






Expansion port **RS485/RS422**

USER'S GUIDE

Used symbols

-  Danger – important notice, which may have an influence on the user’s safety or the function of the device.
-  Attention – notice on possible problems, which can arise in specific cases.
-  Information, notice – information, which contains useful advice or special interest.

GPL licence

Source codes under GPL licence are available free of charge by sending an email to info@conel.cz.



**Declared quality system
ISO 9001**

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Issue in CZ, 12/15/2011



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1. Safety instructions

Please observe the following safety instructions:

- The expansion port must be used in compliance with all applicable international and national laws and in compliance with any special restrictions regulating the utilization of the communication module in prescribed applications and environments.
- Use only the original Conel company accessories. Thus you will prevent possible health risks and damage to the devices and ensure compliance with all relevant provisions. Unauthorised adjustments or use of unapproved accessories may result in damage to the expansion port and breach of applicable laws. Use of unapproved adjustments or accessories may lead to cancellation of guarantee, which has no effects on your legal rights.
- Do not expose the expansion port to extreme conditions. Protect it from dust, moisture and heat.



2. Product disposal instructions

The WEEE (Waste Electrical and Electronic Equipment: 2002/96/EC) directive has been introduced to ensure that electrical/electronic products are recycled using the best available recovery techniques to minimize the impact on the environment. This product contains high quality materials and components which can be recycled. At the end of its life this product **MUST NOT** be mixed with other commercial waste for disposal. Check with the terms and conditions of your supplier for disposal information.

3. Expansion port RS485/RS422 description

The expansion port RS485/RS422 is created as expansion board which enables to use of the next hardware interface of Conel modems or routers for next signal processing. This interface is physical connected on RJ45 connector on appropriate modem or routers.

The Expansion port RS485/RS422 can be selected via jumpers interface RS422 or RS485. Power port can also be selected using jumpers on the board expansion port. Description of the interface and an external or internal power supply selecting, see chapter interface and power supply selection.



Expansion port RS485/RS422 is possible fitted into PORT1 and PORT2.

4. Interface and power supply selection

External or internal power supply of module Expansion port RS485/RS422 can be made by wiring jumpers J2 and J3 on this module. If internal power supply of the module is required, jumpers J2 and J3 must be connected to pins 2 - 3. External power supply is made by connecting pins 1 - 2 with jumpers J2 and J3.

Interface behaviour of module Expansion port RS485/RS422 can be made by wiring jumpers J4, J5 and J6 on this module. If RS485 is required, jumpers J4 and J5 must be connected and jumper J6 disconnected. If RS422 is required, jumpers J4 and J5 must be disconnected and jumper J6 connected.

Jumper placement can be seen in the picture below (module Expansion port RS485/RS422 from TOP layer). We recommend that internal power supply is only chosen in the event that it is not possible to ensure external power supply. If internal power supply is chosen, converter RS485/RS422 is not galvanic separated.

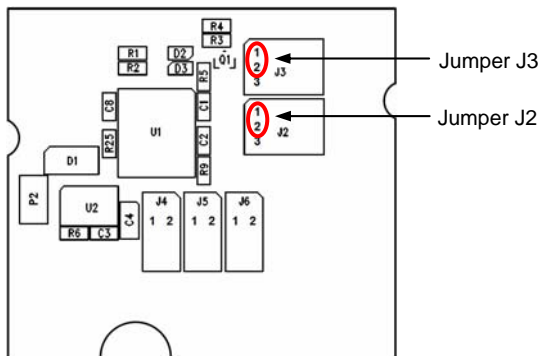


Fig. 1: The jumper circuitry for external supply

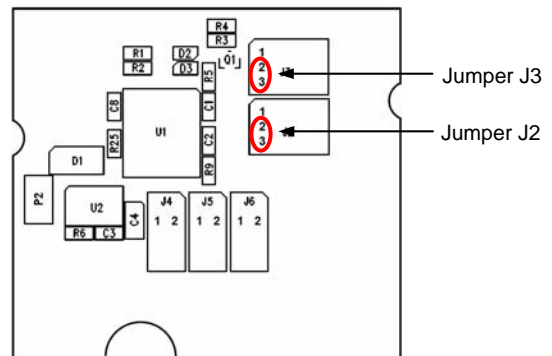


Fig. 2: The jumper circuitry for internal supply

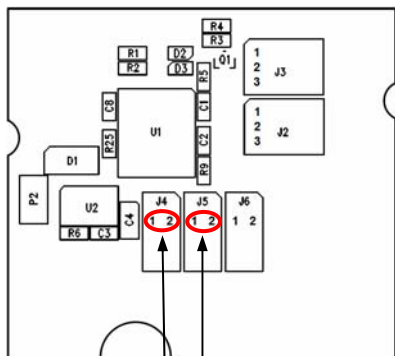


Fig. 3 The jumper circuitry for RS485

Jumper J4 a J5



Fig. 4 The jumper circuitry for RS422

Jumper J6

5. Connection of connector

5.1. Connection of RS485 connector

Panel socket RJ45.

Pin number	Signal mark	Description	Data flow direction
1	GND	Signal and supply ground	
2	GND	Signal and supply ground	
3	TxRx-	RS485 B (-)	Input/Output
4	TxRx+	RS485 A (+)	Input/Output
5	TxRx-	RS485 B (-)	Input/Output
6	TxRx+	RS485 A (+)	Input/Output
7	+12 V EXT	External power supply	
8	+12 V EXT	External power supply	

Table 1: Connection of RS485 connector

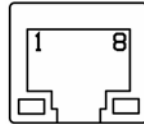


Fig. 5: RS485 connector

! ATTENTION! Power supply is selected on the expansion port RS485 by help of a jumper,

i The signals 3-5 a 4-6 are linked inside of the router.

If galvanic separation is required the converter must have an external power supply.

i Circuit example of the equipment with a router with data cable length less than 10 m:

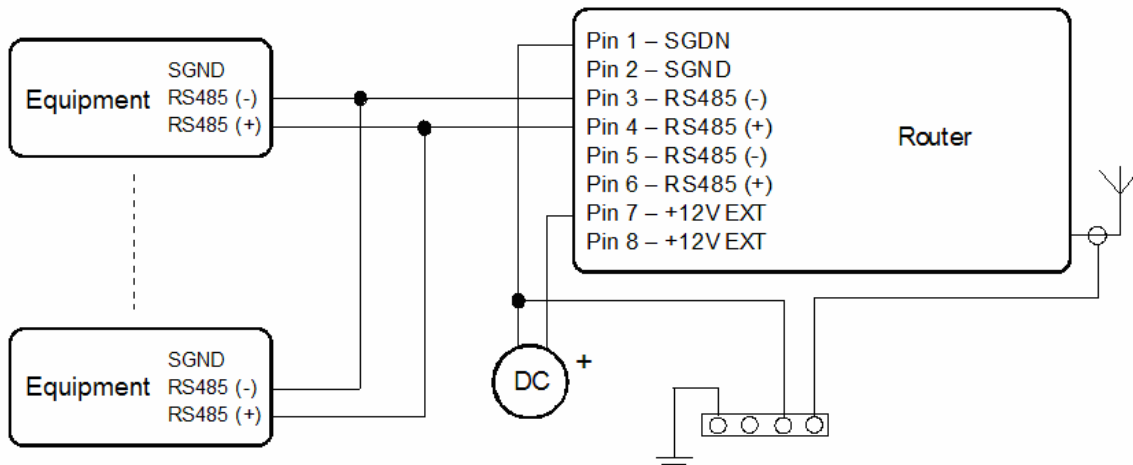


Fig. 6: Equipment with a router with data cable length less than 10 m

i Circuit example of the equipment with a router with data cable length more than 10 m:

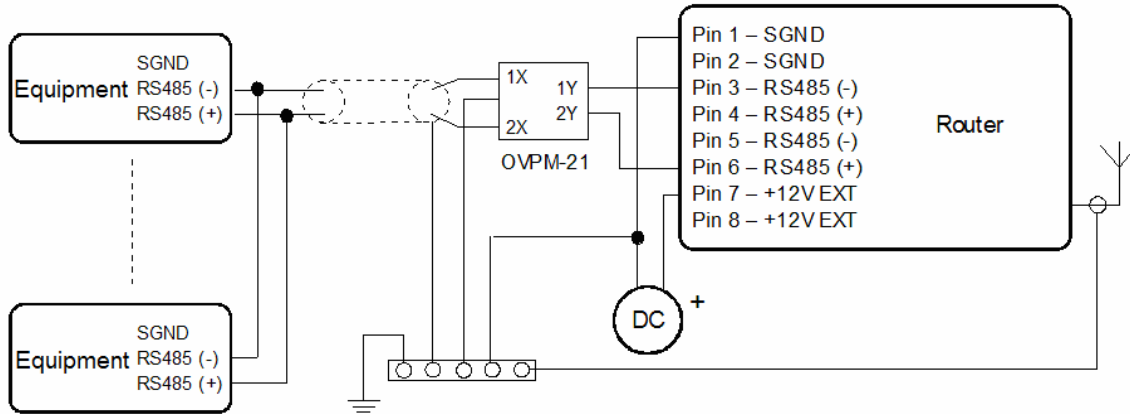


Fig. 7: Equipment with a router with data cable length more than 10 m

! With a RS485 data cable more than 10m it is necessary to use overvoltage protection on the router side!

5.2. Connection of RS422 connector

Panel socket RJ45.

Pin number	Signal mark	Description	Data flow direction
1	SGND	Signal and power supply ground	
2	SGND	Signal and power supply ground	
3	RxD-	Receive Data (-)	Output
4	RxD+	Receive Data (+)	Output
5	TxD-	Transmit Data (-)	Input
6	TxD+	Transmit Data (+)	Input
7	+12V EXT	External power supply	
8	+12V EXT	External power supply	

Table 2: Connection of RS422 connector

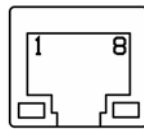


Fig. 8: RS422 connector

! **ATTENTION! Power supply is selected on the expansion port RS422 by help of a jumper,**

If galvanic separation is required the converter must have an external power supply.



Circuit example of the equipment with router with data cable length less than 10 m:

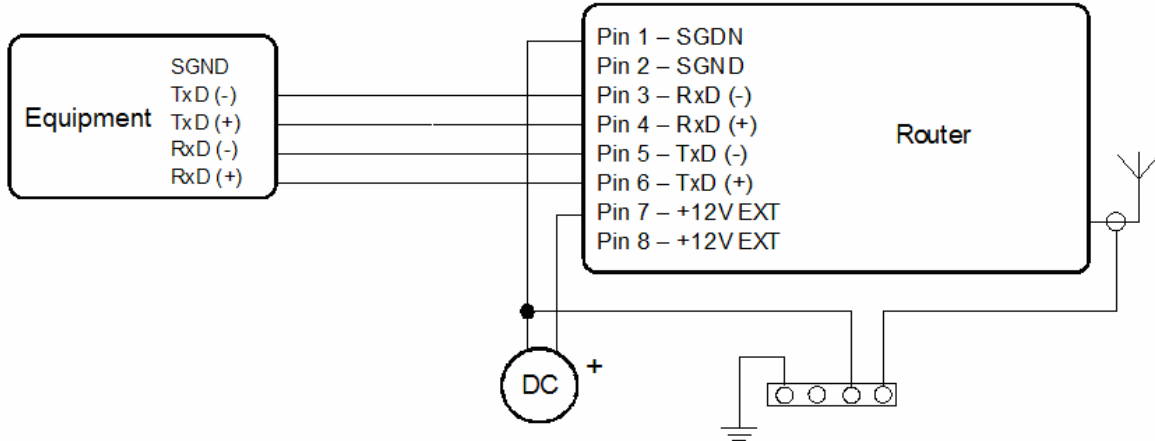


Fig. 9: Equipment with a router with data cable length less than 10 m



Circuit example of the equipment with a router with data cable length more than 10 m:

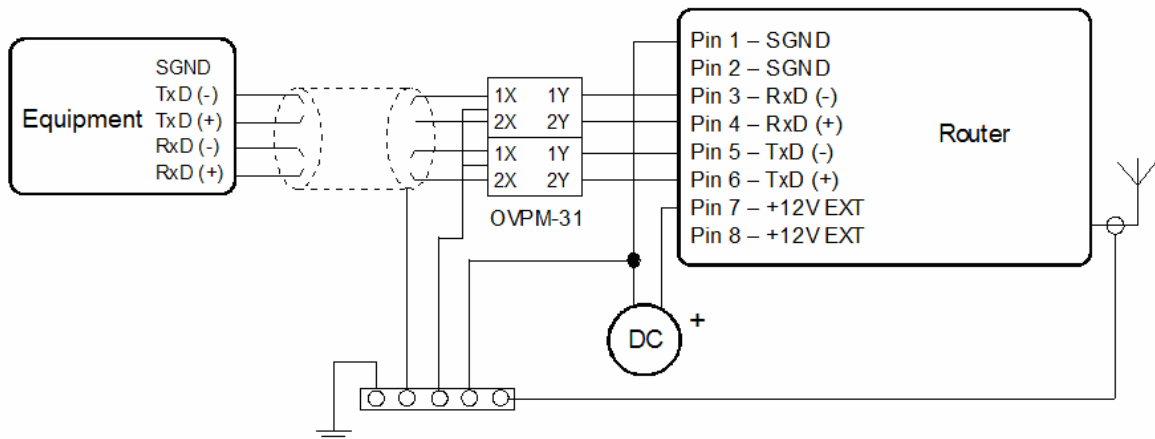


Fig. 10: Equipment with a router with data cable length more than 10 m



With a RS422 data cable more than 10m it is necessary to use overvoltage protection on the router side!

6. State indication of RS485/RS422 port

LED port indicator

Green LED	Indicates Receive data
Yellow LED	Indicates Transmit data

Table 3: State indication



Status indication is supported from 4th revision of boards.

7. Delivery Identification

Trade name	Type name	Power supply
XC-RS485/422	XC-485-422	Internal or external supply

Table 4: Delivery identification

Example of expansion port label:

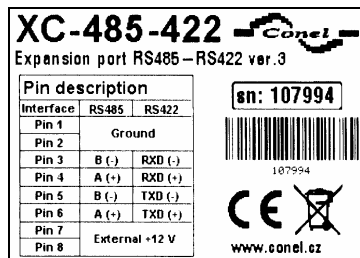


Fig. 11: Port RS485/422 label

8. Technical specification

Expansion port RS485-RS422		RS485	RS422
Power supply	External	+10 .. +30 V	
	Internal	+3,3V	
	Supply power	Max. 1 W	
	Supply current	Max. 4 mA	
Environment	Operating temperature	-30 .. +60 °C	
	Storage temperature	-30 .. +85 °C	
Standards	Emission	EN 55022/B	
	Immunity	ETS 300 342	
	Safety	EN 60950	
RS485 specifications (EN 1434)	Max. devices (each 1,5 mA)	256	
	Max. bit rate	38400 bps	
	Short circuit strength	Permanent	
	Max. total cable length (300Bd, 200nF/km)	1200 m	

Table 5: Technical specification

9. Recommended literature

[1] Conel: Application guide – Expansion port mounting.

10. Customers support

Up to date information about the product is on website:


<http://www.conel.cz/>

Upkeep-advice:

During cleaning of the router do not use aggressive chemicals, solvents and abrasive cleaners!

Conel Company hereby declares that the router narrated in this user's guide fits all basic demands of directive 1999/5/EC (R&TTE).

Router fits values of coefficient SAR defined by association ICNIRP and values of "About protection of health before non-ionized radiation".

 Declaration about consistency was issued and is possible get it in accompanying CD or at producer.