ELCO S.r.l.
Via Lago di Molveno, 20
36015 SCHIO (VI) ITALY
TEL. +39 0445 661722
FAX+39 0445 661792
Website: http://www.elco-italy.com
e-mail: info@elco-italy.com
support@elco-italy.com

TSE 485/WiFi

Converter/Isolator

User Manual

Translation of the original instructions

TSEWiFi-GB-00-04-A

GENERAL INFORMATION

This instruction manual is an integral part of the Converter/Isolator TSE 485/WiFi and users should always make reference to it.

- The Converter/Isolator TSE 485/WiFi, also referred herein as "product" or "device", to which this document refers, is provided for use by persons trained in its use. The instruction must provide for the knowledge of the product and of the maneuvers to be performed during the use, to allow its use in safe conditions.
- All persons trained to work with the product should carefully read this manual in all its sections and understand its contents.
- It is especially important that staff are informed on security with regard to general practices for the protection of people, the product and the surrounding environment.
- Only the correct use of the product as recommended will ensure its lasting and effective use, in full safety for the operators and for the product itself.
- EL.CO. S.r.l. reserves the right to make any formal or functional changes at any time without prior notice.
- The electrical installation where the component is installed must meet the safety requirements in force.
- EL.CO. S.r.l. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, misuse, wrong use or otherwise not in accordance with the device features.
- All rights to this documentation are reserved. Translations, reprints and copies of this manual, even if partial and/or otherwise expressly require the consent of EL.CO. S.r.l.

INTENDED USE

The Converter/Isolator TSE 485/WiFi can only be used to connect RS845 compatible devices (with any protocol) to a 10/100 Base T Ethernet network.

Any other use of the product s not allowed and it is considered improper and therefore dangerous. EL.CO. S.r.l. shall not be liable in any way for damage to persons or property that could occur due to improper use.

Intended recipients of the manual

- This manual is intended for all authorized users and suitable to use the Converter/Isolator.
- All users must read and understand the contents of this manual, which they have to follow while working with the product.
- This manual is an integral part of the product to which it relates and shall be kept throughout its life cycle.
- In case of transfer or sale of the product, the manual and all accompanying documentation, or connected one, shall be maintained and delivered with it.

WARRANTY

The warranty provided by the manufacturer on the product is valid for one year. The following conditions will void the product warranty provided by EL.CO. S.r.l.:

- Improper use of the product, which is different than the expected one, as described in section Intended use *Intended use;*
- Use by unauthorized or untrained personnel;
- Total or partial disregard of these instructions;
- Power supply defects;
- Pollution coming from the outside;
- Changes and unauthorized repairs.

DESCRIPTION OF THE CONVERTER/ISOLATOR TSE 485/WIFI

The Converter/Isolator TSE 485/WiFi is a converter/isolator that connects devices with RS485 communication (with any protocol) to an Ethernet network (10/100 Base T Ethernet) based on protocol TCP/IP stack. Communication from Ethernet to RS485 takes place via a virtual communication port. The Ethernet communication speed can be set to 10Mbit/s or 100Mbit/s or Auto, Half, or Full Duplex.

RS485 and Ethernet/WiFi communication ports support Master or Slave functionality. The 1500 VAC isolation between input, output and power supply is achieved by the use of impulse transformers (which are not subject to aging as optocouplers) on the data line and a DC/DC converter isolated on the power supply unit.

The device repeats interface data without interpreting the protocols, so it can be used with any protocol (i.e. Modbus-RTU, Interbus, Solar Inverter etc.).

The device is fully compatible with the CE marking requirements and is housed in a solid 22.5 mm thick plastic housing suitable for DIN rail mounting.

- Ethernet 10/100 or WiFi 802.11b/g standard network interface with TCP/IP protocol
- Configuration via Webserver or Telnet
- Compatible with any protocol (i.e. ModBus, Interbus, Solar Inverters, etc.)
- Speeds up to 1Mbit/s
- Communication RS485-2 wire serial line (1 or 2 ports)

- Power supply 10 ... 28 Vdc and 11 ... 24 Vac
- Distance up to 1200 m
- Reduced absorption
- Galvanic 1500 Vac isolation on three ways
- LED Reporting voltage, Ethernet/WiFi, RX and RS485 TX status
- Ethernet side RJ45 connector/RP-SMA connector for WiFi and removable terminals on RS485 side
- Simplified installation with DIN rail mounting
- EMC compliant with EN 61000
- 5 year warranty

Areas of use

- Energy
- Water treatment
- Remote control
- Building Automation
- Home Automation
- Weather Stations
- Photovoltaic systems

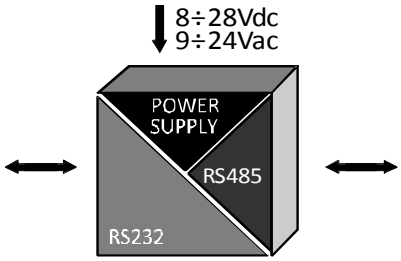
Applications

- Conversion from Ethernet/WiFi to RS485 with any protocol
- Protection of noise in industrial areas

TECHNICAL DATA CONVERTER/ISOLATOR TSE 485/WIFI

POWER SUPPLY	10…28 Vdc; 11…24 Vac (50/60 Hz)
	Operation also with inverted polarity 40 Vdc max
ABSORPTION	<70 mA @ 24 Vdc
SWITCHING TIME	<50 µs
INSULATION	1500 Vac 1 minute on the three ways
NETWORK INTERFACE	WiFi 802.11b/g
ETHERNET PROTOCOLS	TCP, UDP, ICMP
ETHERNET SIDE CONNECTION	Shielded RJ45
RS485 SIDE CONNECTION	Screw terminals, pitch of 5.08 mm
TRANSMISSION SPEED	from 75 to 250,000 bps
DISTANCE/SPEED	0.6 km @ 38.4 kpbs
	0.9 km @ 19.2 kpbs
	1.2 km @ 9.6 kpbs
	2 km @ 4.8 kpbs
	3 km @ 2.4 kpbs
	7 km @ 1.2 kpbs
RS485 LINE IMPEDANCE	Typical 120 Ω
NUMBER OF CONNECTED TERMINALS in RS485	32 max (multipoint)
PORTS	1 x SMA-RP
OPERATING TEMPERATURE	-20°C…+70°C
STORAGE TEMPERATURE	-40 °C…+85 °C
HUMIDITY	0…90% non-condensing (on request 0-100% with resin)

CONTAINER	ITALTRONIC
MATERIAL	Self-extinguishing plastic
PROTECTION DEGREE	IP 20
WEIGHT	approx. 100 grams
CONNECTIONS	Screw terminals and cables applicable up to 2.5 mm^2 (AWG10)
DIMENSIONS (W x H x D) in mm	101 x 119 x 22.5
ASSEMBLY	on T35 DIN rail according to EN 50022
EMC (for industrial environments)	EN 61000



Overall dimensions (mm)

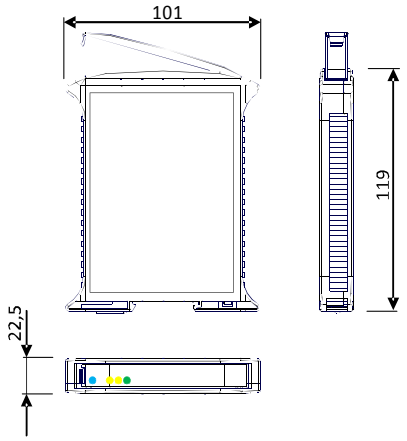


Figura 1- Overall dimensions

INSTALLATION

The device is suitable for mounting on DIN rails in the vertical position. For reliable operation and long life, follow the following guidelines:

- Do not allow the ventilation slots are obstructed by cable ducts or other objects close to them
- Avoid the mounting of the devices above equipment generating heat
- Install the device in a place without vibrations;
- Ensure a stable power supply

Connections

Make the connections according to the following diagrams (Figura 2-). Also refer to*Technical data Converter/Isolator TSE 485/WiFi* and meet the following conditions:

- Use "shielded" twist impedance cables of 120 Ω and connect the display to a dedicated earth terminal dedicated to the instrument.
- The cables must not be in the vicinity of cables for power installations as inverters, motors, induction furnaces and the like.

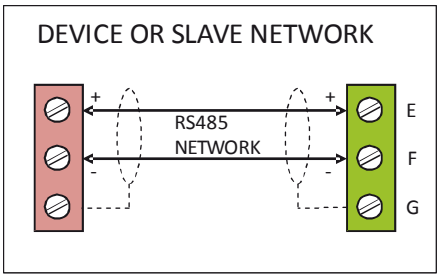


Figura 2- Connections

Devices TSE 485/WiFi can be connected to point-to-point or multi-point networks, in RS485 (half duplex) configuration. The multipoint network provides up to 32 terminals connected to a maximum distance of 1.2 km at a transmission speed of 9600 bps (with appropriate cable and terminations). The connection diagrams shows a 2-wire Master-Slave point-to-point network. The same connections between Master and Slave can be used in a multi-point network, provided that the connection between the second slave and after ones starts from the terminals of the previous slave.

Configuration

Also refer to *Connections*.

Device TSE 485/WiFi in addition to being able to connect to a user WiFi network, creates a network (Soft Access Point). You must connect to this network to configure the user's WiFi access feature on the device.

- The network name is "TSE 485/WiFi";
- The administrator password is "PASSWORD";
- The username for the configuration is "admin";
- The IP address for web access (on port 80) or telnet access (on port 9999) is that of the factory preset gateway: 192.168.0.1.

Do not modify these access parameters so that you can restore the system if necessary.

Connect the TSE 485/WiFi to the user network as described.

1- Enter the login credentials;
2- Select WLAN PROFILES;
3- Select CREATE NEW WLAN PROFILE;
4- Enter the profile name (optional);
5- Select APPLY;
6- Change the profile by clicking on the name;
7- Enter the following data:

- Network Name: The SSID name of the WiFi network to which the device must be connected;
- State: Enabled
- Suite: The type of WiFi network security you choose between WEP, WPA, WPA2

If WEP:

- WEP Key Size: WEP key length (typically 40)
- WEP TX Key Index: 1
- WEP Key1 Key: the keyword

If WPA/WPA2:

- WPAx Key Type: Choose between Passphrase (keyword, typical) or Hex (hexadecimal string)
- WPAx Passphrase: Keyword
- WPAx Encryption: CCMP oR TKIP (typical)

Among the advanced parameters:

- TX Power Maximum: Maximum power value in dBm (default 17 dBm, maximum allowed). Use lower values to decrease power consumption if WiFi coverage is great.
- Power Management: Enable to decrease power consumption; disable to keep response times low

Signaling LEDs

BLUE LED - PS (power supply)	ON	Proper power
	OFF	Device not powered
	Flashing	Reset the initial conditions
YELLOW LED - Rx and Tx (RS485)	On/Flashing	Communication in progress
	OFF	The RS485 port does not communicate

ORDERING DATA

The device comes pre-configured with the following parameters:

- IP address: 10.10.10.42
- Subnet Mask: 255.255.255.0
- Baud Rate RS485: 9600

Other configurations will be set by the final user.

When ordering, you can require the configuration of the device that will be provided at no extra charge. The order must show:

- IP address
- Subnet Mask
- baudrate

Example: TSE 485/WiFi - 192.168.1.100-255.255.255.0-9600