LAN connector through the Ethernet cable (RJ45) provided.
- Initiate a Telnet session from the IP terminal to IP address 192.168.1.1 (Regesta PLC default address).
- The default configuration does not ask for credentials (user/password) to access the console.

A.3 Connectors

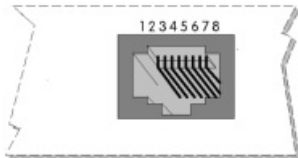
A.3.1 LAN connectors

RJ45	PIN	LAN
	1	Tx+ (input)
	2	Tx- (input)
	3	Rx+ (output)
	4	--
	5	--
	6	Rx- (output)
	7	--
	8	--

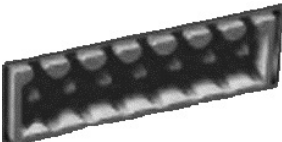
A.3.2 WWAN/cell connectors (female)

RF	PIN	ANT
	Internal	RF in/out
	External	GND

A.3.3 Configuration connector

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

A.3.4 RS-232 serial port connectors

Pins block	PIN	SERIAL
	5	GND
	6	TxD
	7	RxD

A.3.5 RS-485 serial port connectors

Pins block	PIN	SERIAL
	1	2H_R/TX+_4H_TX+
	2	2H_R/TX-_4H_TX-
	3	4H_RX+
	4	4H_RX-

A.4 Technical specifications

A.4.1 PRIME PLC interface

PROTOCOL	PRIME 1.3.6 (Upgradeable PRIME 1.4).
ROLE	Configurable Base Node and Service Node.
COMMUNICATIONS	Single phase injection through CENELEC A band.
TECHNOLOGY	ATMEL ATPL230A chipset.
CONNECTOR	Terminal Block 2 Poles 5mm pitch, is the same as power supply.

A.4.2 LAN interfaces

PROTOCOLS	Ethernet (802.3).
PORTS	2 ports (1 port is optional) with MDI/MDX auto detection with 10KV isolation option (for optional port only).
SPEED	10/100 mbps (BaseT).
CONNECTOR	RJ45 female.
ISOLATION	Standard for E1 interface (1.5 KV), high optional isolation for E2 (up to 10 KV).

A.4.3 Wireless WAN interface

STANDARDS	GPRS, UMTS, HSDPA, HSUPA, HSPA+, LTE ... depending on the device's wireless WAN version.
SPEED	Depends on the device's wireless WAN version. Please see the manual on the relevant module.
CONNECTOR	2 RF SMA female. (the router may only include 1 connector: this depends on the WWAN module technology).
ANTENNA	Depends on the type of wireless WAN. Please see the antenna catalog for Cellular interfaces.

A.4.4 Configuration interface

LOCAL TERMINAL	V.24 9.600-8-N-1-without flow control.
CONNECTOR	RJ-45 female on the device's connector panel.

A.4.5 RS-232 Serial interface

STANDARDS	RS-232. Asynchronous serial port without control signals.
SPEED	From 300 to 115200 bps.
CONNECTOR	Terminal block 4 pin pluggable, on the device's connector panel (optional).

A.4.6 RS-485 Serial interface

STANDARDS	2-4 wires RS-485/RS-422 configurable through software. Bus termination configurable through software.
SPEED	From 300 to 115200 bps.
CONNECTOR	Terminal block 3 pin pluggable, on the device's connector panel (optional).

A.4.7 Power supply

NOMINAL	100-240 V AC.
ABSOLUTE MAXIMUM	85-264 V AC.
FREQUENCY	50-60 Hz
MAXIMUM POWER	9 W.
CONNECTOR	Terminal Block 2 Poles 5mm pitch. Same as the PLC PRIME interface.

A.4.8 Dimensions and weight

TYPE	Plastic ruggedized casing with optional DIN rail mount.
LENGTH x WIDTH x HEIGHT	140 x 80 x 190 mm.
WEIGHT	750 gr.

A.4.9 Environmental specifications

TEMPERATURE	OPERATING NORMALLY: -25 °C to +60 °C STORED: -25° to +70 °C
RELATIVE HUMIDITY	On: 5 % to 93 %

Appendix B Radio Information

B.1 RF GSM/WCDMA specifications

The Regesta PLC model provides WCDMA, GSM, GPRS and EDGE network connectivity over several radio frequency bands under 3GPP Standards.

This product is supplied without antennas. The choice of antennas is left to the discretion of the operator, who is responsible for ensuring they comply with local regulations.

Technology: UMTS(WCDMA)/ HSDPA/ HSUPA/ HSPA+/ DC-HSPA+

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

Technology: GSM / GPRS / EDGE

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