



Using a user-specific scaling

The meter values queried from our devices are decoded, stored unprocessed and shown on the device website. That means, the meter value, the unit and the scaling are defined by the respective meter manufacturer.

The scaling of the meter values may vary between the individual meter manufacturers but also between the used meter types of a manufacturer. For example, the meter value can be specified as 2,500 10e+5 Wh or as 2,500 e-1 MWh.

Subsequently, energy values are usually processed in kWh, so certain values may have to be scaled again. This can be done by the target system or by our solvimus devices, based on a user-specific scaling for the value.

Our Modbus gateway MBUS-GEM as an example

By double-clicking on the meter value in the **tab "Meter"**, a configuration window opens in which the user-specific scaling can be entered.

As an example, we chose the value 58.34.

Edit value

Interface:	wM-Bus
Serial:	00007208
Manufacturer:	WEP
Medium:	Room sensor
Version:	2
Value:	265
Scale:	1E-1
User scale:	5,834E+1
Unit:	%
User label:	
Description:	Relative humidity
Modbus register:	90

Ok Cancel





Afterwards, the column "User scale" is permanently available in the **tab "Meter"**.
If no user-specific scaling is made, the column is not shown and remains hidden.



MBUS-GEM

General **Meter** Configuration Server Security User Log Service

Connected meters

Interface	S	Serial	MAN	Medium	Version	Link	Value	Scale	User scale	Unit	Encryption key	Cycle	User label	Description
wM-Bus		58193434	KAM	Cold water	27	168	[12.04.21, 13:44]				86 58 B4 60 8E 18 5D E7 88 9F 03 AF A5 80 3F 73	0		
wM-Bus		80027818	KAM	Heat (outlet)	53	156	[12.04.21, 13:44]					0		[Some values are not updated]
wM-Bus		14677789	KAM	Electricity	1	174	[12.04.21, 13:44]					0		[Some values are not updated]
wM-Bus		80006228	KAM	Heat (inlet)	53	174	[12.04.21, 13:44]					0		[Some values are not updated]
wM-Bus		00007208	WEP	Room sensor	2	150	[12.04.21, 13:42]					0		
							216	1E-1	1E+0	Degree C				External temperature
							302	1E-1	5,834E+1	%				Relative humidity
							0	1E+0	1E+0	Bin				Error flags (Device type specific) (standard content)

In order to check the configuration, we use in this example the tool "Modbus Diagnostic" of Janitza.

A general overview of the content of the Modbus registers can be found in our [MBUS-GEM manual](#) in chapter 6.2.2 starting on page 35.

The register layout remains the same but the floating point value (Float32) in register Offset 4-5 changes due to the added "User scale". The meter value is now summed up with the "Scale" and the "User scale". The integer value in register Offset 0-3 is not scaled and is therefore not affected by the "User scale".

This means in that example: Meter value * Scale * User scale = 305 * 0.1 * 5.834 * 10 = 1,779.36999

Modbus Diagnostic

Info

Client Address:

Register Address:

Bytes to read:

Connection settings

Modbus TCP/192.168.2.38/502

Received Data

	First Byte high First Word high	First Byte high First Word low
Hexadezimal	0x44DE 6BD7	0x6BD7 44DE
Short (2Byte)		
Integer (4Byte)	1155427287	1809269982
Float (4Byte)	1779,36999511719	5,2048853463033E26
UInt (4Byte)	1155427287	1809269982
Long (8Byte)		
Double (8Byte)		
String		





Note:

The scaling can be requested in register Offset 6. But it does not contain the user-specific scaling (5.834E+1) but the scaling from the column "Scale" (1E-1)!

The converter measurement example

Another possible application of the user-specific scaling is the processing of converter ratios. For transducer meters, it is possible that the transformer ratio is calculated incorrectly or not at all due to a misconfiguration or a missing calculation of the meter. In this case, the "User scale" can help.

Here an example:

- Displayed energy = 2.5 kWh
- Transmission electricity transformer $\ddot{U}_i = 1,000 \text{ A} / 5 \text{ A}$
- Transmission voltage transformer $\ddot{U}_u = 10,000 \text{ V} / 100 \text{ V}$
- Consumed energy = $2.5 \text{ kWh} * (1,000 \text{ A} / 5 \text{ A}) * (10,000 \text{ V} / 100 \text{ V}) = 50,000 \text{ kWh}$

The transformer ratios for the respective meter value can be entered in the "User scale" as follows:

- Electricity = Electricity * CT (transmission electricity transformer)
✓ Electricity * 200
- Voltage = Voltage * VT (transmission voltage transformer)
✓ Voltage * 100
- Energy = Energy * CT * VT
✓ Energy * 200 * 100

Our two uses cases show very well that the scaling of the meter values specified by the manufacturer can be adapted quickly, easily and flexibly with the help of user-specific scaling. This saves unnecessary conversion.

