Circutor TCPRS1+ RS-485 to TCP/IP Converter Instruction Manual

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Contents

SAFETY PRECAUTIONS

Follow the warnings described in this manual with the symbols shown below.

DANGER
Warns of a risk, which could result in personal injury or material damage.

ATTENTION
Indicates that special attention should be paid to a specific point.

If you must handle the unit for its installation, start-up or maintenance, the following should be taken into consideration:

Incorrect handling or installation of the device may result in injury to personnel as well as damage to the device. In particular, handling with voltages applied may result in electric shock, which may cause death or serious injury to personnel. Defective installation or maintenance may also lead to the risk of fire.

Read the manual carefully prior to connecting the device. Follow all installation and maintenance instructions throughout the device's working life. Pay special attention to the installation standards of the National Electrical Code.

Refer to the instruction manual before using the device
In this manual, if the instructions marked with this symbol are not respected or carried out correctly, it can result in injury or damage to the device and /or installations.

CIRCUTOR S.A.U. reserves the right to modify features or the product manual without prior notification.

DISCLAIMER

CIRCUTOR S.A.U. reserves the right to make modifications to the device or the unit specifications set out in this instruction manual without prior notice.

CIRCUTOR S.A.U. on its web site, supplies its customers with the latest versions of the device specifications and the most updated manuals.

www.circutor.com

CIRCUTOR S.A.U. recommends using the original cables and accessories that are supplied with the device.

REVISION LOG

Table 1: Revision log.

Date	Revision	Description
12/21	M349B01-03-21A	First Version
09/22	M349B01-03-22A	Changes in the following sections: 2.

SYMBOLS

Table 2: Symbols.

Symbol	Description
	In accordance with the relevant European directive.
	Device covered by European Directive 2012/19/EC. At the end of its useful life, do not leave the device in a household refuse bin. Follow local regulations on electronic equipment recycling.
	Direct current.
	Alternating current.

VERIFICATION UPON RECEPTION

Upon reception of the device check the following points:

- **a)** The device meets the specifications described in your order.
- **b)** The device has not suffered any damage during transport.
- **c)** Perform an external visual inspection of the device prior to switching it on.
- **d)** Check that it has been delivered with the following:
    - An installation guide

 If any problem is noticed upon reception, immediately contact the transport company and/or CIRCUTOR's after-sales service

PRODUCT DESCRIPTION

The TCPRS1+ is a gateway designed to convert an RS-485 physical environment to Ethernet and/or Wi-Fi. The device features a Web Server and an app, MyConfig Wifi (Android), from which the user can completely edit the configuration parameters of the device.

The device has:
6 indication LEDs.

Note: For ModbusTCP and TCP protocols, the TCPRS1+ can be queried for up to 2 Masters at the same time (maximum 5 sockets).

INSTALLATION OF THE DEVICE

PRELIMINARY RECOMMENDATIONS

In order to use the device safely, personnel operating it must follow the safety measures that comply with the standards of the country where it is to be installed; operators must wear the required personal protective equipment (rubber gloves, approved facial protection and flame-resistant clothing) to prevent injuries from electric shock or arcs caused by exposure to current-carrying conductors, and they must heed the various warnings indicated in this instruction manual.

The TCPRS1+ device must be installed by authorised, qualified personnel.

The power supply plug must be disconnected and measurement systems switched off before handling, altering the connections or replacing the device. It is dangerous to handle the device while it is powered.

Cables must always be kept in perfect condition to avoid accidents or injury to personnel or installations.

The manufacturer of the device is not responsible for any damage resulting from failure by the user or installer to heed the warnings and/or recommendations set out in this manual, nor for damage resulting from the use of non-original products or accessories or those made by other manufacturers.

Before carrying out maintenance, repair or handling of any of the device's connections, the device must be disconnected from all power sources, both from the device's own power supply and the measurement's. Contact the after-sales service if you detect that the device is not working properly.

INSTALLATION

When the device is on, its terminals, opening covers or removing elements may expose the user to parts that are hazardous to touch. Do not use the device until it is fully installed.

The device must be installed inside electric panel or enclosure, with DIN rail mounting (IEC 60715).

The device must be connected to a power circuit that is protected with gL (IEC 60269) or M class fuses with a rating of 1 to 2 A. It must be fitted with a circuit breaker or equivalent device, in order to be able to disconnect the device from the power supply network. The power and voltage measuring circuit must be connected with cables that have a minimum cross-section of 1 mm2.

DEVICE TERMINALS

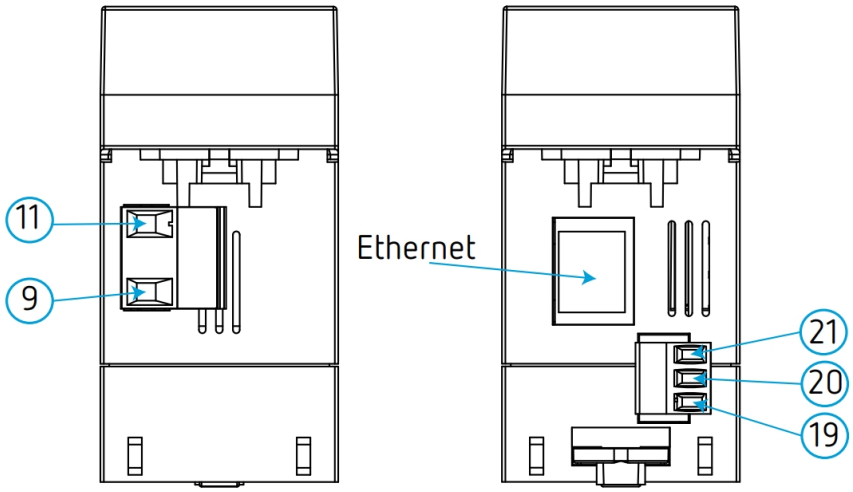


Figure 1: TCPRS1+ terminals.

Table 3: List of TCPRS1+ terminals.

Device terminals	
9: A1 ~/**+**, Power supply	**20: S**, GND for RS-485
11: A2 ~/**-**, Power supply	**21: A+**, RS-485
19: B-, RS-485	**Ethernet:** Ethernet connection

OPERATION

LED INDICATORS

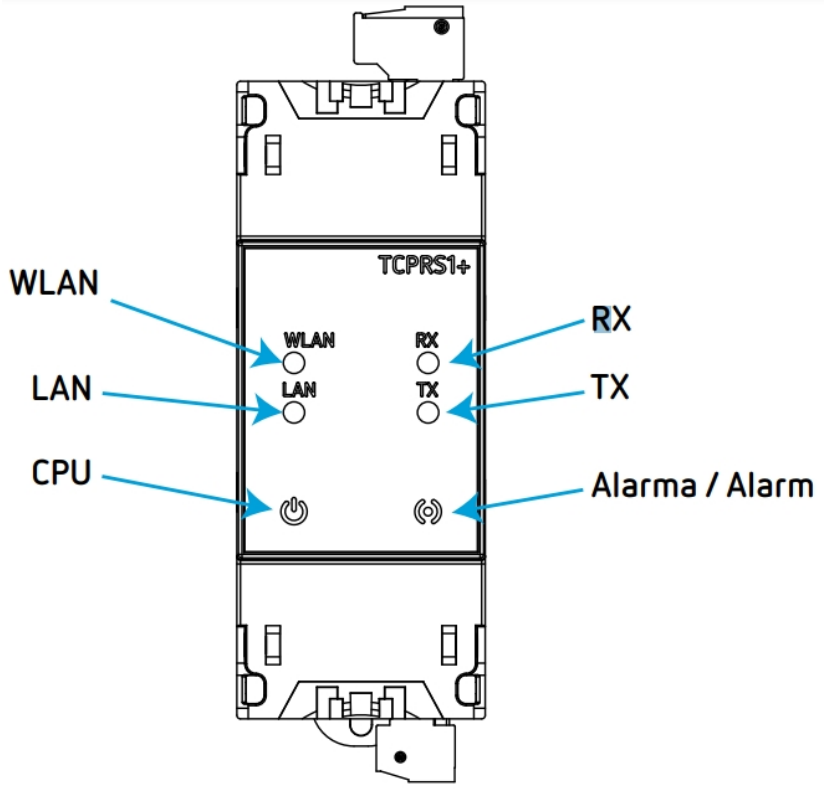


Figure 2: LEDs: TCPRS1+.

The TCPRS1+ have 6 indicating LEDs:

- **CPU,** Indicates device status:
  Table 4: LED CPU.

LED	**Description**
CPU	**Flashing:**
	White color: Indicates that the device is powered

- **WLAN,** Indicates the status of Wi-Fi connectivity:
  Table 5: LED WLAN.

LED	**Description**
WLAN	**On:**
	Blue color: Indicates that the Wi-Fi connection is activated

- **LAN,** Indicates the status of Ethernet connectivity:
  Table 6: LED LAN.

LED	Description
LAN	**On:**
	Green color: Indicates that the Ethernet connection is activated

- **RX, TX,** Indicates the status of RS-485 / RS-232 communications:

  Table 7: LEDs RX and TX.

LED	Description
RX	**Flashing:**
	Orange color: Indicates the frame reception.
TX	**Flashing:**
	Orange color: Indicates the frame delivery.

- **Alarm,** Indicates that an alarm has been generated:

LED	Description
Alarm	**On:**
	Red color*:* Frame reception error.

- Table 9 shows other LED indications:

  Table 9: LEDs.

LEDs	Description
CPU + Alarm	**Rapid flashing:**
	Indicates that the device is updating.

COMMUNICATIONS

USAGE EN

VIRONMENT AND HEALTH

Wireless communications emit radio frequency electromagnetic energy, like other radio devices.

Because wireless communications operate under the guidelines found in radio frequency standards and recommendations, they are safe for users to use.

In some settings and situations the use of wireless communications may be restricted by the building’s owner of

representatives of the organisation.
These may include:

- Use of wireless connections on board aircraft, in hospitals or near service stations, blasting areas, medical implants or electronic medical devices implanted in the human body (pacemakers, etc.).
- In any other setting where the risk of interference with other devices or services is a hazard.

If you are not sure of the applicable usage policy for wireless devices in a specific organisation (airport, hospital, etc.) we recommend requesting permission to use wireless communications.

Wi-Fi COMMUNICATIONS

Wi-Fi is one of the most widespread wireless technologies today. It is used to connect electronic devices and exchange information between them without having to connect them physically.

The TCPRS1+ devices feature Wi-Fi communications in the 2.4 GHz band, and are compliant with the IEEE 802.11b, IEEE 802.11g and IEEE 802.11n standards.

Note: If the signal level is < 25%, it is recommended to use Ethernet communications to avoid any incidence in the data recording.

Note: The TCPRS1+ has the service Wi-Fi IP 192.168.222.1. In order to access this IP, you must first connect to the device's Wi-Fi Access Point network (TCPRS1+-XXXX). The password corresponds to the last 8 digits of the device serial number.

MOBILE APP

The MyConfig Wifi mobile application, which allows you to configure communications, can be downloaded free of charge from Google Play (Android)

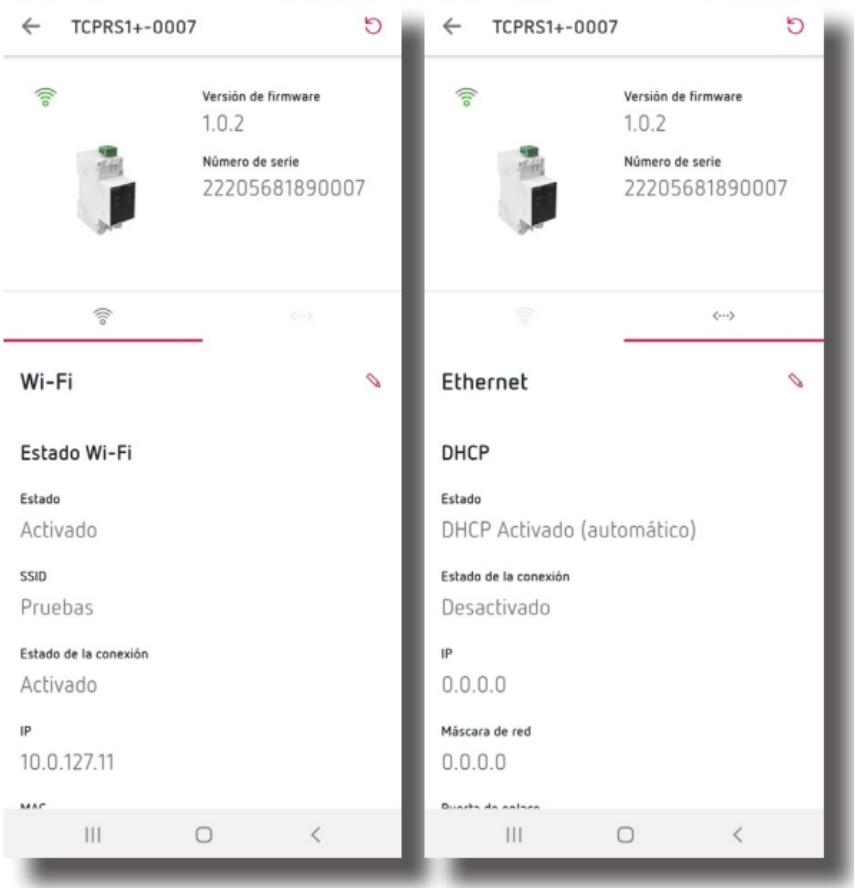


Figure 3: Mobile Application Screens.

WEB PAGE

To access the internal configuration website, the device's IP address has to be entered into the browser address bar. The **TCPRS1+** is set by default to DHCP mode.

The IP address can be obtained using the **MyConfig Wifi** application. The device can be identified by its MAC address using software such as Advanced IP Scanner or IP Setup Program.

To access the configuration website, open the screen shown in **Figure 4** and enter the Username and Password. The default values are shown in **Table 10.**

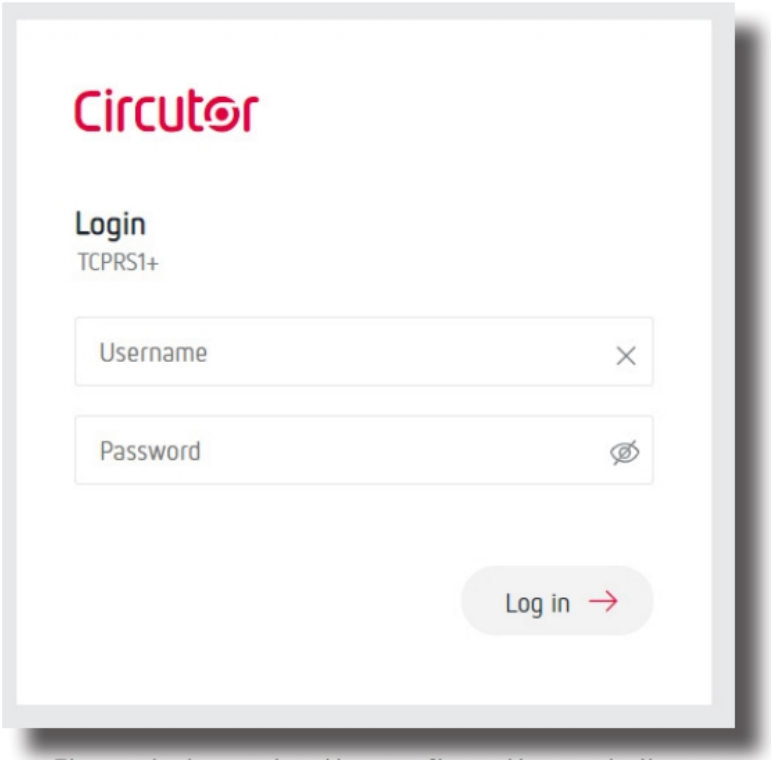


Figure 4: Accessing the configuration website.

Table 10: Accessing the configuration website.

Accessing the configuration website	
Username	admin
Password	circutor

Note: For security reasons, you need to change the login password. You can change it on the Security screen, **Figure 8.**
Note: To register the device in the PSS software, the credentials defined on this website must be used.

The website of the device can be used to:

- On the Device Info screen, view the device's information and settings for Ethernet, Wi-Fi and RS-485 communications **(Figure 5).**

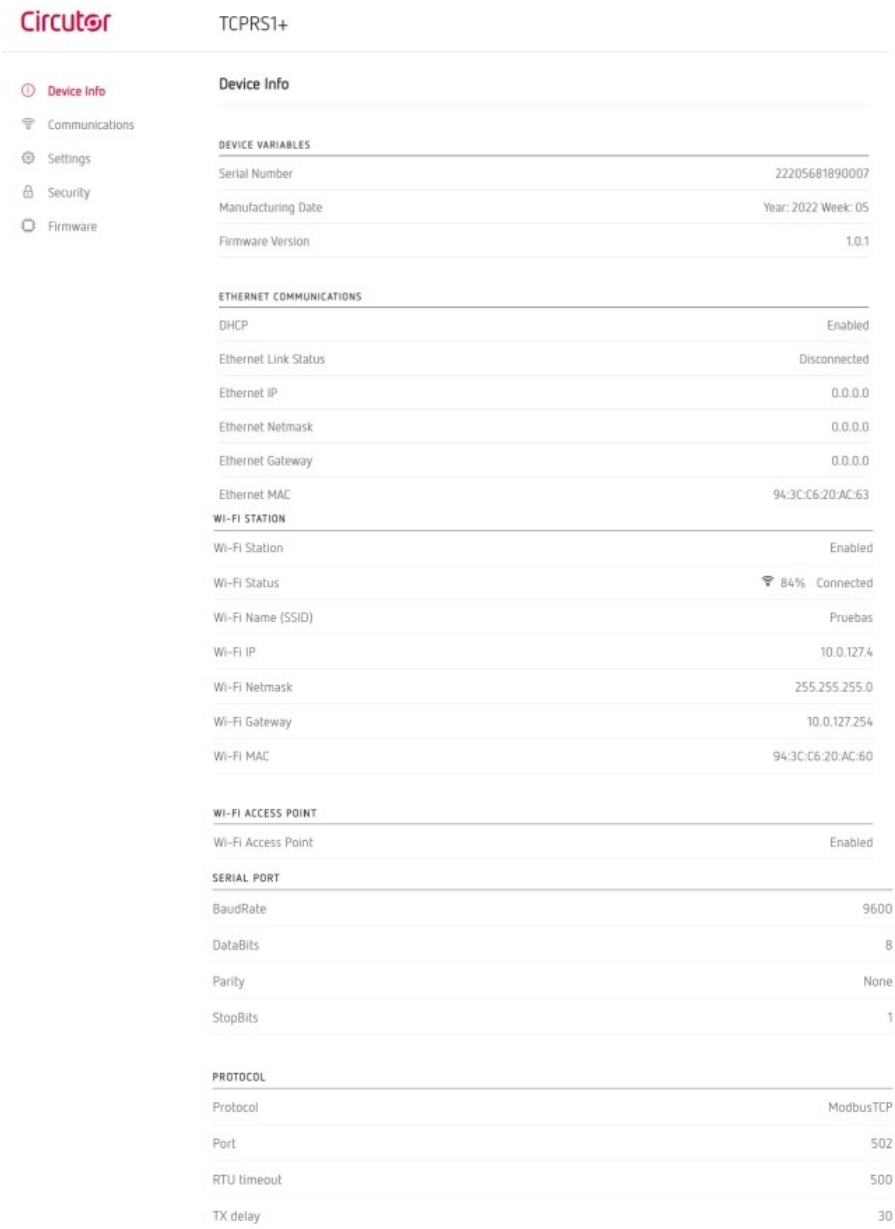


Figure 5: Website: Device Info.

- On the **Communications** screen, modify the settings for Ethernet and Wi-Fi communications, as well as enable or disable the Wi-Fi Access Point network used for configuration through the **MyConfig Wifi** App (**Figure 6)**

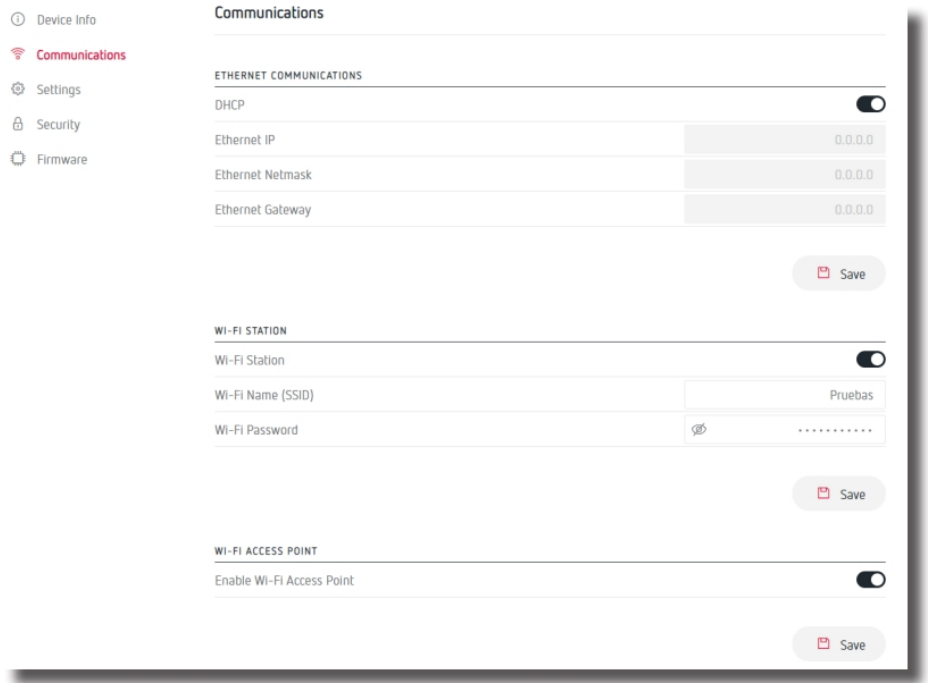


Figure 6: Website: Communications.

- On the Settings screen, edit the RS-485 communications settings **(Figure 7).**

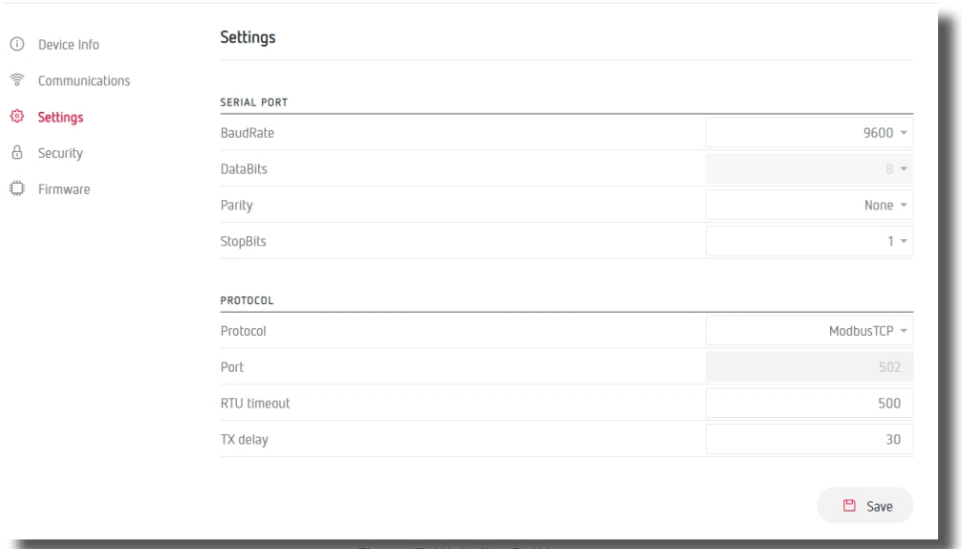


Figure 7: Website: Settings.

- On the **Security** screen **(Figure 8),** change the login password to the configuration website.

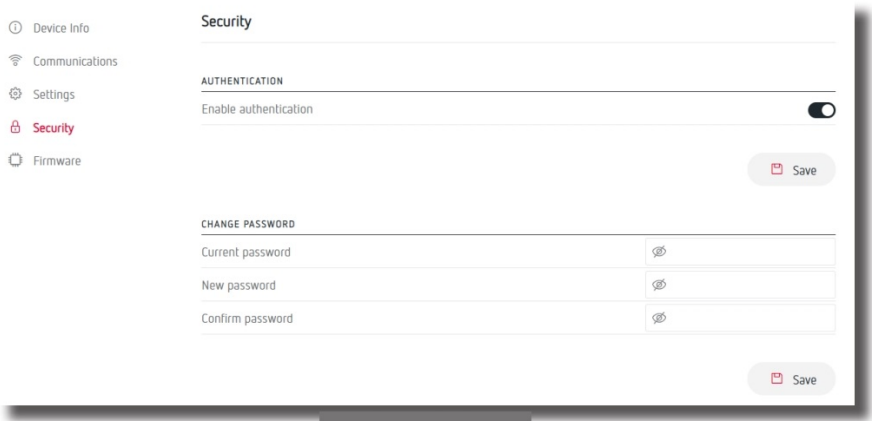


Figure 8: Website: Security.

- On the Firmware screen, update the device's firmware **(Figure 9).**

Figure 9: Website: Firmware.

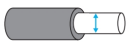
When the device is updating, the CPU and Alarm LEDs flash alternately every second.

Note: After updating the device, you have to exit the web page and enter it again to avoid display problems in the browser

TECHNICAL FEATURES

Rated voltage	100 … 264 V~
Frequency	50 … 60 Hz
Consumption	2 … 7 VA
Installation category	CAT III
DC Power supply	
Rated voltage	100 … 300 V
Consumption	1.6 … 2 W
Installation category	CAT III
RS-485 Interface	
Bus	RS-485

Baud rate	4800 – 9600 – 19200 – 38400 – 57600 – 115200 bps
Data bits	7 – 8
Stop bits	1 – 2
Parity	without – even – odd
Ethernet Interface	
Type	Ethernet 10BaseT – 100BaseTX self-detectable
Connector	RJ45
Protocol	TCP – UDP – Modbus TCP – HTTP (Web server) – REST
Connection mode to network	DHCP ON/OFF (ON by default)
Wi-Fi communication	
Band	2.4 GHz (Range: 2.4…… 2.5 GHz)
Standard	IEEE 802.11 b / g , IEEE 802.11 n (up to 150 Mbps)
Max. output power	**IEEE 802.11 b:** 20 dBm **IEEE 802.11 n:** 14 dBm
User interface	

LED	6 LEDs		
Environmental features			
Operating temperature	-20ºC … +60ºC		
Storage temperature	-20ºC … +70ºC		
Relative humidity (non-condensing)	5 … 95%		
Maximum altitude	2000 m		
Protection degree IP	IP30, Front: IP40		
Protection degree IK	IK08		
Pollution degree	2		
Use	Indoor		
Mechanical features			
Terminals			
9, 11, 19 … 21	2.5 mm2	≤ 0.4 Nm, M2.5	flat

Dimensions	**Figure 10** (mm)
Weight	126 g.
Enclosure	Self-extinguishing V0 plastic
Attachment	DIN rail**(1)**

(1) Recommended minimum distance between DIN rails: 150 mm.

Standards	
Audio/video, information and communication technology equipment – Part 1: Safety requirements.	EN 62368-1:2020/ A11:2020/ AC:2020-05
Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz – 300 GHz)	EN 50663: 2017
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Com- patibility	ETSI EN 301 489-1 V2.2.3
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Stan- dard for ElectroMagnetic Compatibility	ETSI EN 301 489-17 V3.2.4
5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU	ETSI EN 301 893 V2.1.1

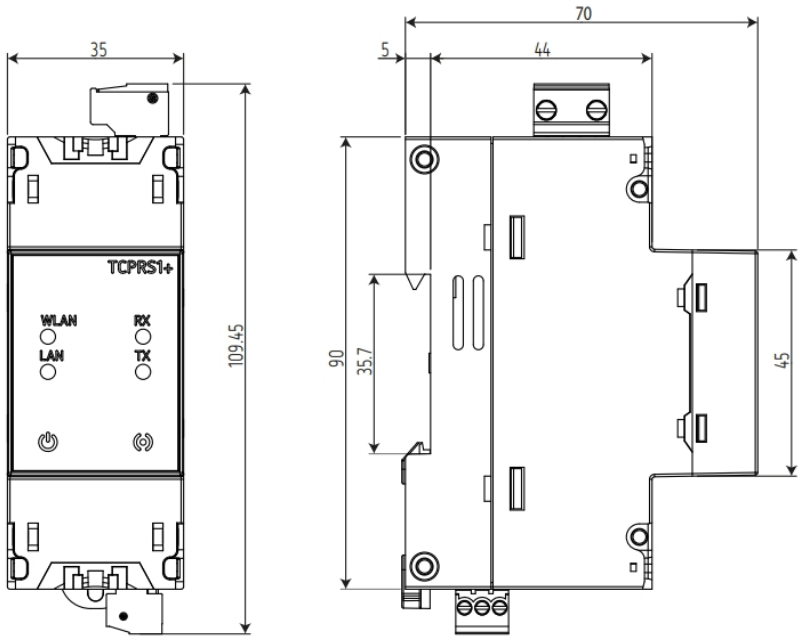


Figure 10:TCPRS1+ dimensions.

MAINTENANCE AND TECHNICAL SERVICE

In the case of any query in relation to device operation or malfunction, please contact the CIRCUTOR S.A.U. Technical Support Service.

Technical Assistance Service
Vial Sant Jordi, s/n, 08232 – Viladecavalls (Barcelona)
Tel: 902 449 459 (Spain) +34 937 452 919 (outside of Spain)
email: **sat@circutor.com**

GUARANTEE

CIRCUTOR guarantees its products against any manufacturing defect for two years after the delivery of the units.

CIRCUTOR will repair or replace any defective factory product returned during the guarantee period

- No returns will be accepted and no unit will be repaired or replaced if it is not accompanied by a report indicating the defect detected or the reason for the return.
- The guarantee will be void if the units has been improperly used or the storage, installation and maintenance instructions listed in this manual have not been followed. “Improper usage” is defined as any operating or storage condition contrary to the national electrical code or that surpasses the limits indicated in the technical and environmental features of this manual.
- **CIRCUTOR** accepts no liability due to the possible damage to the unit or other parts of the installation, nor will it cover any possible sanctions derived from a possible failure, improper installation or “improper usage” of the unit. Consequently, this guarantee does not apply to failures occurring in the following cases:
- Overvoltages and/or electrical disturbances in the supply;
- Water, if the product does not have the appropriate IP classification;
- Poor ventilation and/or excessive temperatures;
- Improper installation and/or lack of maintenance;
- Buyer repairs or modifications without the manufacturer’s authorisation.

CE CERTIFICATE

EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of CIRCUTOR with registered address at Vial Sant Jordi, s/n 08232 Viladecavalls (Barcelona) Spain

Product:
RS-485 / WIFI & Ethernet Converter
Series:
TCPRS1+

Brand:
CIRCUTOR
The object of the declaration is in conformity with the relevant EU harmonisation legislation, provided that it is installed, maintained and used for the application for which it was manufactured, in accordance with the applicable installation standards and the manufacturer's instructions 2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive 2015/863/EU: RoHS3 Directive 2014/53/EU: RED Directive

It is in conformity with the following standard(s) or other regulatory document(s):
EN62311:2020 EN IEC 67368-1:20201A1120201AC:2020-05
EC 61000-6-1:2016 Ed 3.0 IEC61000-6-3:2006+NAD1:2010 Ed2.1 ETSI EN 301 489-1 V2.2.3 ETSI 301 489-17 v3.2.4 ETSI EN 300 328 v2.2.2

Year of CE mark: 2022

Support

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Documents / Resources

	**Circutor TCPRS1+ RS-485 to TCP/IP Converter** [pdf] Instruction Manual TCPRS1 RS-485 to TCP IP Converter, TCPRS1 RS-485 to TCP, RS-485 to IP Converter, IP Converter, Converter, TCPRS1, TCPRS1 Converter

References

- **Productos y soluciones integrales para la eficiencia energética eléctrica**