

R095, R096 M-Bus / RS232 converter



Summary R095 and R096 are microprocessor-controlled M-Bus converters for energy and media meter readouts over RS232. The converters facilitate automatic baud rate switching, galvanic separation of power part and both interfaces, and they can host up to 25 and 60 M-Bus devices. These converters are successors of the previous types M095 and M096.

Application

- integration of M-Bus water, electricity, gas, and heat meters into PLC or SCADA over RS232 interface

Function The R095 converter connects up to 25 M-Bus devices to a process station or supervisory system over RS232. The R096, which provides stronger power supply, may host up to 60 M-Bus meters. Maximum communication speed is 9600 bps, with fully automatic baud rate switching – it is not necessary to set anything at the converter.

All interfaces are mutually separated up to 1000 V DC. It is a very important feature which provides high reliability even in harsh industry environment with high EMC pollution. The M-Bus power source is protected against short-circuit and overvoltage.

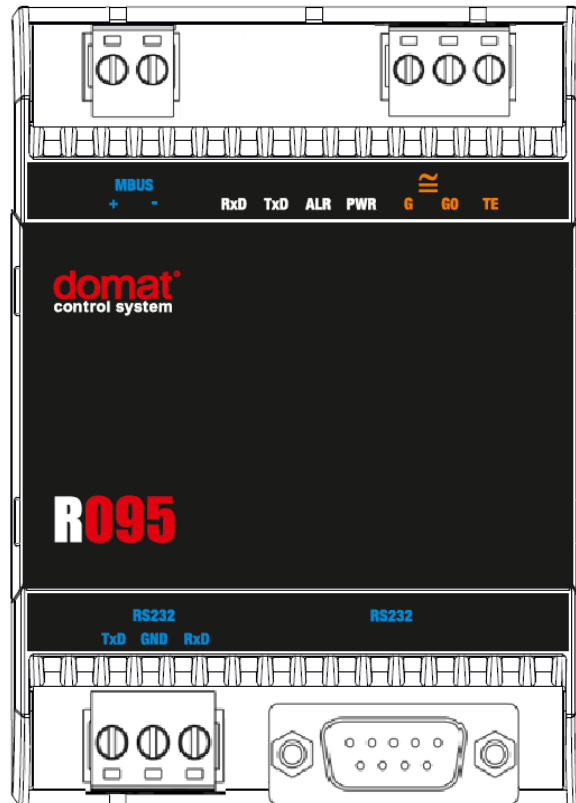
The M-Bus devices are connected over a 2-pole connector, regardless of polarity. The RS232 bus is connected over a CANNON 9 M connector with cross (zero-modem) cable or over three terminals TxD, GND and RxD. Do not connect RS232 in both ways.

The module is 70.4 mm wide and mounts on a standard DIN rail.

Technical data

Power	20...24 V DC, 14...24 V AC; 6 W
RS232	CANNON 9 male; (1- DCD, 2 - RXD, 3 - TXD, 4 - DTR, 5 - GND, 6 - DSR, 7 – RTS, 8 - CTS) terminals TxD, GND, RxD 300...9600 bit/s
M-Bus	standard EN 1434-3, EN 13757-2; 300, 2400, and 9600 bps, automatic baud rate; support of secondary addressing (detection of collision RTS signal) maximum bus length is 1000 m for 300 baud rate and 350 m for 9600 baud rate. Maximum number of devices on the bus is R095 – 25; R096 – 60 devices. has permanent protect against short-circuit and overvoltage.
Galvanic separation	power part, RS232, and M-Bus are separated from each other up to 1000 V DC
4x LED	PWR, ALR, TxD, RxD
Housing	polycarbonate box (certification UL94V0)
Dimensions	see below
Protection degree	IP21 (EN 60529)
Terminals	screw terminals M3, maximum wire cross-section 2.5 mm ² (recommended wire cross-section is 0.35...1.5 mm ²)
Ambient conditions	5...40 °C; 5...85 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according EN 60721-3-3 climatic class 3K3)
Storage conditions	5...40 °C; 5...85 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according EN 60721-3-1 climatic class 1K2)
Standards conformity	EMC EN 61000-6-2 ed.3:2005, EN 55022 ed.3:2010 EN 60950-1 ed.2:2006 + A11:2009 + A12:2011 + A1:2010 + A2:2014 EN 50581:2012

Schema



Terminals and connectors

MBUS	interface for bus with M-bus meters; terminals +, -
G	power
GO	power
TE	optional connection for shielding

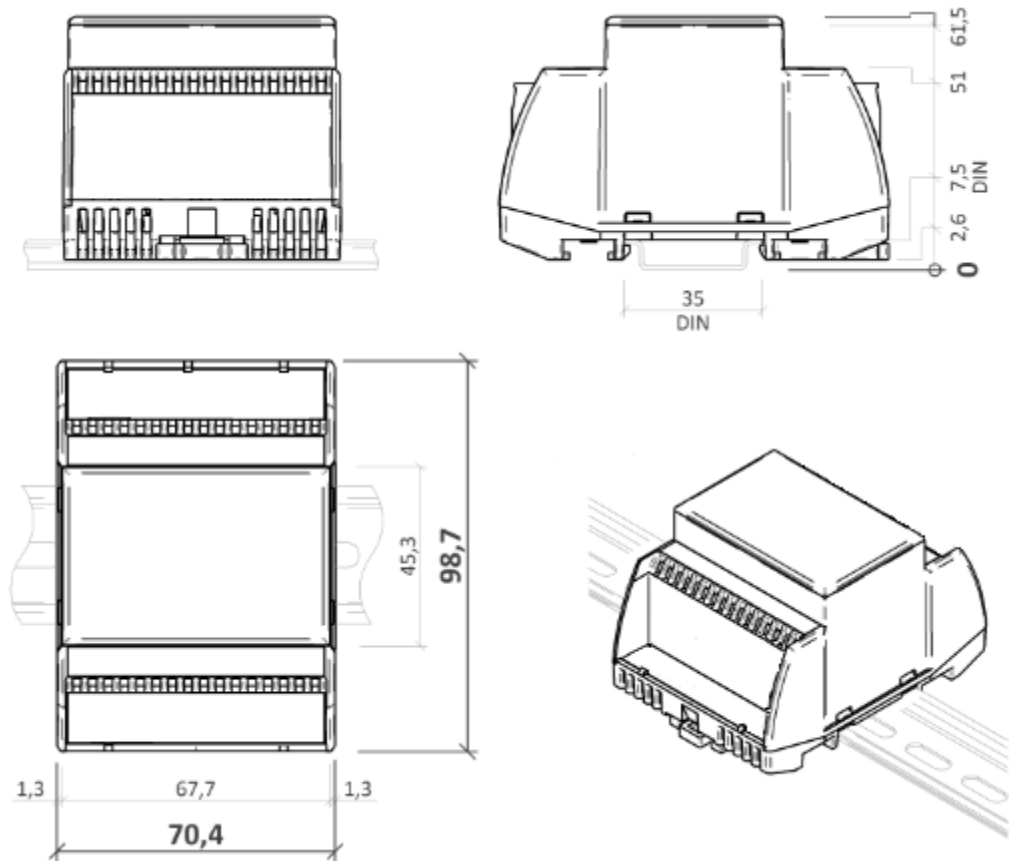
RS232 serial line RS232; CANNON 9 male (1- DCD, 2 - RXD, 3 - TXD, 4 - DTR, 5 - GND, 6 - DSR, 7 – RTS, 8 - CTS)

RS232 TxD, GND, RxD serial line RS232; only signals TxD, GND a RxD, in the case when the other side not used CANNON 9; Do not connect RS232 simultaneously CANNON 9 and terminals TxD, GND, RxD.

LED indication

RxD	green LED – M-bus receiving data (flashing: receiving data; OFF: no data traffic)
TxD	red LED – M-bus transmitting data (flashing: transmitting data; OFF: no data traffic)
PWR	green LED – power (ON: power OK; OFF: no power applied, weak or damaged power supply, ...)
ALR	yellow LED – short circuited or overloaded bus (M-bus)

Dimensions



All dimensions are in *mm*.

**Changes in
versions**

12/2016 – First version of the datasheet.

02/2017 – Minor typo corrections (Power: AC, DC).

02/2021 – Added info about protection against short-circuit and overvoltage on bus.

08/2021 – Stylistic adjustments, change of logo.