Automation System TROVIS 5400
Converter TROVIS 5484

Mounting and operating instructions

EB 5409-2 EN

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TROVIS® Electronics from SAMSON

CE

Contents

1 Application

The TROVIS 5484 Converter is used to convert RS-485 or RS-422 signals into RS-232 or V.24 signals.

This way, the device allows two different interfaces to be adapted to each other.

CAUTION!
Assembly, start-up and operation of the device may only be performed by trained and experienced personnel familiar with this product.

2 Principle of operation

The device is equipped with two interfaces, X1 and X2, which are electrically isolated from each other.
Four LEDs are located on the front side of the device. When they are illuminated or blink, the following conditions are signalled:

- Power on
- V.24 interface receiving data
- V.24 interface sending data
- RS-485 transmitter is active

There is a series of jumpers on the printed circuit board inside the device which allows the converter to be adapted to the requirements of the bus system. Fig. 1 illustrates the position of the jumpers. The casing can be opened as described in section 3. The following functions can be selected or set as follows (for the exact jumper settings and the default positions refer to Tables 1 to 6):

Selecting 2-wire or 4-wire system

Depending on the wire system used, you are required to select a 2-wire or 4-wire system for the RS-485 interface, using the X7 jumper (see Table 1).

Bus termination of the RS-485 interface

The bus can be terminated in the converter, if necessary, as follows: with the 2-wire system for transmitter and receiver, with the 4-wire system for receivers only. For this purpose, the jumpers must be set according to Table 2.

Transmitter control

Depending on the software used, the transmitter in the converter can be activated in two different ways, i.e. either by the data itself or through the RTS signal. The transmitter can also be activated permanently. For the applicable setting, refer to Table 3.

CTS control

If the transmitter is controlled by the RTS signal, this signal can be delayed in case of communication problems by changing the X6 jumper according to Table 4.

Increasing the duration of the transmitter's switching signal

To prevent reflections in the lines of the 2-wire system, the transmitter signal can be lengthened (see Table 5).

Grounding the X2 interface

If required, ground and shield of the X2 interface can be connected to the grounding conductor (PE) by changing the position of the jumper X5 as described in Table 6.

3 Opening the device

CAUTION!
Do not open the device, unless the power is turned off. The device may be opened by experienced personnel only!

When changing the jumper positions as described in section 2, proceed as follows:

1. Disconnect the mains plug.
2. Loosen the two screws located on the bottom of the case.
3. Separate the two case parts, taking care that the front panel does not fall out.
4. Remove the front panel and set aside.
5. Change the jumper positions according to Tables 1 to 6.
6. Replace the front panel, making sure the holes and LEDs are properly aligned.
7. Reassemble the two case parts and screw back together using the two screws.

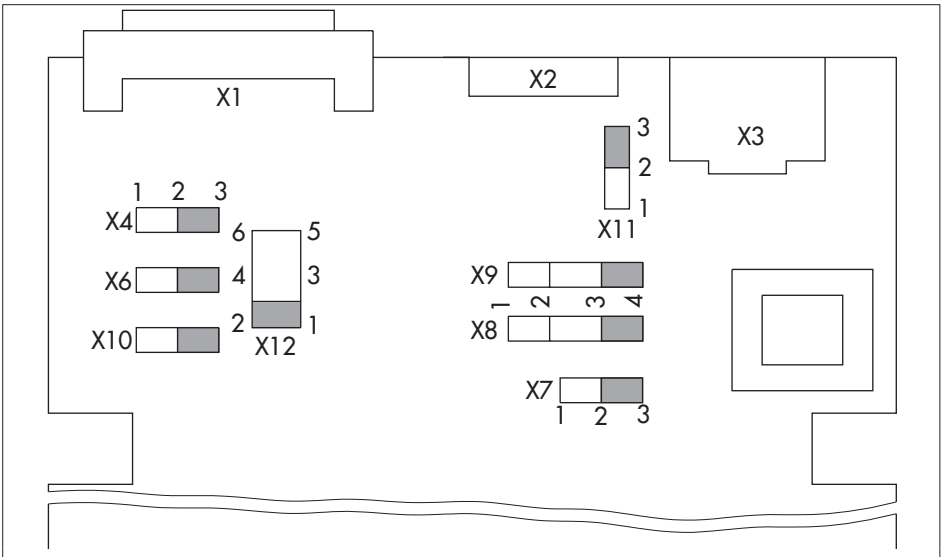


Fig. 1 · Position of the jumpers

Table 1 · Selecting a 2-wire or 4-wire system

Circuit	Jumper	
	Designation	Position
2-wire	X7	1-2
4-wire		2-3

Table 2 · Bus termination of RS-485 interface

Bus termination	Jumper	
	Designation	Position
Transmitter/ receiver (2-wire)	X8, X9	1-2
No		2-3
Receiver (4-wire)		3-4

Table 3 · Transmitter control

Transmitter activated	Jumper	
	Designation	Position
By data (TD)	X10	1-2
By jumper X4		2-3
By RTS (only if X10 at 2-3)	X4	1-2
Permanently (only if X10 at 2-3)		2-3

Table 4 · CTS control

Function	Jumper	
	Designation	Position
Delayed RTS signal (t=20 ms)	X6	1-2
Not delayed RTS signal		2-3

Table 5 · Increasing duration of the transmitter's switching signal for X2

Function	Jumper	
	Designation	Position
Not delayed (3 µs)	X12	1-2
0.75 ms ± 20%		3-4
1.5 ms ±20%		5-6

Table 6 · Grounding conductor (PE)

Function	Jumper	
	Designation	Position
PE connected to mass and shield by X2	X11	1-2
PE not connected to mass and shield by X2		2-3

Default setting

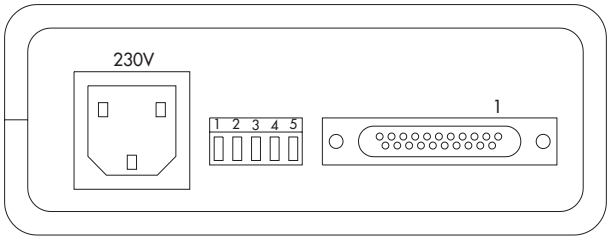


Fig. 2 · Electrical connections on the rear side of the device

4 Electrical connections

The power suply connection 230 V, the 5-pin connector of the RS-485 (RS-422 A) interface as well as the 25-pin SUB-D female connector of the RS-232 (V.24) interface are located on the rear panel as shown in Fig. 2. For the assignment of the data line connections, refer to Tables 7 and 8. Fig. 3 shows the typical wiring in a 4-wire system. For the RS-485 interface, the data lines must be attached to the 5-pin connector using the screw clamp terminal. For the data lines, we recommend using a twisted-pair, unshielded cable (0.5 mm², max. 100 nF/m, max. 100 Ω/km). Use a shielded cable if the electrical interference is strong. The shielding

Table 8 · Connection of X2 (5-pin screw clamp terminal)

Terminal		Designation
1	Input	R_B (R_{x+})
2	Input	R_A (R_{x-})
3	Output	T_B (T_{x+})
4	Output	T_A (T_{x-})
5	Shield	

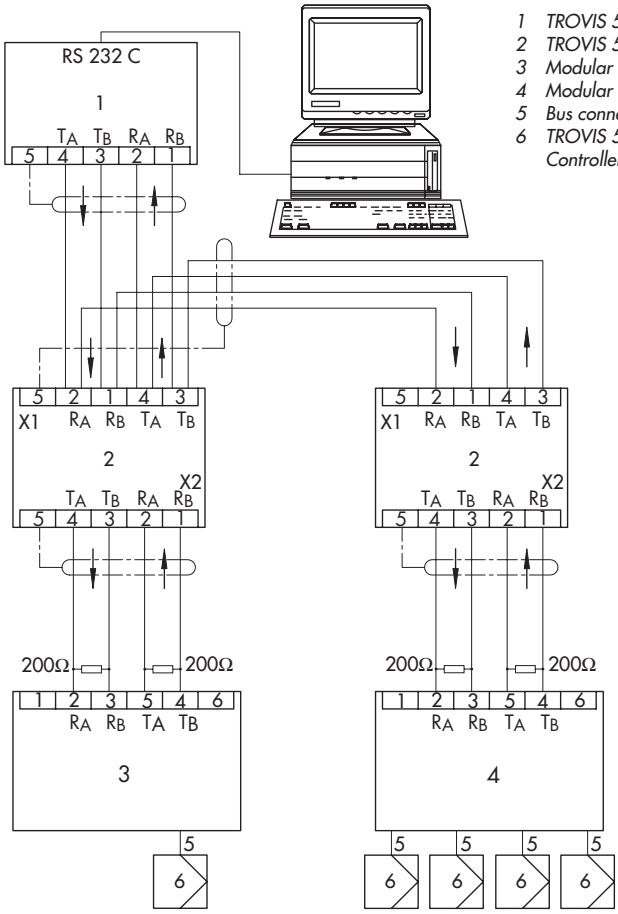
Table 7 · Connection of X1 (RS 232/ V.24)

Terminal assignment		CCITT V.24 Designation	Description	
25-pin	9-pin			
1	-	101	Protective ground	
2	3	103	TD	Transmit data
3	2	104	RD	Receive data
4	7	105	RTS	Request to send
5	8	106	CTS	Clear to send
6	6	107	DSR	Data set ready (+12 V)
7	5	102	GND	Signal ground
8	1	109	DCD	Data carrier detect (+12 V)

must only be connected to one end to prevent ground currents. It must be noted that the transmission properties are reduced with increased cable capacitance and smaller cable cross-sections which leads to a reduction in the bus range.

At the RS-232 interface, plug in the connecting cable (25-pin SUB-D male connector and 9-pin SUB-D female connector) supplied with the device .

At the power supply connection 230 V, plug in the power supply cable supplied with the device.



1 *TROVIS 5484 Converter*
2 *TROVIS 5482 Repeater*
3 *Modular jack 1-fold 1400-6169*
4 *Modular jack 4-fold 1400-7140*
5 *Bus connecting cable 8801-280.*
6 *TROVIS 547. District Heating Controller*

Fig. 3 · Connection in a 4-wire bus

5 Installation

The device can either be placed on an uneven surface using the 4 rubber pads supplied or fixed with two Velcro strips.

Rubber pads

Remove the protective backing! Stick the rubber pads onto the underside of the device.

Velcro strips

Two pairs of Velcro strips are supplied with the device. The Velcro strips also have a self-adhesive side and can be fixed as follows:

1. First remove the protective backing from one side of the strip on each pair.
2. Stick one pair of strips each on the left and on the right side of the device top or bottom.
3. Now remove protective backing from the other side of each pair of strips.
4. Stick the device onto the desired location using the Velcro strips.

6 Technical data

Data transmission	Asynchronous, full-/half-duplex or simplex
Interface 1	RS 232 C, 25-pin SUB-D female connector, approx. 1.8 m connecting cable (25-pin SUB-D male connector and 9-pin SUB-D male connector for connection to PC)
Interface 2	RS 485 or RS 422 A 2- or 4-wire transmission via 5-pin connector
Transmission rate	0 to 100000 Bit/s; code transparent
Running time of device	4-wire systems: appr. 0.2 µs independent of transm. rate; 2-wire systems: min. 45 µs
Indicators	4 LEDs for power, TD, RD and status
Isolation	Electrical isolation of data lines with optocouplers; supply isolation through transformer, PE conductor used to discharge interference current

Supply isolation	420 V effective
Power supply	230 VAC, 50/60 Hz, others available on request
Supply cable	1.8 m; separate
Power consumption	Maximum 3.5 VA
Noise immunity	According to EN 50082 Part 2
Noise emission	According to EN 50081 Part 1
Ambient temperature	5 to 50 °C
Humidity	0 to 95 % relative air humidity
Case material	Plastic ABS, black; rear panel: aluminum
Installation	With rubber pads or Velcro strips
Weight	0.4 kg
Dimensions	129 x 47 x 134

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