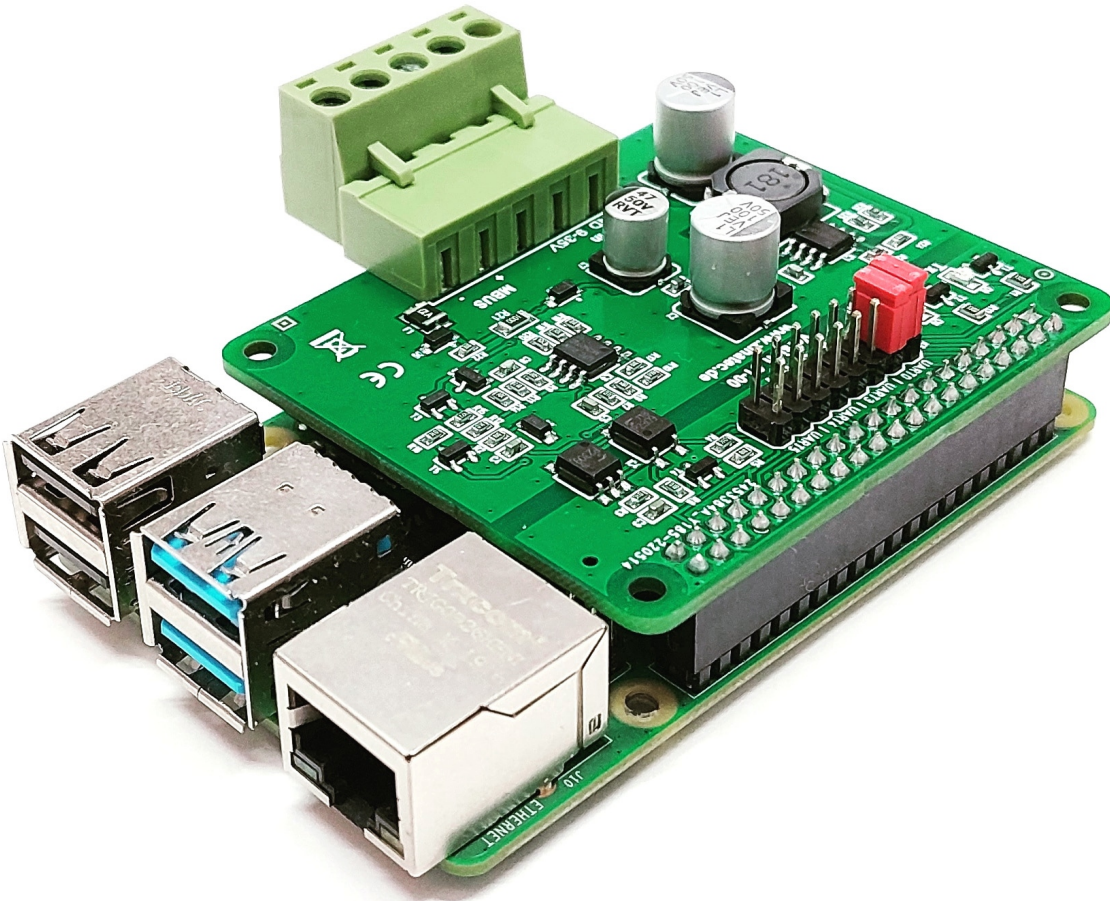


M-Bus HAT



for Raspberry Pi and compatible



Features:

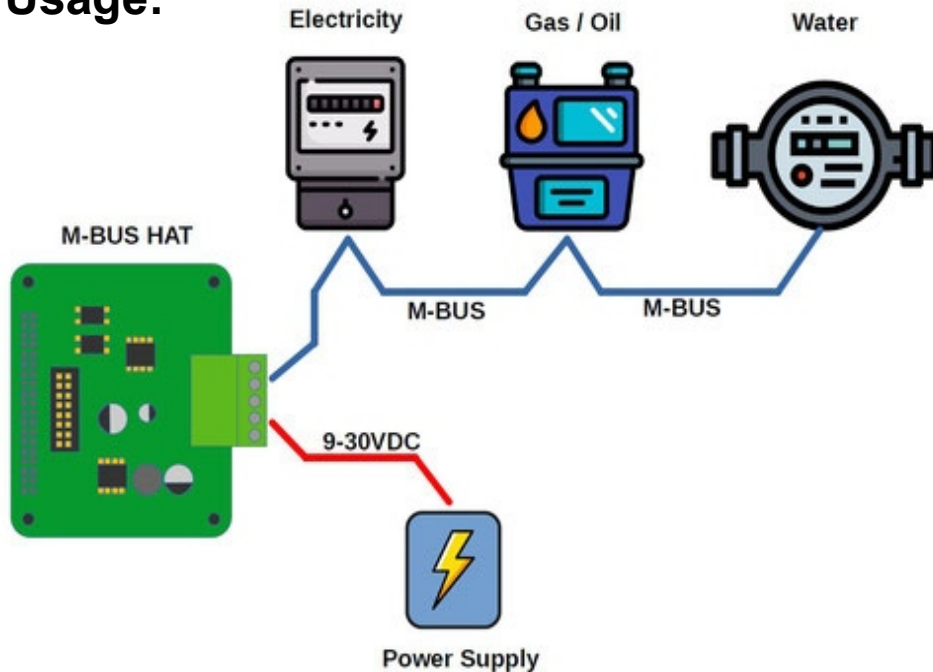
- M-Bus (Meter-Bus) master
- Compatible to European standard EN 13757-2
- For the remote reading of consumption meters
- For up to 6 unit-loads (9mA)
- External DC power supply (9...30V) needed
- Galvanically isolated interface
- Removable screw terminals for bus and power supply connection
- Stacked header version available
- Indicator LEDs for RX and TX signals
- For Raspberry Pi 2 / 3 / 4 / 5 Modell B, Raspberry Pi Zero and compatible SBC

M-Bus HAT



for Raspberry Pi and compatible

Usage:



Compatibility :



Raspberry Pi B+, 2 B, 3 B, 3 B+



Raspberry Pi 4 B, Pi 5 B



Raspberry Pi A+, 3 A+



Raspberry Pi Zero (w) & Zero2

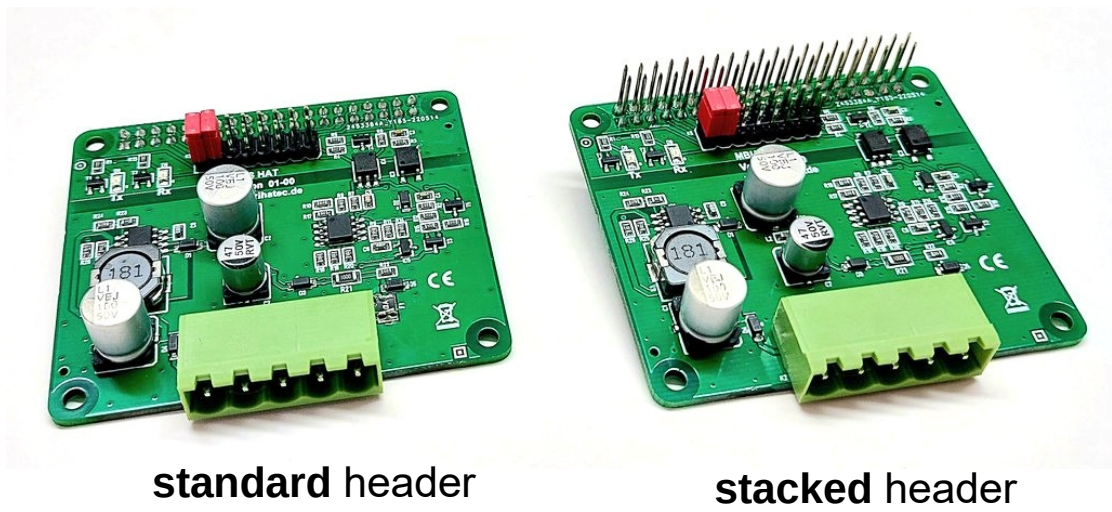
M-Bus HAT



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Part number table:

Part-No.	EAN	Version
RPIHTMB	0676424951404	With standard header
RPIHTMBS	0676424951411	With stacked header



standard header

stacked header

Used Raspberry Pi Pins:

Depending on the selected UART via jumper K5 different pins are used:

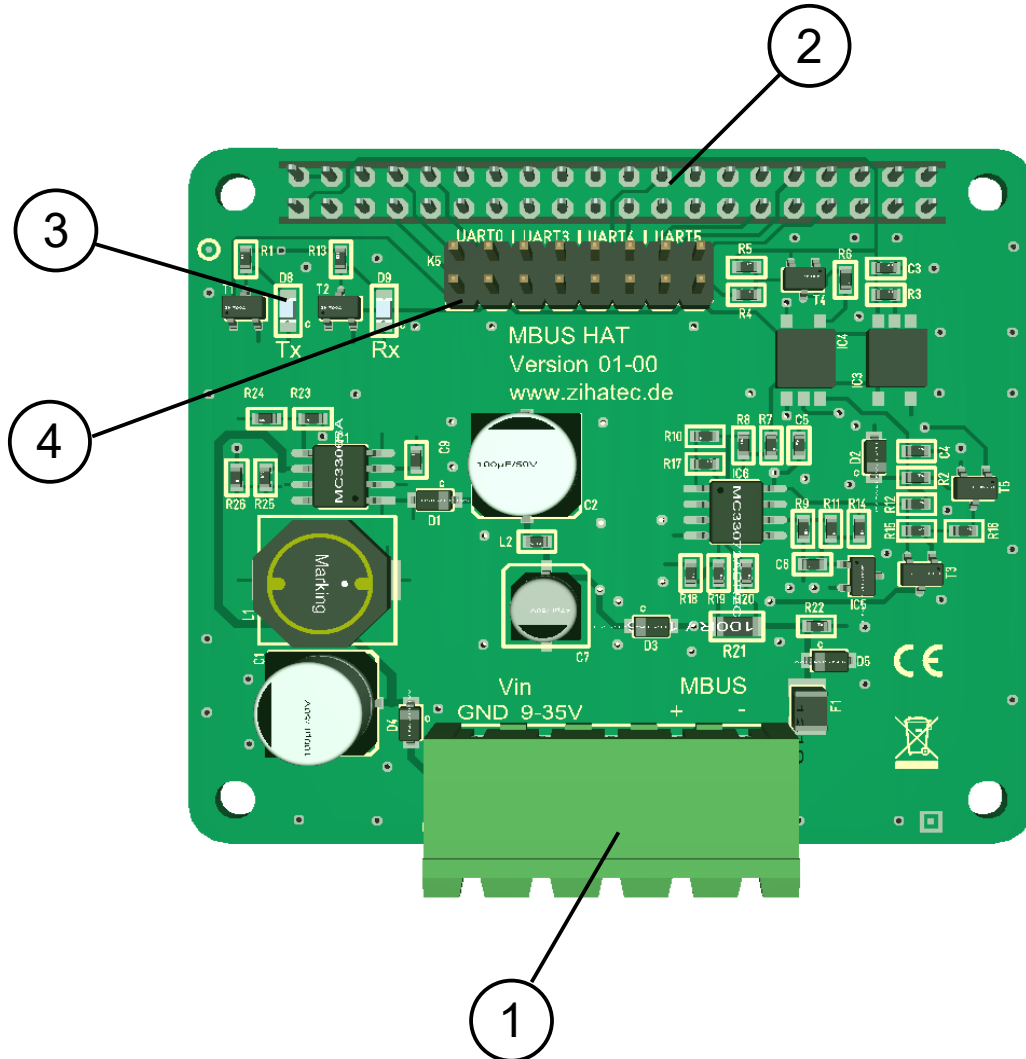
Function	UART0	UART3	UART4	UART5
GND	PIN 6, 9, 14, 25, 39			
3,3V	PIN 1			
5V	PIN 2, 4			
TX	GPIO14 (8)	GPIO4 (7)	GPIO8 (24)	GPIO12 (32)
RX	GPIO15 (10)	GPIO5 (29)	GPIO9 (21)	GPIO13 (33)

M-Bus HAT



for Raspberry Pi and compatible

Control Elements:



- ① Power and M-Bus terminal
- ② headers for Raspberry Pi (on backside)
- ③ Indicator LEDs
- ④ Jumper K5 for UART configuration

for Raspberry Pi and compatible

UART configuration via Jumper K5:

When using a Raspberry Pi 4, other UARTs can be selected alternatively via jumper K5 besides UART0:



UART0 – default

(for all Raspberry Pi models)



UART3

(Raspberry Pi 4 only)



UART4

(Raspberry Pi 4 only)



UART5

(Raspberry Pi 4 only)

for Raspberry Pi and compatible

UART(0) Configuration under Bullseye:

The easiest way is to use the raspi-config tool to enable the UART to the GPIO14/15 pins.

take a fresh Raspbian Bullseye image

```
sudo raspi-config
```

goto '3 Interfacing Options'

goto 'I6 Serial Port'

'Would you like a login shell to be accessible over serial?' --> NO

'Would you like the serial port hardware to be enabled?' --> YES

Finish raspi-config

```
sudo echo "dtoverlay=disable-bt" | sudo tee -a /boot/config.txt
```

```
sudo systemctl disable hciuart
```

reboot the Raspberry Pi

Now you can access the UART via **/dev/serial0**

for Raspberry Pi and compatible

UART Configuration under Bookworm (Raspberry Pi 4 only):

In our experience, libmbus does not run stable with UART0 (GPIO14,15) on Bookworm due to higher latency times. We therefore recommend using the remaining 3 UARTs.

UART	PCB Print	Access via
3	UART3	/dev/ttyAMA3
4	UART4	/dev/ttyAMA4
5	UART5	/dev/ttyAMA5

To enable the corresponding UART, please proceed as follows:
take a fresh Raspbian image

```
sudo nano /boot/firmware/config.txt
```

For e.g. UART3 add the following line at the end of the file:

```
dtoverlay=uart3
```

If you want to enable more or another UART change this line to uart4 or uart 5 or add some additional lines.

reboot the Raspberry Pi!

UART Configuration under Bookworm (Raspberry Pi 5 only):

In our experience, libmbus does not run stable with UART0 (GPIO14,15) on Bookworm due to higher latency times. We therefore recommend using the remaining 3 UARTs.

Please note, however, that in contrast to the Pi4, the connections of the UARTs are interchanged:

UART	PCB Print	Access via
2	UART 3	/dev/ttyAMA 2
3	UART 4	/dev/ttyAMA 3
4	UART 5	/dev/ttyAMA 4

To enable the corresponding UART, please proceed as follows:
take a fresh Raspbian image

```
sudo nano /boot/firmware/config.txt
```

For e.g. UART2 add the following line at the end of the file:

```
dtoverlay=uart2
```

If you want to enable more or another UART change this line to uart3 or uart 4 or add some additional lines.

reboot the Raspberry Pi!

for Raspberry Pi and compatible

Installation of libmbus (C++) library and utility:

Libmbus by Raditex Control is an open-source library for Linux. For more information see <http://www.rscada.se/libmbus>

Installation:

```
sudo apt install git libtool autoconf cmake build-essential
```

```
sudo apt-get install -y cmake
```

```
sudo git clone https://github.com/rscada/libmbus.git
```

```
cd libmbus
```

```
sudo ./build.sh
```

```
sudo make install
```

```
cd bin
```

```
sudo ln -s /usr/local/lib/libmbus.so.0 /usr/lib/libmbus.so.0
```

M-Bus HAT



for Raspberry Pi and compatible

Using libmbus (C++) library and utility:

Goto /libmbus/bin directory first:

```
cd libmbus/bin
```

Usage for UART0 (Bullseye):

```
./mbus-serial-scan -d -b 2400 /dev/serial0
```

(will list all connected M-Bus slave devices)

```
./mbus-serial-request-data -d -b 2400 /dev/serial0 10
```

(will read out the M-Bus device with address 10)

Usage for e.g. UART3 (Bookworm):

```
./mbus-serial-scan -d -b 2400 /dev/ttyAMA3
```

(will list all connected M-Bus slave devices)

```
./mbus-serial-request-data -d -b 2400 /dev/ttyAMA3 10
```

(will read out the M-Bus device with address 10)

M-Bus HAT



for Raspberry Pi and compatible

Using pyMeterBus (Python) library and utility:

PyMeterBus is a pure Python implementation of the Meter-Bus by Mikael Ganehag Brorsson. For more information see <https://gitlab.com/ganehag/pyMeterBus>

Installation under Bullseye:

```
pip3 install pyMeterBus
```

```
sudo git clone https://gitlab.com/ganehag/pyMeterBus
```

```
cd pyMeterBus/tools
```

Usage for UART0 (Bullseye):

```
python3 mbus-serial-scan.py -d /dev/serial0
```

(will list all connected M-Bus slave devices)

```
python3 mbus-serial-request-data.py -d -a 10 /dev/serial0
```

(will read out the M-Bus device with address 10)

M-Bus HAT



for Raspberry Pi and compatible

Installation under Bookworm:

```
python3 -m venv mbus
```

```
cd mbus
```

```
pip install pyMeterBus
```

```
sudo git clone https://gitlab.com/ganehag/pyMeterBus
```

```
cd pyMeterBus/tools
```

Usage for UART3 (Bookworm):

```
python3 mbus-serial-scan.py -d /dev/ttyAMA3
```

(will list all connected M-Bus slave devices)

```
python3 mbus-serial-request-data.py -d -a 10 /dev/ttyAMA3
```

(will read out the M-Bus device with address 10)