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TSE 485-232

Isolated RS485-RS232 serial converter

User Manual

TSE485-232-GB-00-04-A



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GENERAL INFORMATION

This instruction manual is an integral part of the Isolated RS485-RS232 serial converter TSE 485-232 and users should always make reference to it.

- The Isolated RS485-RS232 serial converter TSE 485-232, 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. - limited liability company 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. - limited liability company 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. - limited liability company

INTENDED USE

The Isolated RS485-RS232 serial converter TSE 485-232 may only be used in the following applications:

- Connection of RS232 devices to RS485 devices.
- Extension of RS232 connections
- Protection of noise in industrial areas
- Remote RS232/RS485 transmission

Any other use of the product is not allowed and it is considered improper and therefore dangerous. EL.CO. S.r.l. - limited liability company 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 Isolated RS485-RS232 serial converter.
- 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. - limited liability company:

- 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 ISOLATED RS485-RS232 SERIAL CONVERTER TSE 485-232

The Isolated RS485-RS232 serial converter TSE 485-232 is a converter from serial line RS232 to RS485. It achieves complete electrical isolation between the lines and therefore also constitutes a valid protection against disturbances found in industrial environments.

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 has been designed to operate on a half duplex RS485 serial (a twisted pair) item at a speed of 75 bps to 250 kbps. An important feature of the EC-42 is that, since it is able to adapt automatically to the baud rate of the data in transit, it does not require any kind of preparation. Furthermore, the RS232 interface does not require Hand-Shake signals.

The device is fully compatible with the requirements applicable to the CE mark and is housed in a robust plastic container, 22.5 mm thick, suitable for mounting on a DIN rail.

- Asynchronous data transmission
- Compatible with any protocol (i.e. ModBus-RTU, ModBus-ASCII, Interbus, etc.)
- Automatic speed adaptation
- Speed up to 250 kbaud
- Communication on RS485-2 serial line
- Power supply 8 ... 28 Vdc and 9 ... 24 Vac
- Distance up to 1200 m
- Reduced absorption
- Galvanic 1500 Vrms isolation on three ways
- Voltage presence (blue) and RX and TX (yellow), USB (red) LEDs
- Point-to-point or multi-point connection
- Power directly from USB
- Simplified installation with DIN rail mounting
- Serial connection on removable terminals
- EMC compatibility meeting EN 50022 and EN 50035

Areas of use

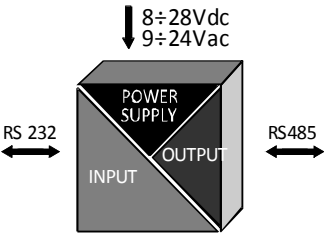
- Energy
- Water treatment
- Remote control
- Building Automation

TECHNICAL DATA ISOLATED RS485-RS232 SERIAL CONVERTER

(Typical at 25°C in nominal conditions)

POWER SUPPLY	8...28 Vdc; 9...24 Vac -Protection against reverse polarity 60 Vdc max.
ABSORPTION	20 mA (maximum) @ 24 Vdc
SWITCHING TIME Rx/Tx RS485	<25 µs
INSULATION	1500 Vac 1 minute on the three ways
RS485 SIDE CONNECTION	Screw terminal
TRANSMISSION SPEED	75 to 230400 baud
DISTANCE/SPEED	0.6 km @ 38.4 Kbaud
	0.8 km @ 19.2 Kbaud
	1.2 km @ 9.6 Kbaud
	2 km @ 4.8 Kbaud
	3 km @ 2.4 Kbaud
	5 km @ 1.2 Kbaud
LINE IMPEDANCE	Typical 120 Ω
NUMBER OF CONNECTED TERMINALS in RS485	32 max
OPERATING TEMPERATURE	-20°C...+70°C
STORAGE TEMPERATURE	-40 °C...+85 °C
HUMIDITY	0 ... 90% non-condensing
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

DIMENSIONS (W x H x D)	101 x 119 x 22.5 mm
ASSEMBLY	on T35 DIN rail according to EN 50022
COMPLIANT WITH THE SPECIFICATION	EIA RS232; RS422; RS485
EMC (for industrial environments)	EN 50081-2 and EN 50082-2



Overall dimensions (mm)

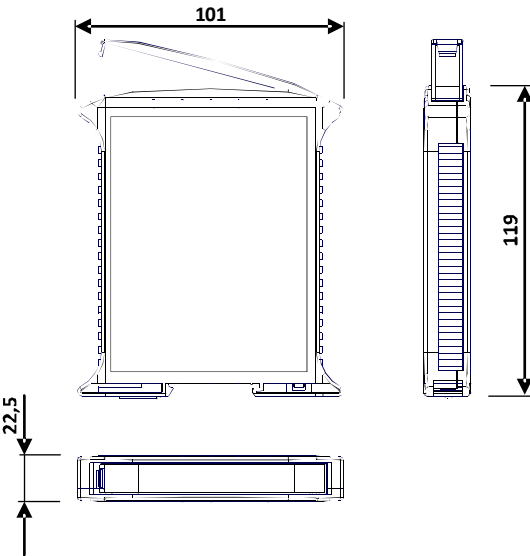


Figure 1- Overall dimensions

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;

Connections

Make the connection according to the following diagrams (Figure 2-). Also refer to *Technical data Isolated RS485-RS232 serial converter* and meet the following conditions:

- Use shielded cables and connect the shield to a ground terminal dedicated to the equipment.
- The cables must not be in the vicinity of cables for power installations as inverters, motors, induction furnaces and the like.

The device must be powered by a DC/AC DC voltage applied between C and D terminals. Data arriving on the "Tx" line of the RS232 port (pin 3 of the DB9 connector) are converted and retransmitted by the RS485 port (I-L terminals), while the data arriving on the "Rx" line of the RS485 port (I-L terminals) are converted and retransmitted by the RS232 port (pin 2 of the DB9 connector).

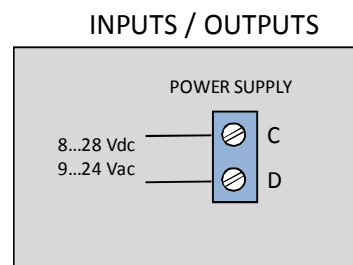
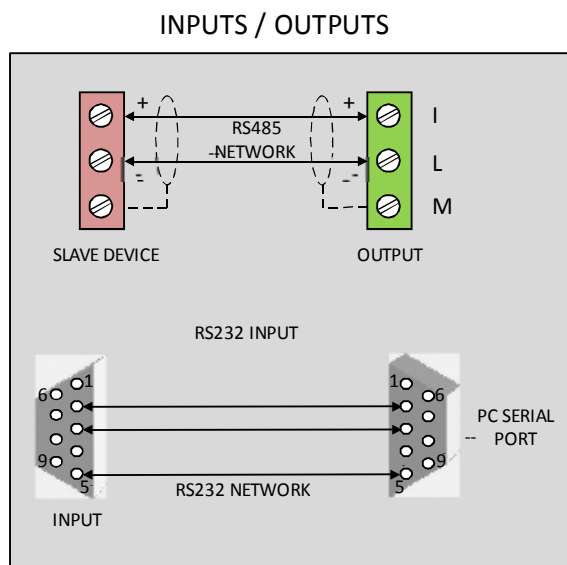


Figure 2- Connections

The device TSE 485-232 can be connected to point-to-point or multi-point networks, in RS485 (half duplex) configuration. The multi-point network provides up to 32 terminals connected to a maximum distance of 1.2 km at a transmission speed of 38400 bps.

The data transmission is of the asynchronous serial type, without protocol, character format and transmission speed preparation.

Signaling LEDs

BLUE LED - PS (power supply)	ON	Proper power
	OFF	Device not powered
YELLOW LED - Rx and Tx	ON	Communication in progress
	Flashing	The device does not communicate

ORDERING DATA

The device TSE 485-232 is suitable for point-to-point or multi-point connections in RS485 configuration (2 wires).

The order code is as follows: TSE 485-232