Automation System TROVIS 5400
Repeater TROVIS 5482

Mounting and operating instructions

EB 5409-1 EN

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TROVIS® Electronics from SAMSON

CE

Contents

1 Application

The TROVIS 5482 Repeater is used in a RS-485 bus system to increase the line length by 1200 m.

It can also be used to convert data for a 4-wire bus system into data for a 2-wire bus system.

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 as well as from the PE connection.
Four LEDs are located on the front side of the device. When they are illuminated or blink, the following conditions are signalled:

- | Power on
- ⊖ X1 sending data
- ⊕ X1 receiving data
- ⊙ X2 recognizes that transmitter is active (DCD)

There is a series of jumpers on the printed circuit board inside the device which allows the repeater to be adapted to the requirements of a RS-485 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 (for the exact jumper settings and the default positions refer to Tables 1 to 6):

Selecting a 2-wire or 4-wire system

Depending on the bus system used, a 2-wire or 4-wire system must be selected for each interface (see Table 1).

Bus termination of interfaces

The bus can be terminated both at interface X1 and at X2 by positioning the jumpers X6, X7 and X11, X12 as shown in Table 2.

Controlling the transmitter for interface X2

A signal level detector is located at both interfaces. It recognizes whenever a bus station sends data (transmitter activated). In the 2-wire system, it controls the switching between sending and receiving data. The signal level detector can be disabled. In that case, sending and receiving are switched over by the data itself (see Table 3). An adjustment of the transmission rate is not necessary.

Blocking duration of the transmitter

In the 2-wire system, one interface is blocked whenever the other interface sends data. Jumpers X16 and X17 allow the duration of the blocking to be changed, should communication problems occur (see Table 4).

Increasing the duration of the transmitter's switching signal for X2

In order to prevent reflections in the lines of the 2-wire system, the transmitter's switching signal can be lengthened.This is only possible for the interface X2 (see Table 5).

Grounding the interfaces

If necessary for older devices, it is possible to ground the interfaces X1 or X2 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 only be opened by experienced personnel!

When changing the jumper positions according to the instructions in section 2, proceed as follows:

1. Disconnect mains plug, if necessary.
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 with one another.
7. Reassemble the two case parts and screw back together using the two screws.

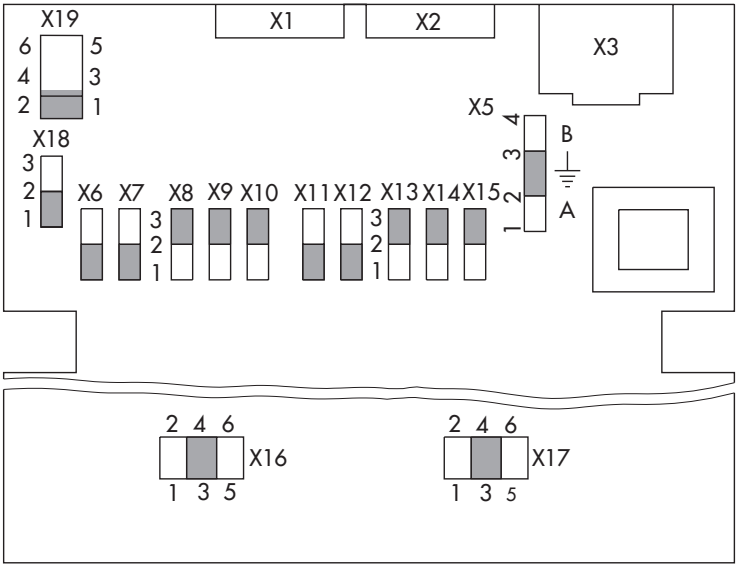

Fig. 1 · Position of the jumpers

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

Interface	Circuit	Jumper	
		Designation	Position
X1	2-wire	X8, X9, X10	1-2
	4-wire		2-3
X2	2-wire	X13, X14, X15	1-2
	4-wire		2-3

Table 2 · Bus termination of interfaces

Interface	Bus termination	Jumper	
		Designation	Position
X1	Yes	X6, X7	1-2
	No		2-3
X2	Yes	X11, X12	1-2
	No		2-3

Table 3 · Controlling the transmitter for interface X2

Function	Jumper	
	Designation	Position
By data	X18	1-2
By signal level detector		2-3

Default setting

Table 4 · Blocking duration of a transmitter

Interface	Time in µs	Jumper	
		Designation	Position
X1	40 ±20 %	X16	1-2
	80 ± 20%		3-4
	120 ± 20%		5-6
X2	40 ± 20%	X17	1-2
	80 ± 20%		3-4
	120 ± 20%		5-6

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

Function	Jumper	
	Designation	Position
Not delayed (3 µs)	X19	1-2
0.75 ms ± 20%		3-4
1.5 ms ± 20%		5-6

Table 6 · Grounding the interfaces

Function	Jumper	
	Designation	Position
X1 grounded	X5	1-2
Electrically isolated interfaces		2-3
X2 grounded		3-4

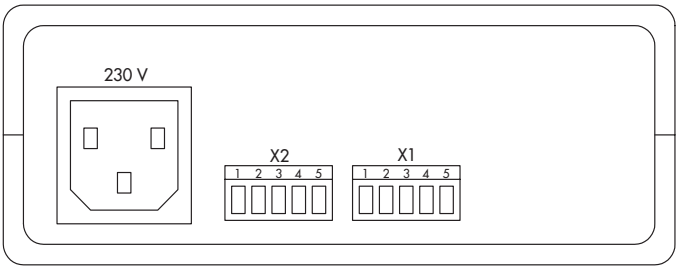

Fig. 2 · Electrical connections on the rear side of the device

4 Electrical connections

The power supply connection 230 V as well as both terminals for the interfaces X1 and X2 are located on the rear panel as shown in Fig. 2.
Connect the data lines for interfaces X1 and X2 to the supplied 5-pin connectors using screw terminals. For the data lines, we recommend using a twisted pair of wires, non-screened cable with a cross-section of 0.5 mm², a cable capacitance of maximum 100 nF/km and a line resistance of maximum 100 Ω/km. Use a shielded cable if the electrical interference is strong. The shielding must only be connected at 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.
For the assignment of the data line connections, depending on the type of line selected, refer to Tables 7 and 8. Fig. 3 shows the typical wiring in a 4-wire system.
Use the power supply cable supplied for the power supply connection 230 V.

Table 7 · 2-wire terminal for X1 and X2

Terminal		Designation
1	Input/Output	B
2	Input/Output	A
3	Not assigned	
4	Not assigned	
5	Shield	

Table 8 · 4-wire terminal for X1 and X2

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

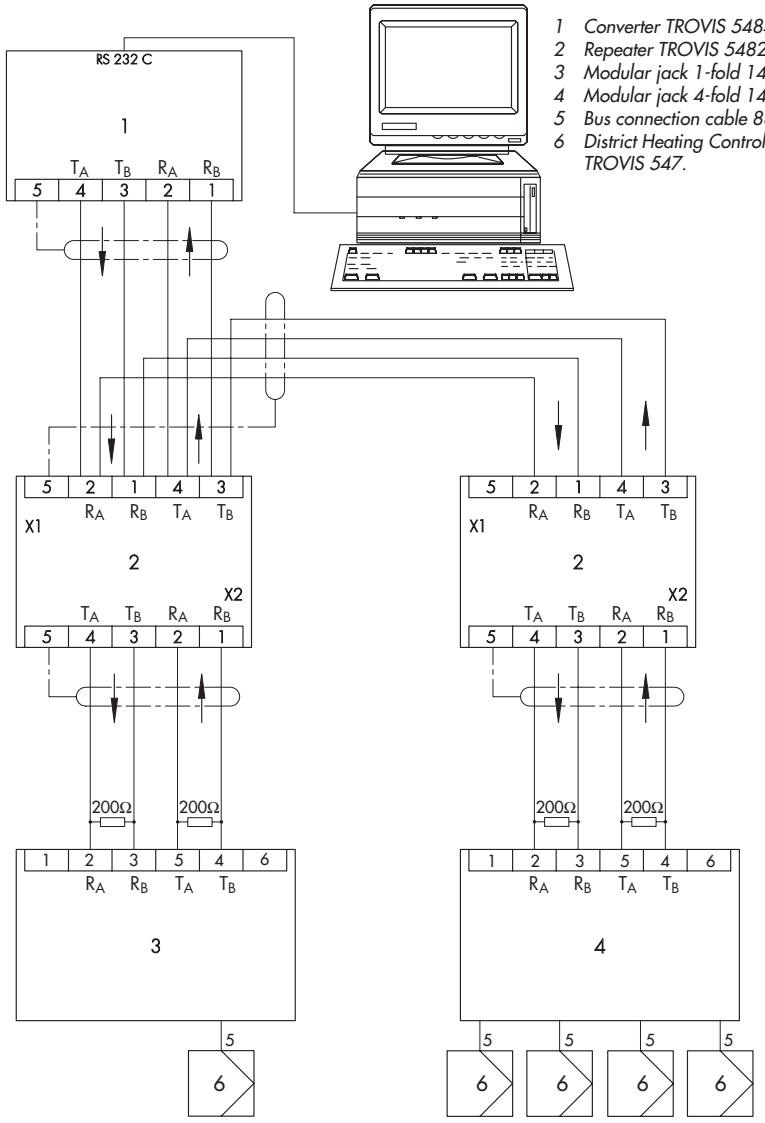

Fig. 3 · Connection in a 4-wire bus

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!
2. Stick strips on the left and right side of the top or bottom of the device!
3. Remove the protective backing from the other side of the strip!
4. Stick the device with the Velcro strips onto the desired location!

6 Technical data

Device	TROVIS 5482
Data transmission	Asynchronous, full-/half-duplex or simplex
Interface 1	RS 485 or RS 422 A 2- or 4-wire transmission via 5-pin connector
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	For 4-wire systems: appr. 0,2 µs independent of transmission rate For 2-wire systems and for conversion between 2- and 4-wire systems: minimum 45 µs
Indicators	4 LEDs for power, TD, RD and status
Isolation	Electrical isolation of data lines using 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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