M-Bus to RS232 and RS485 interface communication converters

- > **RS232toMBus-5. RS232 to M-Bus converter**
- > **RS485toMBus-5. RS485 to M-Bus converter**
- > **Connection of up to five M-Bus slave devices**
- > **Communication speeds up to 9600bps max.**
- > **Extended AC and DC power operating range**
- > **Safeguards and filters insuring high durability of the entire device against surges and failures**

Overview

RS232toMBus-5 and **RS485toMBus-5** communication converters are durable converters of the M-Bus industrial communication bus to the common serial interfaces RS232 or RS485. They are intended for connection of measuring devices with M-Bus interface to control/computer systems for data collection and processing. These converters convert signals from one communication interface to the other directly without any need for setting up the communication parameters or modifications to the transferred messages.

The M-Bus port has a connection capacity for one to five M-Bus slave devices. The interface has the highest grade of surge protection and is resilient to failures on the M-Bus bus.

The converter operates at a wide range of the direct and alternating current power supply voltages with protection against overvoltage and a resettable current PTC fuse.

Operational statuses are indicated by four LEDs which makes it easy to determine the actual state of the converter or possible causes of failure. The LEDs indicate the state of the power supply voltage, M-Bus communication and fault conditions of the M-Bus line.

Technical parameters

RS232 communication interface	
Communication signals	RxD, TxD and GND
Protection	protection against 15kV ESD
Galvanic separation	1kV from power supply, >1kV from the M-Bus line
RS485 communication interface	
Communication signals	Data+, Data- and GND
Protection	overvoltage protection TVS 600W
Terminator resistors	1k pull High/Low, 120R terminating resistor
Galvanic separation	1kV from power supply, >1kV from the M-Bus line
M-Bus Master communication interface	
Number of devices that can be connected	1 to 5 SLAVE devices, idle current max. 7.5mA
Baud rate	300-9600 bps
Protection	- overvoltage protection TVS 1500W - electronic protection against overloads and short circuit on line
Galvanic separation	1kV from power supply, >1kV from the RS232, RS485 line
Power supply - recommended range	
DC power	9V to 33V
AC power	8V to 24V
Protection	- overvoltage protection TVS 1500W - overcurrent protection with a 0.3A resettable PTC fuse
Power consumption	0.4W to 1W Depends on M-Bus line load and power supply.
Temperature	
Operating range	-40°C to 70°C

Mechanical parameters of the converter

The converter is made from a robust aluminium box which ensures excellent mechanical durability, enhanced interference resistance and improved heat dissipation from the converter to the environment. The converter is designed to be mounted on a 35 mm DIN rail (EN 50022 top hat rail).Weight of the converter is 70g.

Top view

Side view with DIN rail attached

EMC compatibility

EMC compatibility of the M-Bus converter has been tested according to the following industrial environment standards in an accredited laboratory.

EMC emission tests

Standard	Test	Level
EN 55011	Power line - CONDUCTED EMISSIONS 10/150 kHz - 30 MHz	Class A
EN 55011	RADIATED EMISSIONS (Electric Field) 30 MHz - 1000 MHz	Class A

EMC immunity tests

Standard	Test	Level
EN 61000-4-2	ELECTROSTATIC DISCHARGE (ESD) - Contact discharge	± 4kV
EN 61000-4-2	ELECTROSTATIC DISCHARGE (ESD) - Air discharge	± 8kV
EN 61000-4-3	RADIATED RADIO-FREQUENCY ELECTROMAG. FIELD 80MHz - 1GHz	10 V/m
EN 61000-4-3	RADIATED RADIO-FREQUENCY ELECTROMAG. FIELD 1,4GHz - 2GHz	10 V/m
EN 61000-4-3	RADIATED RADIO-FREQUENCY ELECTROMAG. FIELD 2GHz - 2,7GHz	3 V/m
EN 61000-4-4	ELECTRICAL FAST TRANSIENT/BURST - Powerline	± 4 kV
EN 61000-4-4	ELECTRICAL FAST TRANSIENT/BURST - M-Bus, RS485 line	± 4 kV
EN 61000-4-5	SURGE IMMUNITY - Power line. Common/differential mode.	± 1kV / ± 1kV
EN 61000-4-5	SURGE IMMUNITY - M-Bus, RS485 line. Cable shielding.	± 4 kV
EN 61000-4-5	SURGE IMMUNITY - M-Bus line. Common/differential mode.*	± 4kV / ± 2kV
EN 61000-4-6	CONDUCTED DISTURBANCES, INDUCED BY RADIO-FREQUENCY FIELDS 0,15MHz - 80 MHZ. Power line and M-Bus line.	10 V

* Test carried out at the request of the manufacturer. The M-Bus port of the converter achieves the highest level of overvoltage protection according to the EN 61000-4-5 standard. Carrying out this type of test is not required with the use of shield cable. Reaching the highest level of protection on the M-Bus port also guarantees the highest achievable reliability of the converter. The M-Bus interface often poses the greatest risk of overvoltage and the ensuing destruction of the converter.

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