

EthMBus-5 SECURE

M-Bus to Ethernet converter

- > Connection of up to five M-Bus slave devices
- > 10/100 Mbps Ethernet interface
- > TCP or UDP datagram message transmission with options for encryption and authentication
- > Supported connection modes: client or server
- > Simple web interface for configuration, including the option of using secure HTTPS protocol
- > Extended AC and DC power operating range
- > Safeguards and filters insuring high durability of the entire device against surges and failures



Overview

EthMBus-5 SECURE is a communication converter designed for secure remote communication with M-Bus meters via an Ethernet network.

The converter uses encryption and authentication to ensure secure data transmission from M-Bus meters and secure configuration via the web interface.

The converter works only as a transparent gateway and M-Bus messages are transmitted without any changes to their content. Messages are transmitted via TCP or UDP in client or server mode with the option to use encryption. Computer applications that do not have a TCP/IP interface can use a virtual COM port application for communication.

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 DC and AC power supply voltages with protection against overvoltage.

Operational statuses are indicated by six 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, Ethernet communication, M-Bus communication and fault conditions of the M-Bus line.

Technical parameters

Ethernet communication interface

Communications interface	10BASE-T or 100BASE-TX (auto-sensing)
Communication protocols	ARP, UDP, TCP, ICMP, AutoIP, DHCP, HTTP, HTTPS, BOOTP, SMTP, SSHv2, SSLv3, TLS1.0 - 1.2
Connector	RJ45
Compatibility	Ethernet: Version 2.0/IEEE 802.3

M-Bus Master communication interface

Number of connectable devices	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 the M-Bus line, note: converter can withstand a sustained short circuit on the M-Bus line
Galvanic separation	1kV from power supply, >1kV from Ethernet

Power Supply

Recommended range of power supply voltages

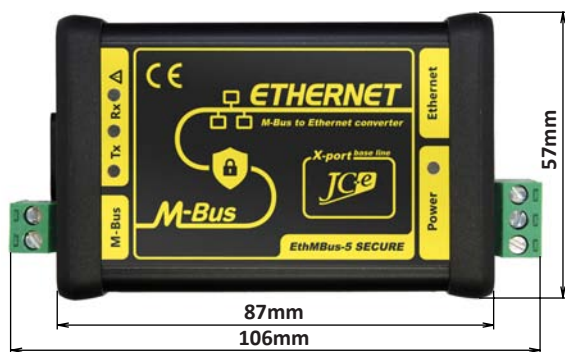
DC power	9V to 39.5V
AC power	9V to 27.5V
Protection	overvoltage protection TVS 1500W
Power consumption	2.0W to 3.3W Depends on M-Bus line load and power supply.

Temperature

Operating range	-40°C to 60°C
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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 136g.



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 - Power line	± 4 kV
EN 61000-4-4	ELECTRICAL FAST TRANSIENT/BURST - M-Bus line	± 4 kV
EN 61000-4-5	SURGE IMMUNITY - Power line. Common/differential mode.	± 1kV / ± 1kV
EN 61000-4-5	SURGE IMMUNITY - M-Bus 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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