TC485

RS232 to RS485 converter

Simple make for basic use

TC485

Datasheet

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TABLE OF CONTENTS

ABOUT

TC485 is a simple bidirectional converter of RS232 line to RS485 bus specifically designed to be used with intelligent sensors TQS4 and THT2.

Galvanically isolated RS232 side is only powered via RTS signal from RS232, RS485 side is powered from an external power supply. RS232 line is connected via D-SUB9 connector on the side of the TC485. RS232 is connected to a PC using straight 1:1 cable. RS485 Bus is on a slip-on terminal. TC485 automatically switches the communication direction.

Applications

- Converter for TQS thermometer / hygrometer system.
- Conversion of RS485 to RS232 for some basic uses.

Features

- Galvanically isolated RS485 line
- RS232 line with surge protection
- Automatic direction control on RS485
- Power ON indicator
- No setup needed
- Rugged industrial make in a metal enclosure
- Removable terminals for RS485 and power supply

Note on using the converter

For any more complicated applications where TC485 is unusable, you can use UC485 converter instead which has a variety of settings for RS232, RS485 and RS422 / RS422 Multi-master lines.

WIRING

RS232 connector (D-SUB 9) is to be connected to a PC using straight 1:1 RS232 cable (modem cable). Connections are shown in fig. 2, cable connections are shown in tab. 1 (only used signals are in the table).

signal	PC		TC485
	D-SUB 25	**D-SUB 9**	**D-SUB 9**
TxD	2	3	3
RxD	3	2	2
DTR	20	4	4
RTS	4	7	7
GND	7	5	5

tab. 1 – RS232 cable connections

RS485 line and power (slip-on terminal) connects via a common connector. RS485 connections and power connections are shown in fig. 1.[1]
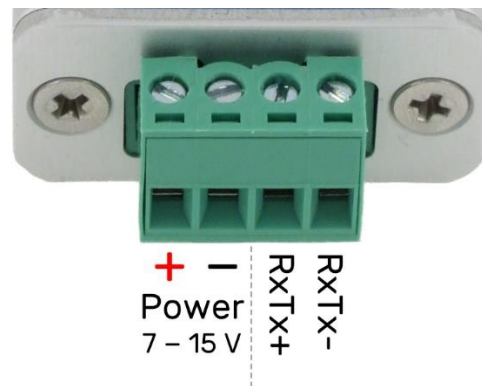

fig. 1 - power supply and RS485 connection

Block diagram

RS232 is connected via the galvanic isolator to the board logic taking care of the RS485 communication direction control and to the RS485 driver. To ensure proper function, DTR and/or RTS signals one the RS232 side must be set to ON.[2] RS485 side is powered from the external power supply unit.
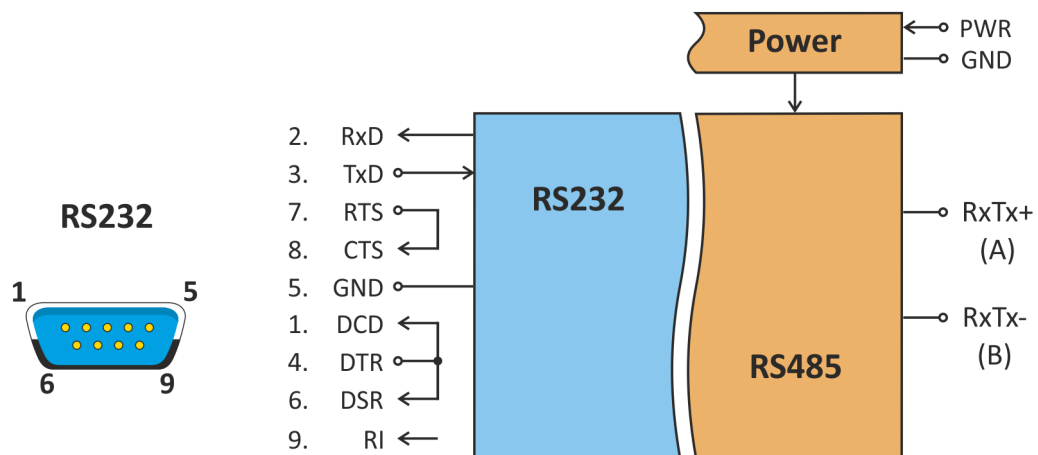

fig. 2 – block diagram

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[1] Some manufacturers label RS485 line connections as A (RxTx+) and B (RxTx-).

[2] Please use UC485 converter if your application does not allow this. UC485 can be found here.

RS485 LINE DIRECTION CONTROL

Automatic RS485 direction control works by following the data flow on the RS232 line. In idle state, TC485 converter is switched to receive data from RS232, once the data flow starts from RS232 it switches to transmitting without any timeout. After the end of the data stream from the RS232 line, the converter waits for the 0.9 ms to switch back to receive mode. RS485 device can only start transmitting after this timeout.

INDICATIONS

PWR indicator – Power voltage is connected.

DTR indicator – lights up when DTR and/or RTS signals are present on the RS232 side. Indicator shows there is power on the RS232 side.

Both indicators must be lit to ensure proper function!

TECHNICAL PARAMETERS

RS232

Connector ....D-SUB 9F (female)

Used signals ....RxD, TxD, RTS, DTR, GND

Converter signals..............................RxD, TxD

Galvanic isolation form RS485 ....yes

Communication speed.......................up to 115,2 kBd

RS485 (two-wire only)

Connector ....Slip-on terminal; 3,5 mm spacing

Termination..None

Built-in biasing resistors.....................10 kΩ

Comm. direction timeout....................0,9 ms

Power

Power voltage....................................DC 7 to 15 V; reverse polarity protection

Connector ....Slip-on terminal; 3,5 mm spacing

Current draw with no load..................typ. 5 mA

Power on DCD, DSR, DTR, RTS or CTS necessary to power the RS232 side of the converter
....6 to 12 V DC

Other

Mechanical make...............................Metal enclosure; material: anodized aluminum

Operating temperatures.....................0 °C až 70 °C

Dimensions (with connectors)............67 mm × 33 mm × 16 mm (width × height × length)

Weight ....45 g

Degree of protection IP30

Mounting options

Mounting:

- Standalone – no DIN rail holder *(default)*
- With DIN rail mount

Please do not hesitate to contact us in case of other specific requests for the TC485 functionality and makes.

Papouch s.r.o.

Data transmission in industry, line and protocol conversions, RS232/485/422/USB/Ethernet/GPRS/ WiFi, measurement modules, intelligent temperature sensors, I/O modules, and custom-made electronic applications.

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