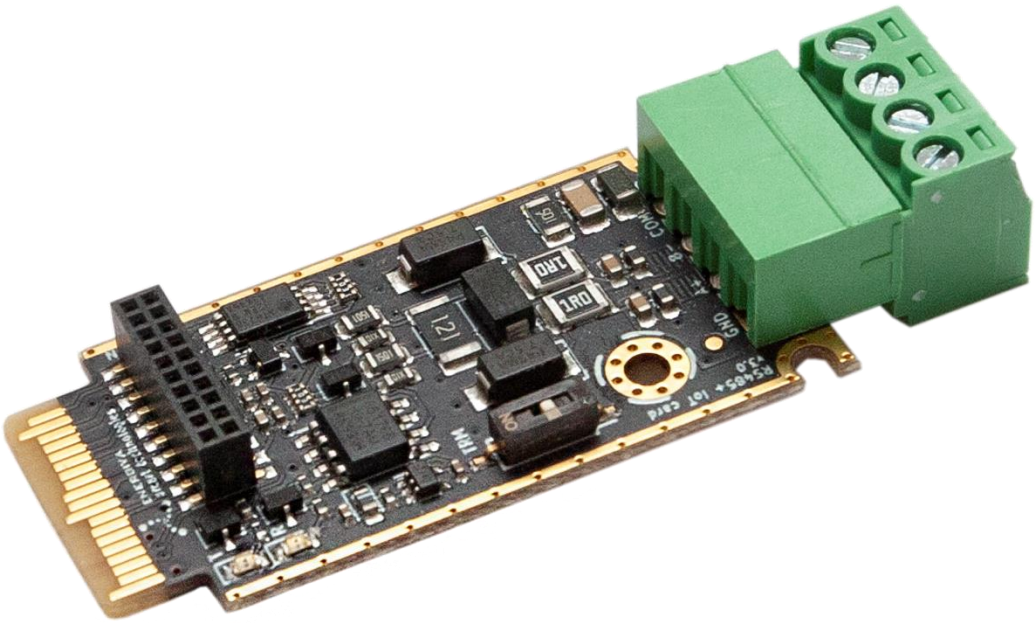
ENERGIYA
smart technologies

RS4+

RS485 + IoT card



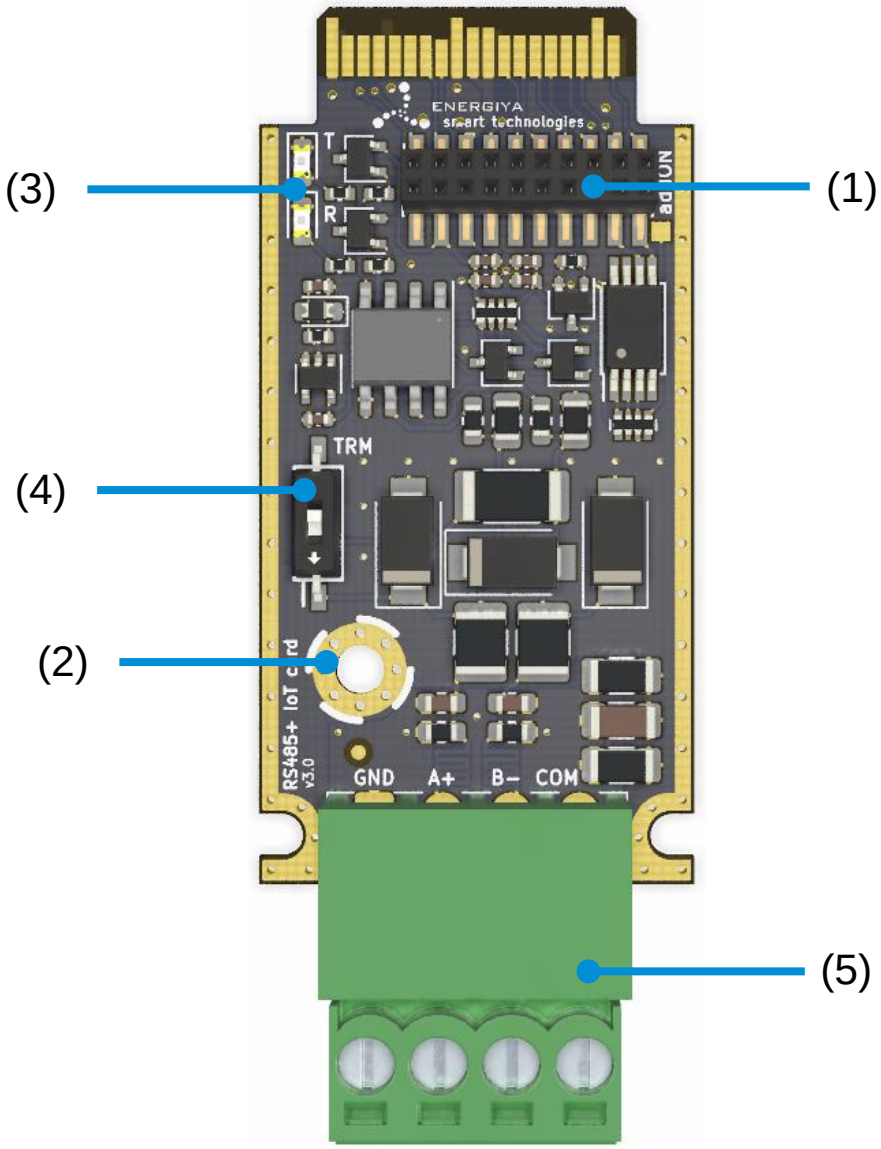


fig. 1

(1)	addON socket
(2)	addON mounting hole
(3)	RXD and TXD LEDs
(4)	Line termination switch
(5)	Pluggable terminal block

Description

The RS485 + IoT card is the standard EIA485 serial interface. The RS485 + card does not require an additional flow control line, because the direction of flowing data switches automatically.

Thanks to a special connector, the device has the possibility to extend its functionality with addON expansion cards.

The IoT card is compatible with mangOH Green, Red, Yellow and FX30 / FX30S.

Mounting the card in the host

It is recommended to install the IoT card when the power is off to avoid accidental short circuits. If the card is installed with the power on, it is necessary to reboot the program.

cDepending on the device used, the card is mounted using standoffs/spacers (mangOH) or rails (FX30). The IoT card also have dedicated cover for locking inside FX30.

Important! Never mount or remove the addON card with power on!

RS485 bus wiring

The following figure shows a description of the connector terminals.

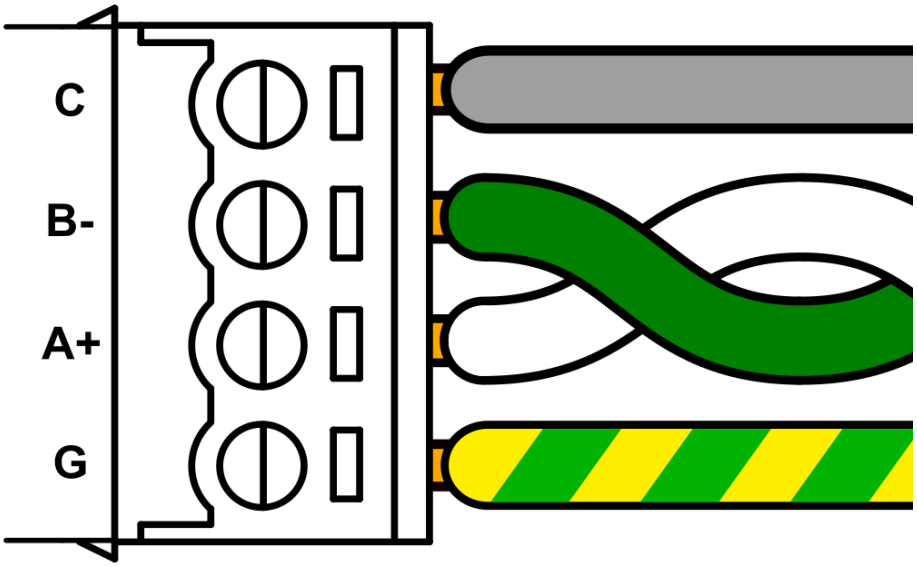


fig. 2

A+, B-	RS485 bus terminals
C	common
G	ground

RS485 topology and termination

Twisted pair cable is used as a wire in the RS485 bus (A and B). The RS485 bus has a straight line topology with a maximum length of 1200 m. Straight line topology is recommended, and when we can't avoid a branch, let's try not to exceed 10 m. Star and ring topology should be avoided. Terminating resistors (T) must be activated at the extreme ends of the bus (fig. 3).

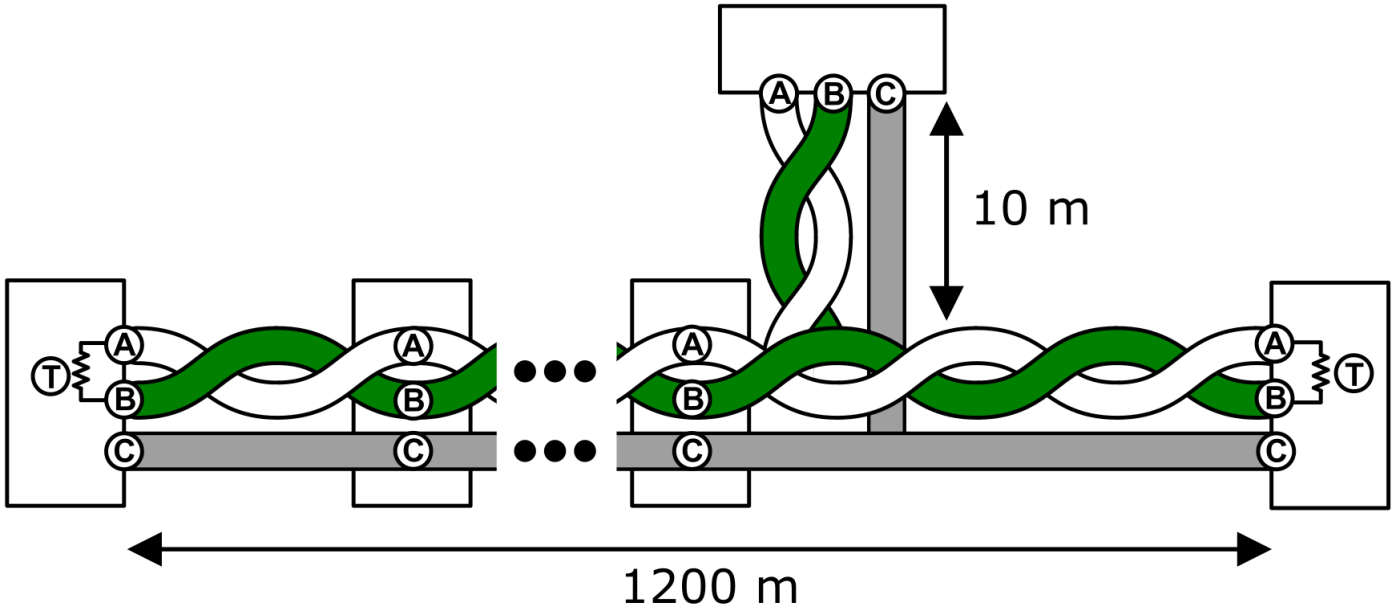


fig. 3

Important! Connections via terminals A and B are sufficient for RS485 communication. We recommend potential equalization and connection of the common terminals of all units. This avoids potential differences that can lead to communication errors or make communication completely impossible.

Important! Terminating resistors are used to avoid signal reflections. They are connected in parallel between terminals A and B of the RS485 bus at its extreme points. To connect the terminating resistor in the RS485+ IoT card, the jumper must be shorted on the TERM pins (see figure 1, element 3).

Important! The quality of the cables used and their diameter also affects the quality of data transmission. It is recommended to increase the wire diameter as the bit rate increases, because as the wire diameter increases, its resistance decreases.

Important! Try to don't unwinding your twisted pair more than one or two inches. This may be difficult with shielded cables, but it is worth taking care of the cabling quality.

RS485 grounding

We strongly recommend grounding the host IoT card. The RS485+ card has a special grounding terminal. This increases the safety and resistance of the system to electrostatic discharge.

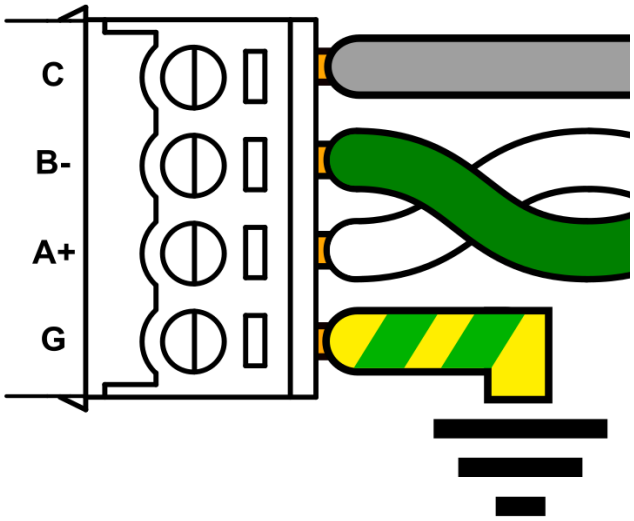


fig. 4

The use of shielded cables also improves safety and transmission quality. However, badly connected or not connected shields of cables can only worsen the situation. Connect the shields of bus cables to the ground only at one point.

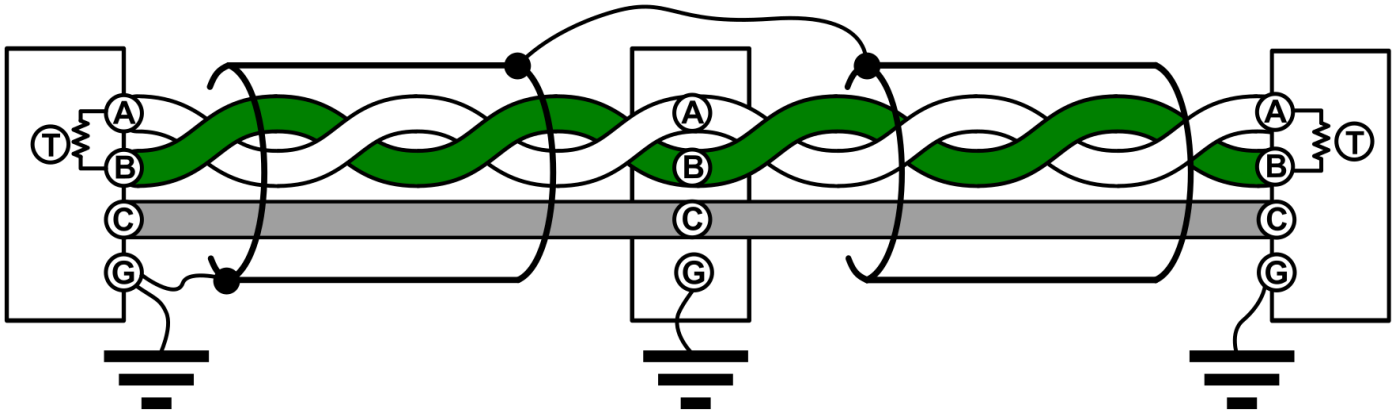


fig. 5

Important! Using high quality materials and taking care of the quality of the installation from the very beginning, we can be sure that the system will function without the slightest malfunction or interference for a long time, which is of great importance in bus systems and data transmission.

Specifications

Dimensions (W x H x D)	22.3 x 58.8 x 12.9 mm
Operating temp	–40 to +85°C
Weight	9 g
Current consumption	8 mA
Interface connector type	pluggable terminal block
Wire range	0.5 to 1.5 mm^2 (20 to 16 AWG)
Max recommended cable length	1200 m
Terminating resistor	yes (120 Ω)
Fail-safe biasing	yes
Grounding lug	yes
Reverse polarity protection	yes
ESD protection	yes
addON socket	yes
Latching cover for FX30	yes

Troubleshooting

Lack of communication	check the bus according to the instructions in the manual, check for a short circuit
Communication errors	check baud rate, check topology and termination, check common points and grounding