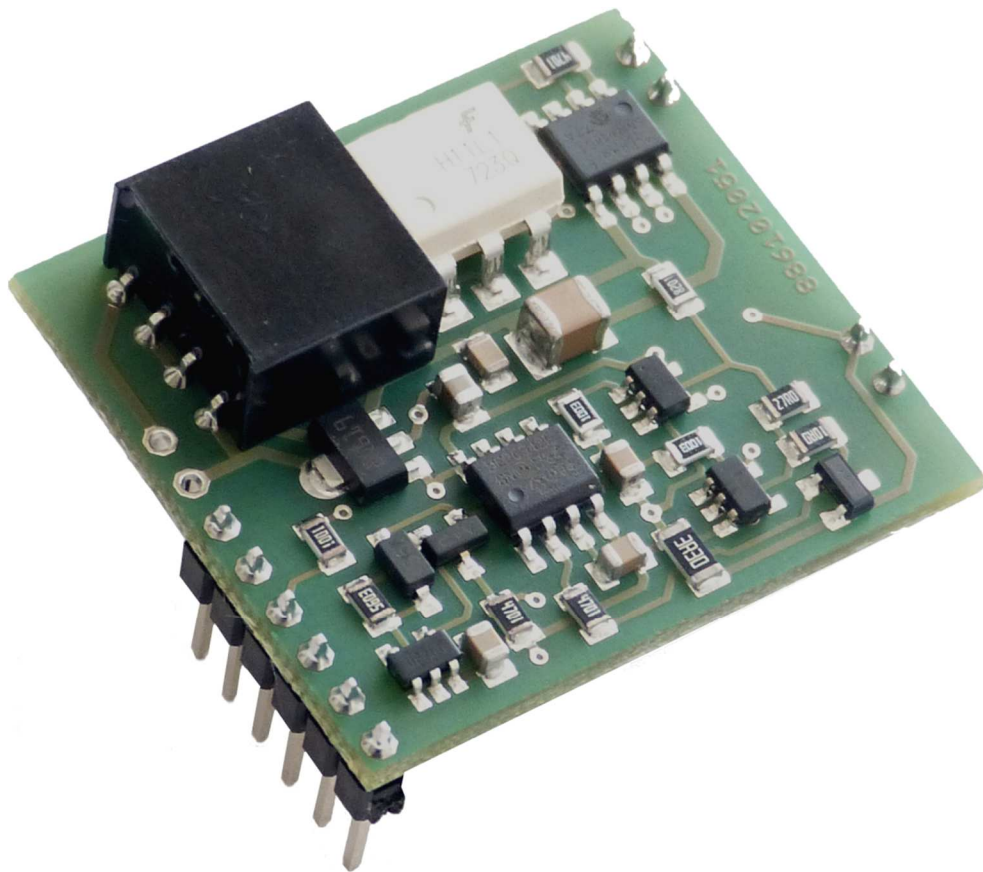


MBM55 R4

M-Bus Master Module
(Level converter)



Product data sheet

General description

The MBM55 module is a compact M-Bus level converter for a maximum of 55 bus loads with all the necessary components:

- 36V M-Bus voltage to supply the M-Bus slaves
- Voltage modulator for master telegrams
- Detector for evaluating the current-modulated slave telegrams
- Collision detection / message when the fuse has tripped
- Electronic current limitation / fuse with foldback function (current reduction in short-circuit case / latching)

The data interface (TXD, RXD, the collision message and the reset of the electronic fuse) is isolated via optocouplers. The required supply of the interface (VDD ext./ GND ext.) is usually the micro controller supply voltage.

An isolated 24VDC supply is required for the isolated operation of the M-Bus, e.g. an upstream 24V/24V DC/DC converter with a power of 4W.

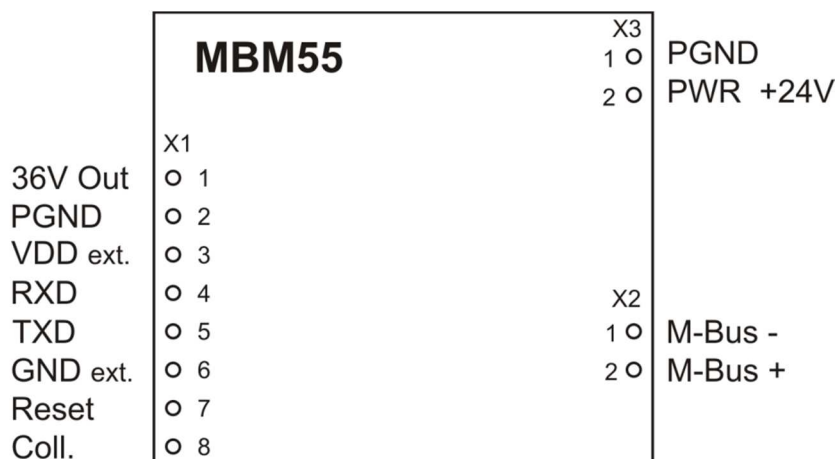
If less power is available on the 24V side (e.g. due to a 2W DC/DC converter), normal operation of the module for 27 loads is guaranteed, but the current limitation will not work in the event of a short circuit because the tripping current of approx 95mA of the electronic fuse is not reached.

Technical specifications:

Mechanically:	
Dimensions:	30mm x 33mm
Total height:	9,3mm
DC characteristic:	
Supply:	24VDC +/-5% (electrical isolation required)
Current consumption:	17mA with no load, approx. 150mA with 55 loads
Input power 24V:	3,6W (MBM55) 6,5W (MBM110)
M-Bus Voltage:	36V
Current limit:	approx. 95mA (MBM55) approx. 190mA (MBM110)
Short-circuit current:	approx. 0.8mA due to the foldback function
Data interface:	Isocoupler / Optocoupler
Supply (VDD / GND ext):	3..5,5V / 10mA max.
I _{Low} TXT Input	1,9mA at VDD = 3,3V
I _{Low} RXD Output	4mA max.
I _{Low} Coll. Output	4mA max.
I _{Low} Reset	1,9mA at VDD = 3,3V
Miscellaneous:	
Bus loads:	max. 55
Max baud rate:	38400 Bit/s
Ambient temperature:	-25..+80 degrees C
I/O isolation:	1KV rms 1min
Power dissipation:	0.66W at full load

The module is also available in the MBM110 version for 110 bus loads.

Pin assignment:

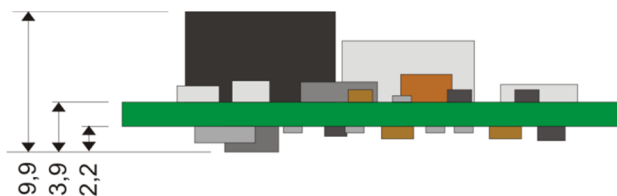
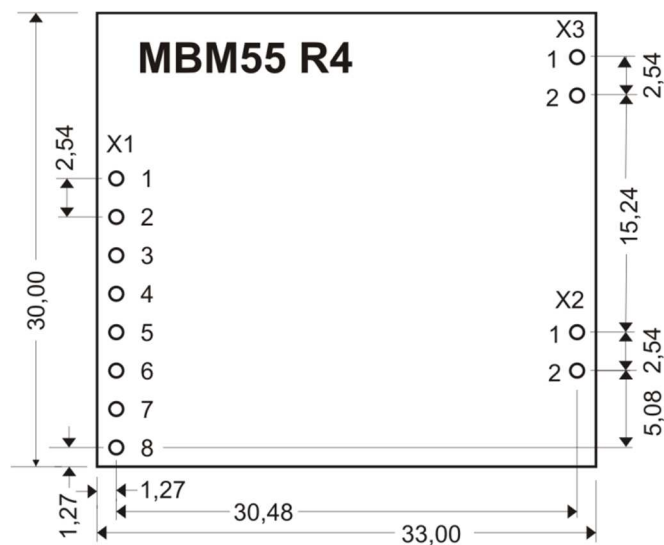


Connections X1		Designation	Direction
1	36V Out	36V connection for optional backup capacity	Output
2	PGND	0V connection for optional backup capacity	Output
3	VDD ext.	3.3V..5V supply for data interface	Input
4	RXD	Isolated data output (to RXD uC)	Output Push / Pull
5	TXD	Isolated data input (from TXD uC)	Input Low aktiv
6	GND ext.	0V supply for data interface	Input
7	Reset	Electronic fuse reset	Input Low aktiv
8	Coll.	Isolated output of the collision message	Output Push / Pull

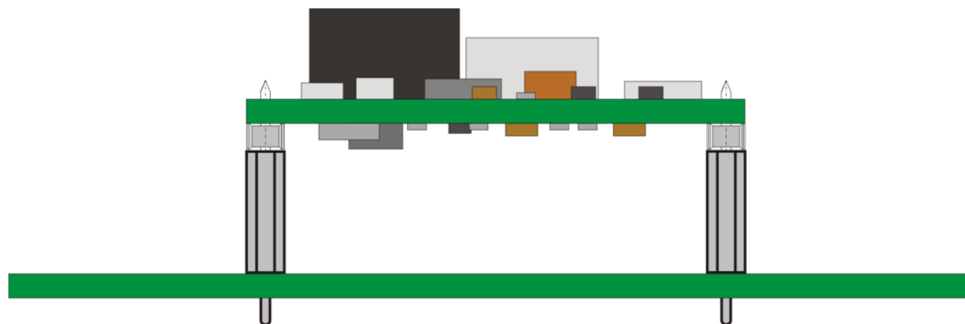
Connections X2		Designation	Direction
M-Bus -		M-Bus low side	Output
M-Bus +		M-Bus high side	Output

Anschlüsse X3		Bezeichnung	Direction
PGND		Supply GND M-Bus	Input
PWR +24V		Supply +24V M-Bus	Input

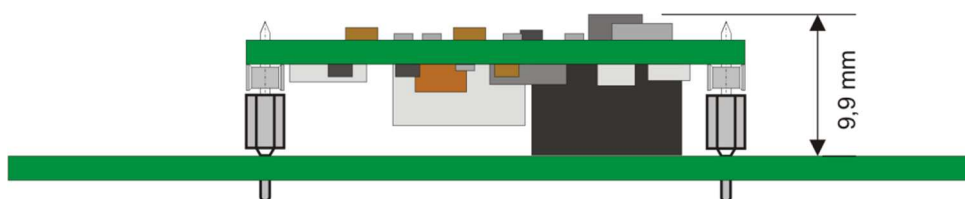
Dimensions:



When determining the installation location, the populated underside may need to be taken into account

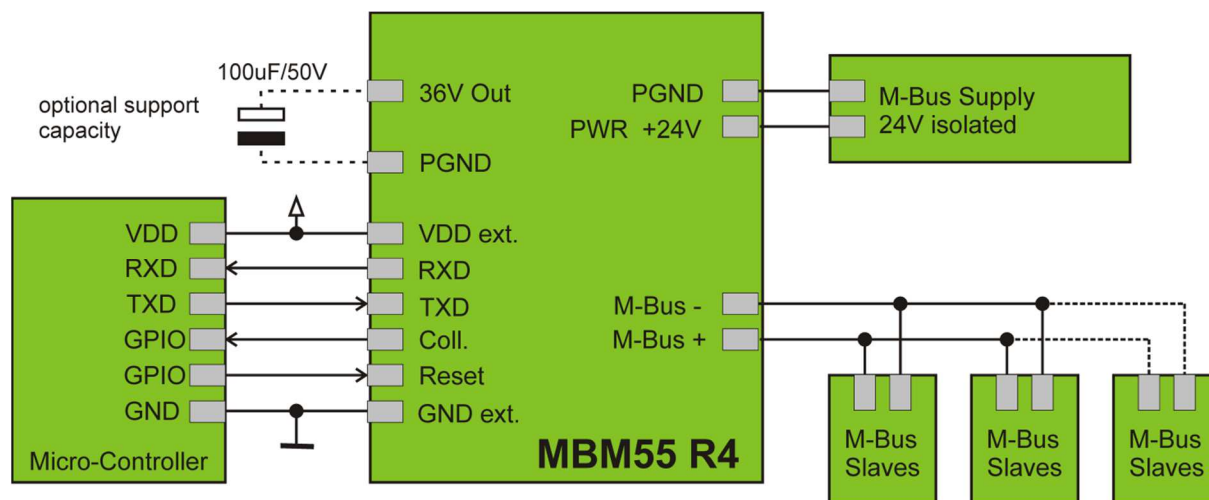


Installation variant 1, module pinned and plugged. The installation space below the MBM55 on the carrier board can be used for additional components.



Installation variant 2, overhead plug-in installation, the smallest possible height is 10mm max.

System build:



The system structure shown here is only in principle. Instead of the microcontroller, an RS232 module (MAX232, MAX3232 or similar), a USB TTL interface, an Ethernet or Profibus gateway can also be used.

The optional support capacity is not essential. It only serves to better stabilize the internally generated 36V M-Bus supply voltage and to absorb current peaks during voltage modulation, especially in M-Bus networks with higher capacitive loads.

Electronic fuse

To protect the voltage modulator and the 24V supply, the level converter has a current limiter and electronic fuse with self-locking.

If the bus current exceeds a value of approx. 95mA due to an overload or short circuit, the fuse trips and is self-locking with a residual current of 0.8mA.

A permanent 0 signal at the "Collosion" pin results in the "fuse trip" message.

If the short circuit or overload is removed, the fuse will reset itself at less than 7 bus loads. If more than 6 slaves are connected to the bus, the fuse is reset by briefly disconnecting the bus line.

The "Reset" input is used for automated or remote-controlled resetting. A LOW pulse from a μ C or another connection between the "Reset" control input and "GND ext" (e.g. button) cancels the latching of the fuse.

Caution: A pull-down of the reset input disables the current reduction (fold-back) of the current limitation and thus the fuse. However, the current limitation itself is still active. In the event of a bus short-circuit, this would mean a power loss of approx. 3.5W at the current-limiting circuit, which can lead to thermal overload.

At the same time, the "Fuse tripped" message (permanent 0 signal at the "Collosion" pin) is disabled.

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