



## Teldat Router iM8-Cx

### Installation Manual

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### **Warranty**

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## I Related Documents

Teldat-DM748-I Software Updating

# Chapter 1 About This Guide

This installation guide for the **Teldat iM8-Cx** router contains information on how to correctly install this device in a working environment.

## 1.1 Supported Devices

The information provided in this installation guide only applies to the **Teldat iM8-Cx** router.

## 1.2 Who should read this manual?

This manual should be read by the support personnel who need to 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 iM8-Cx** router
- Technical specifications
- Power supply requirements
- Elements that can be connected when the router is operating
- How to install and uninstall the modules and power sources
- A description of the device LEDs and connectors
- Troubleshooting

## 1.5 What is not in this manual?

This manual does not contain information relative to 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 or technical specifications, and 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 in case new features are developed.

Contact information:

Web: <http://www.teldat.com> - Email: [support@teldat.com](mailto:support@teldat.com)

Tel.: +34 918 076 565 - Fax: +34 918 076 566

## Chapter 2 Teldat iM8-Cx

### 2.1 Characteristics

#### 2.1.1 Power Supply

For further information on the different **Teldat iM8-Cx** power supplies, please see [Components and Power Supply](#) on page 4, section [Power Source](#) on page 7.

#### 2.1.2 Hardware Monitoring

The LEDs on the front panel are used to monitor the hardware in the **Teldat iM8-Cx** router. These LEDs provide visual information on the state of the device and reference the condition of the hardware components, indicating whether there is connectivity, data flow, etc.

For further information on the LEDs panel, please see [Components](#) on page 4.

## Chapter 3 Components and Power Supply

The following chapter provides detailed information on the chassis of the **Teldat iM8-Cx** router and its components. This information includes:

- Components
- Information on assembly
- Power supply
- RST button
- Data connection

### 3.1 Components

#### 3.1.1 Front Panel

The following figure shows the front panel. Here you will find the majority of the **Teldat iM8-Cx** router connectors.

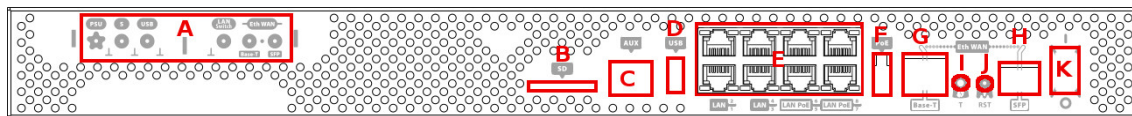


Fig. 1: Front Panel

The front panel elements are as follows:

#### FRONT PANEL ELEMENTS TABLE

Item	Description
A	LEDs panel.
B	Slot SD card.
C	Aux. Provides access to the <b>Teldat iM8-Cx</b> local console for configuring and monitoring purposes.
D	USB. Slot where you can insert an external USB device.
E	8-port Gigabit Ethernet Switch.
F	PoE. Connector for power supply through Ethernet (Power over Ethernet). Not available.
G	Eth WAN Base-T. WAN Gigabit Ethernet.
H	Eth WAN SFP.
I	T. Reserved for future use.
J	RST. Reset button. For further information on how the reset button works, please see <a href="#">RST Button</a> on page 8.
K	On/Off switch.

The LEDs panel provides information on the status of the components (if they are active or not) and on the network activity.

#### LEDs table



LED	Definition	Status Indication
PSU	Power / Switch On-Off	Off -> no power through PSU. On -> powered through PSU.
S	General Status / Default Configuration Process	Off -> system off. Red -> Error, component operating incorrectly. Green -> System initialized and operating. Amber (blink) -> Default configuration.
USB	USB Interface Status	Off -> system stopped. Red -> interface is unavailable because it is installing, it is disabled (shutdown) or due to auto-test failure. Amber -> idle. <ul style="list-style-type: none"> <li>• Rapid blinking. It has not registered in the network or the quality is insufficient.</li> <li>• Slow blinking. GSM connection (GPRS).</li> <li>• Steady. WCDMA (UMTS / HSDPA) connection.</li> </ul> Blinking (green/red) -> activity/maintenance.
LAN Switch	LAN Switch interface activity	Green -> connected. Blinking: connection data activity. Red -> disconnected. Off -> interface off.
Eth WAN	Base-T	Green -> connected. Blinking: connection data activity. Off -> not used.
	SFP	Green -> connected. Blinking: connection data activity. Off -> not used.

In addition to the LEDs described in the above table, the front panel also has LEDs linked to the Switch Ethernet interfaces.

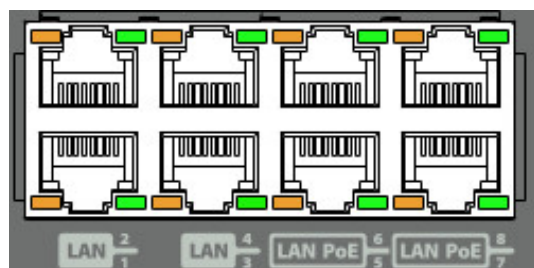


Fig. 2: Ethernet interface LEDs

The table below provides information on the LEDs associated to the Switch Ethernet interface:

#### Switch Ethernet interface LEDs table

LED	Description	State
Orange	PoE activity	Always OFF.
Green	Ethernet (link) connection established	Off -> Link has not been detected.

Green -> Link detected. Blinking: connection data activity.

### 3.1.2 Rear Panel

The following figure shows the rear panel.

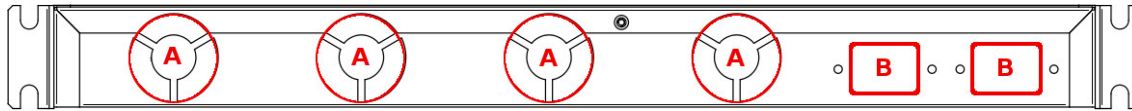


Fig. 3: Rear panel

The following table provides information on each element, as well as a description:

#### Rear panel elements

Item	Description
A	Ventilation slots.
B	Power cable connection.

## 3.2 Installation in a rack

The **Teldat iM8-Cx** device can be installed in a 19" rack.

### 3.2.1 Standalone

**Teldat iM8-Cx** devices can be placed as standalones on a flat, stable surface. The adhesive rubber feet must be stuck to the underside panel to prevent the router from sliding.

Make sure there is enough space around the router (for ventilation purposes) and check that the electricity cables can reach it.

### 3.2.2 Wall mounting

The **Teldat iM8-Cx** family cannot be mounted on the wall.

## 3.3 Plug-in Modules

The only module that can be inserted in the device is an USB.

### 3.3.1 Installation

Simply insert the USB in the appropriate slot on the rear panel, as shown in the following figure:

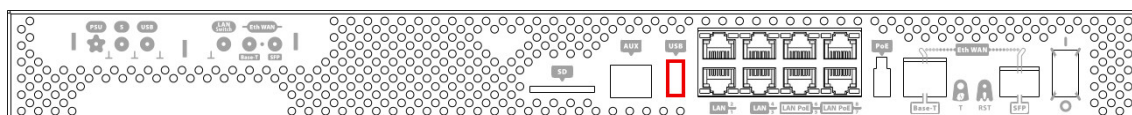


Fig. 4: USB modem insertion slot

### 3.3.2 Uninstall

To remove the device, simply pull it out from the slot where it was inserted.

## 3.4 Power Source

The **Teldat iM8-Cx** router is powered through two internal AC/DC sources. The **Teldat iM8-Cx** has two power inputs and two power supplies that operate simultaneously. It can operate one, the other, or both at once. If **Teldat iM8-Cx** is powered by the two power supplies and one of them fails, the other acts as a backup.



### Warning

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

### 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 forth in [Connecting](#) on page 7 and [Disconnecting](#) on page 7.

### 3.4.1 Internal Power Source

To connect the power supply to the device, please follow the steps under section [Connecting](#) on page 7.

To avoid electric shocks, residual current circulation and other unwanted effects that affect 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.

#### 3.4.1.1 Connecting

- Ensure that the on/off power supply switch is in the OFF position.
- Connect all data cables.
- Connect the power supply to the device.
- Set the device's on/off power supply switch in the ON position.

#### 3.4.1.2 Disconnecting

- Set the on/off power supply switch in the OFF position.
- Disconnect the power supply from the device.
- Disconnect the data cables.

## 3.5 RST Button

The different RST button features are described below.

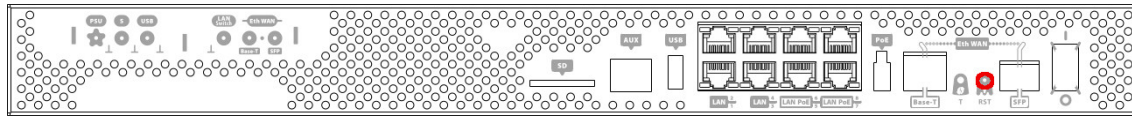


Fig. 5: RST button

### 3.5.1 Rebooting the device

Once the device is operating normally, pressing the RST button will make it 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, press and hold the RST button down while you turn on the router using the ON/OFF switch (1).
- The PSU LED (green) will light up and LED 'S' will begin to blink (amber). It will carry on blinking for 10 seconds.
- To boot the device with the default configuration, let go of the RST button while LED 'S' is still blinking (i.e. before the 10-second period expires).

The default configuration sets up the device with 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. This personalization can mean your router's default configuration is different from the one shown above.

## 3.6 Connecting the data

The **Teldat iM8-Cx** router has the following data connections.

### 3.6.1 8-port Ethernet Switch

The **Teldat iM8-Cx** router incorporates an 8-port 10/100/1000 Base-T Switch with automatic MDI/MDIX to connect to a local area network (LAN).

Please pay careful attention to the labeling to avoid mixing up this switch with other port types:

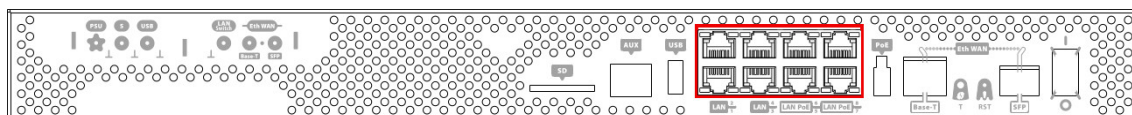


Fig. 6: LAN switch PORTS



#### Note

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

### 3.6.2 WAN Connection

The **Teldat iM8-Cx** has 1 Ethernet interface for WAN connection. This port has 2 connectors - SFP for optical link and RJ45 for 10/100/1000 Base-T link - but they cannot work simultaneously. This interface is totally independent from the Switch and is handled as just one more interface.

Please pay careful attention to the labeling to avoid mixing up these ports with other port types:

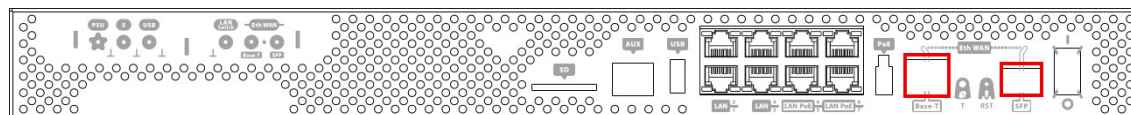


Fig. 7: WAN connectors



#### Note

During booting and in BIOS mode, the WAN connectors do not work.

### 3.6.3 Connecting an USB device (USB connector)

The **Teldat iM8-Cx** router has a USB HOST 2.0 Type A connector interface, allowing for USB devices to be connected. The interface can be activated through the purchase of the corresponding software license.

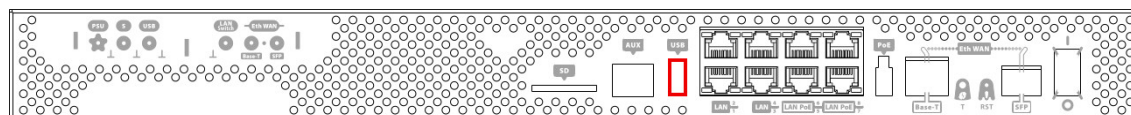


Fig. 8: USB Connector

### 3.6.4 Connecting for Configuration

The **Teldat iM8-Cx** has a RJ45 female connector on the front panel (labeled "Aux") that provides access to the device's local console

For further information, please see [Connecting to the device](#) on page 14.

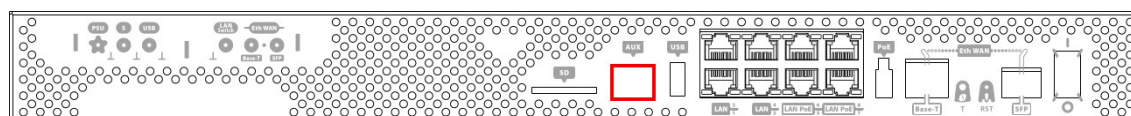






Fig. 9: Aux Connector

## Chapter 4 Compliance

### 4.1 Manufacturer Information

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

## 4.2 Safety Warnings

	<p>The electric current in power cables 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 <a href="#">Connecting</a> on page 7 and <a href="#">Disconnecting</a> on page 7.</p>
	<p>La tensión eléctrica de los cables de alimentación 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".</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>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.</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>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>Laser radiation. Do not expose users of telescopic optics. Class 1 laser product.</p> <p>SFP modules to be installed in the card socket should be class 1 devices complying with standard IEC/EN 60825-1:2007</p>
	<p>Radiación laser. No exponer a los usuarios de productos telescópicos. Producto laser clase 1.</p> <p>Los módulos SFP que se instalen en el socket de la tarjeta deberían ser dispositivos de clase 1 de acuerdo con la norma IEC/EN 60825-1:2007</p>

### 4.3 WEEE Information



The waste container symbol with the >X< 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.

El símbolo del contenedor con la cruz, que se encuentra en el aparato, significa que cuando el equipo haya llegado al final de su vida útil, deberá ser llevado a los centros de recogida previstos, y que su tratamiento debe estar separado del de los residuos urbanos.

### 4.4 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>Hereby, Teldat S.A. declares that the radio equipment type <b>Teldat iM8-Cx</b> is in compliance with:</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> <p>of the European Parliament and of the Council.</p>
Spanish (ES) Español	<p>Por la presente, Teldat S.A. declara que el tipo de equipo radioeléctrico <b>Teldat iM8-Cx</b> es conforme con:</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> <p>del Parlamento Europeo y del Consejo.</p>

The full text of the EU declaration of conformity and additional product documentation is available at the following Internet address: <http://www.teldat.com>

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



## 4.6 Laser Product

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Use only trained and qualified personnel to install or replace this device

Chose SFP+ transceivers that meet the following regulations

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

## 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 lights up on the router.	Check the power supply to the router (power source, ON/OFF switch, main power outlet).
You have forgotten the router's access password.	Ignore the configuration through 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 that the appropriate license is available for use.
The Eth WAN LED never lights up in green.	Check the Ethernet cable and the connection to the network.
The USB LED never lights up in green.	Check that the router supports the device inserted in the USB connector. Check the appropriate license is available for use.

### A.2 Updating the software

The **Teldat iM8-Cx** router can be updated to new versions. Please contact your dealer for information on new releases.

A Teldat router can be updated in several ways. For further information, please see manual: "Teldat- Dm 748-I Software Updating".

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

### A.3 Connecting to the device

#### A.3.1 Connecting using the local console (Aux connector)

The **Teldat iM8-Cx** router has a RJ45 female connector on the front panel, known as "Aux", that provides access to the device local console.

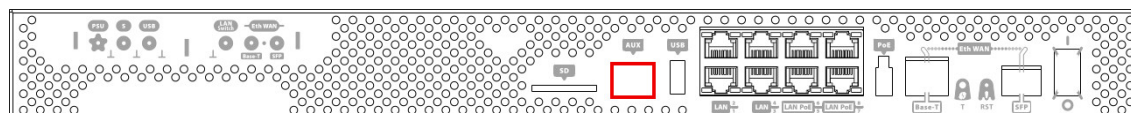


Fig. 12: Aux Connector

To configure this, you must connect the "Aux" port to an asynchronous terminal (or to a PC with terminal emulation).



**Note**

The configuration for the terminal must be:

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

Connection to the configuration port can be done through the RJ45 connector cable, supplied together with the device, and the RJ45 Female-DB9 Female adapter (also provided).

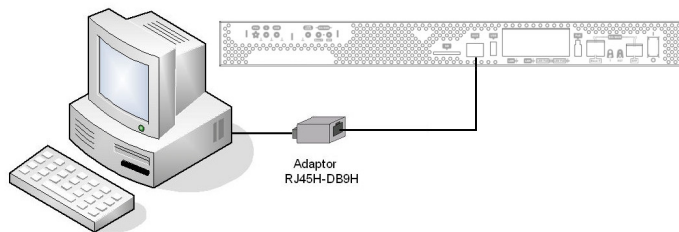


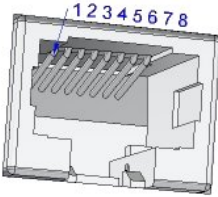
Fig. 13: Connecting for Configuration

## A.4 Connectors

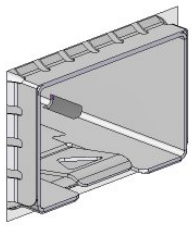
### A.4.1 LAN Connector

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-

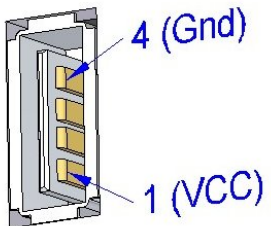
### A.4.2 WAN Base-t Connector

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

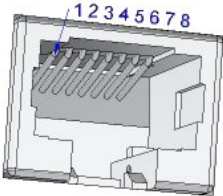
### A.4.3 WAN SFP Connector

SFP	
	Standard SFP connector

### A.4.4 USB Connector

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

### A.4.5 Configuration Connector

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

## A.5 Technical Specifications

### A.5.1 Hardware Architecture

PROCESSORS	Freescall QorIQ
MEMORY	1 Gbyte in SDRAM
STORAGE UNIT	FLASH Memory (32 Mbytes)

### A.5.2 LAN Interface

PROTOCOLS	Ethernet (802.3)
PORTS	8 port Switch managed with MDI/MDX autodetection.
SPEED	10/100/1000 Mbps (Base-T)
CONNECTOR	RJ45 female

### A.5.3 WAN Base-T Interface

STANDARDS	802.1Q (VLAN) 1000-Base-X
SPEED	1000 Mbps full duplex
TYPES	LX/LH (single-mode 1310 nm) SX (multi-mode 850 nm) ZX (single-mode 1550 nm)
CONNECTOR	Standard SFP Connector

### A.5.4 WAN SFP Interface

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

### A.5.5 USB Interface

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.5.6 Configuration Interface

LOCAL TERMINAL	RS-232 9600-8-N-1 without flow control
CONNECTOR	RJ45 female on the device's front panel

### A.5.7 Power Supply

INPUT VOLTAGE	85-264 V AC
INPUT CURRENT	1.7 A
INPUT FREQUENCY	47/60 Hz
MAXIMUM POWER	60 W

### A.5.8 Dimensions and weight

TYPE	Desktop / chassis for a 1 U high Rack mount enclosure
LENGTH x WIDTH x HEIGHT	313 x 483 x 43.6 mm
WEIGHT	4.1 kg

### A.5.9 Environmental Specifications

TEMPERATURE	OPERATING NORMALLY: 0 °C to 40 °C
RELATIVE HUMIDITY	On: 5 % to 90 %