

## R012

## RS232 – RS485 data converter



### Summary

R012 is a RS232 to RS485 multi-speed half-duplex physical level converter with galvanic separation at both ends and power part. The device is equipped with a microcontroller which controls the data flow switching. This converter is a successor of the previous types M010, M011 and M012.

### Applications

- domat I/O modules link to PC
- any RS232 to RS485 conversion where galvanic separation is required

### Functions

The RS485 bus supports half-duplex communication. For automatic flow control, a microcontroller is used which is controlled by the CTS or DSR signals (DSR as default). The communication speed of both channels must be equal and is to be set by DIP switches under the front panel of the converter. There are LEDs at the front panel to indicate power presence and RS485 data flow.

For the RS485 connection is used 2-pole connector. The line is protected against overvoltage. In case the converter is used as the last in line, a terminating resistor may be employed by connecting DIP switch accessible behind the K connector.

For the RS232 connection, a CANON 9M (pins) connector is used. For PC connection, use nullmodem (cross) cable with CANON 9F (holes) at both ends. System **domat** only uses RxD, TxD, and GND signals for communication.

## Technical data

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Supply voltage	10 V ÷ 35 V DC, 14 V ÷ 24 V AC, any polarity
Consumption	1,5 W
<b>Communication</b>	
RS485	K+, K- Communication asynchronous, 1200 ... 115200 bit / s Bits 8 or 9, 1 stop bit Max. bus length to 1,200 meters Galvanically isolated, isolation voltage 1 kV
Default settings	Bus end OFF, 8, 9600 (Suitable for I / O modules domat)
RS232	CANNON 9 male System <b>domat</b> only uses RxD, TxD, and GND signals. 1200 ... 115200 bit/s Bits 8 or 9, 1 stop bit Galvanically isolated, isolation voltage 1 kV
Data flow control	Auto, CTS, or DSR
Dimensions	see below
<b>Operating environment</b>	
Ambient conditions	-5 – +40 °C; 5 – 95 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according EN 60721-3-3 climatic class 3K3)
Storage conditions	-5 to +45 ° C; 5 to 95% relative humidity; non-condensing gases and chemically non-aggressive conditions (according EN 60721-3-1 climatic class 1K3)
Standards Compliance	EMC EN 61000-6-2 ed.3: 2005, EN 55022 ed.3: 2010 (industrial environment) Electrical safety EN 60950-1 ed.2: 2006 + A11: 2009 + A12: 2011 + A1: 2010 + A2: 2014 Restriction of Hazardous Substances EN 50581: 2012
EU legislation	Council Directive 2006/95 / EC, the health and safety of low voltage equipment Council Directive 2004/108 / EC Electromagnetic Compatibility Council Directive 2011/65 / EC Certain Hazardous Substances in Electrical and Electronic Equipment

**Terminals and settings**



**Terminals and connectors:**

- G** power
- G0** power
- TE** optional connection for shielding
- RS232** serial link RS232; CANNON 9 male (1- DCD, 2 - RXD, 3 - TXD, 4 - DTR, 5 - GND, 6 - DSR, 7 – RTS, 8 - CTS)
- RS485** serial link RS485; terminals K+, K-

**LED indication:**

- TxD** red LED – RS485 transmitting data (flashing: transmitting data; OFF: no data traffic)
- RxD** green LED – RS485 receiving data (flashing: transmitting data; OFF: no data traffic)
- PWR** green LED – power (ON: power OK; OFF: no power applied, weak or damaged power supply, ...)

**DIP switches**

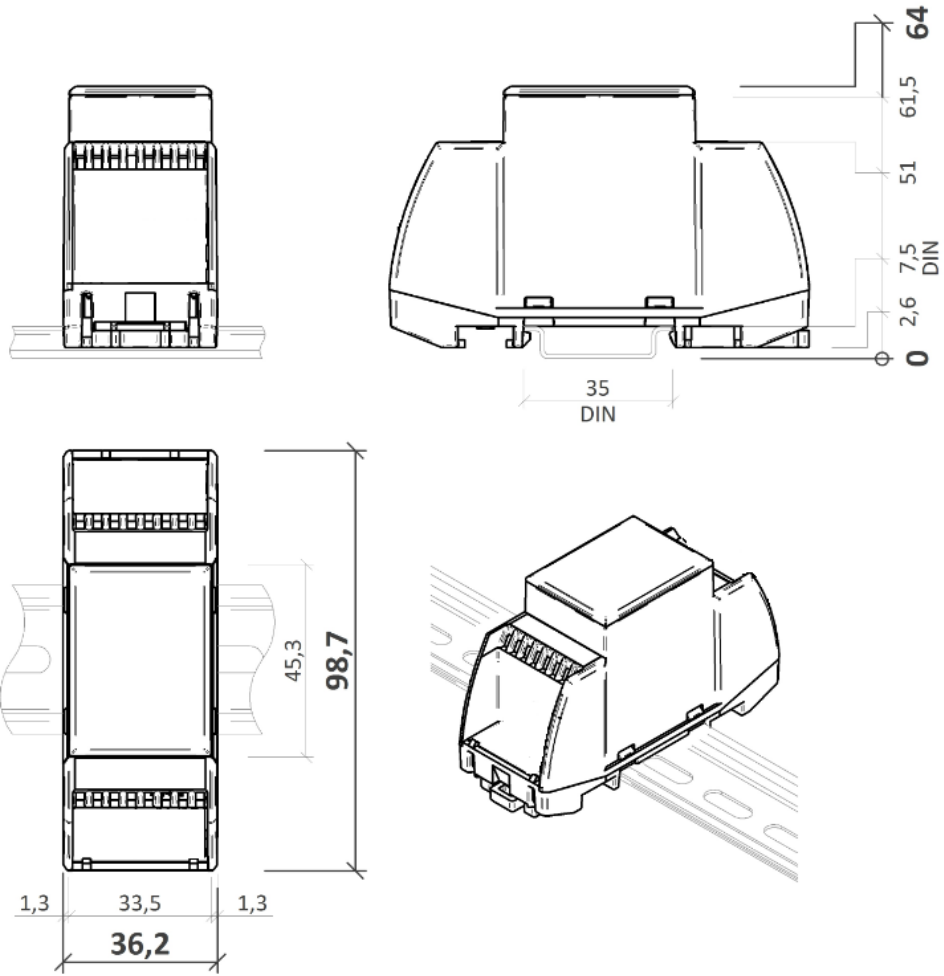
- BUS END** (DIP1 under the RS485 terminal) ON = bus end; the first and last devices on bus should have bus end ON
- SW 1, 2, 3** After removing the cover you can adjust the speed of the serial line by the DIP switches. After setting required communication parameters switch device power OFF/ON.

	<b>SW1</b>	<b>SW2</b>	<b>SW3</b>
<b>1 200 bps</b>	OFF	OFF	OFF
<b>2 400 bps</b>	ON	OFF	OFF
<b>4 800 bps</b>	OFF	ON	OFF
<b>9 600 bps (default)</b>	<b>ON</b>	<b>ON</b>	<b>OFF</b>
<b>19 200 bps</b>	OFF	OFF	ON
<b>38 400 bps</b>	ON	OFF	ON
<b>57 600 bps</b>	OFF	ON	ON
<b>115 200 bps</b>	ON	ON	ON

**SW 4**

Number of bits OFF 8 bits / ON 9 bits. If parity (Even/Odd) is used, it is necessary to switch ON DIP SW 4 (9 bits)!

**Dimensions**



Dimensions are in *mm*.

**Changes in  
versions**

12/2016 — First datasheet version.  
05/2018 – Change technical data.