



Ultrasonic heat and cooling energy meters

UH50..

Ultrasonic heat and cooling energy meters to measure flow and energy in hydronic heating or refrigerant circuits.

- Available as heat, cooling energy, or combined heat/cooling energy meters
- Separate acquisition of heat or cooling energy by the combined heat/cooling energy meters, with automatic changeover
- Non-wearing due to non-moving parts
- Approved in accordance with EN 1434 and MID accuracy class 2
- Optional mounting position (horizontal or vertical), in return or flow
- Measuring range of flow 1:100 as per EN 1434, 1:1,000 total range
- Choice of communication modules and power supplies
- No settling paths required
- Optical interface as per EN 62056-21
- Self-diagnostics

Use

The UH50.. heat and cooling energy meter acquires energy consumption in a physically correct way. The amount of heat or cooling energy is acquired separately and can be read out either on site or from a remote location. The device consists of flow measuring section and processor unit. The processor unit can be equipped with different sensors, different types of power supply and communication modules. The UH50.. is used to measure the consumption of heat in district heating systems and blocks of flats. It is also suited to measure the consumption of cooling energy (cooling energy only or in combination with thermal energy), or volume flow in hydronic systems.

Restrictions

The UH50.. must not be used in connection with drinking water. Also, the product is not suited for use in systems operating on water-glycol mixtures.

Functions

Ultrasonic measuring principle

The volume flow is acquired based on the ultrasonic measuring principle, free from wear, thanks to the use of non-moving parts.

The quantity of energy supplied to the consumer by the medium during a certain period of time is proportional to the temperature differential of flow and return and the volume flow passing through the meter.

The **water volume** is measured in the measuring tube by ultrasonic pulses which are transmitted in the direction of flow and against the direction of flow. Downstream, the time required by the pulses to travel from the transmitter to the receiver is reduced, upstream it is increased. The water volume is then calculated based on the values measured for the traveling times.

The **flow and return temperatures** are determined using platinum resistors. The heating water volume and the temperature differential of flow and return are multiplied and its product integrated. The result, which is the consumed **quantity of thermal or cooling energy**, is registered and displayed in the physical **units kWh/MWh or MJ/GJ**, the volume in **m³**.

Processor unit

A standard electronic unit is used for all flow rates with identical operation and an integrated service unit.

Optical communication interface

The meter is equipped with an optical communication interface, enabling the device to be read and parameterized on site with the help of the WZR-OP-USB optical read head and the UltraAssist software.

Self-diagnostics

The meter performs constantly self-diagnostics, allowing it to detect a number of mounting or device errors and to display them.

Type summary UH50..

The types of meters listed below are equipped as follows:

| | |
|---------------------------------|--|
| Mounting location | Return |
| Rated pressure | PN 16 (PS16) /PN 25 (PS25) |
| Length of control cable | 1.5 m/3 m |
| Sensor mounting | Return temperature sensor, integrated in the flow measuring section Return temperature sensor, not integrated in the flow measuring section |
| Temperature sensor type | Pt500, DS M10x1, length 27.5 mm Pt500, DS M10x1 mm, length 38 mm Pt500, Ø 6 mm, length 100 mm Pt500, Ø 6 mm, length 150 mm |
| Temperature sensor cable length | 1.5 m/5 m |
| Power supply | Without power supply, different types of power supply available |
| Communication | Without communication, different types of modules available |
| Energy unit | kWh/MWh |

| | <i>Options</i> | <i>Stock no.</i> | <i>Product no.</i> |
|-------------------|--|------------------|--------------------|
| Heat meter | 0.6 m³/h nominal flow rate, mounting length 110 mm, connecting thread G ¾", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F112 | UH50-A05-00 |
| | 1.5 m³/h nominal flow rate, mounting length 110 mm, connecting thread G ¾", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F113 | UH50-A21-00 |
| | 2.5 m³/h nominal flow rate, mounting length 130 mm, connecting thread G 1", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F114 | UH50-A36-00 |
| | 3.5 m³/h nominal flow rate, mounting length 260 mm, connecting thread G 1¼", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 38 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F115 | UH50-A45-00 |
| | 6 m³/h nominal flow rate, mounting length 260 mm, connecting thread G 1¼", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 38 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F116 | UH50-A50-00 |

Heat/cooling energy meter

| | | |
|---|-------------|-------------|
| <p>10 m³/h nominal flow rate, mounting length 300 mm, flanged DN 40, PN 25, control cable length 1.5 m, Pt500, Ø 6 mm, sensor length 100 mm, cable length = 5 m, return sensor, not integrated in the flow measuring section, energy unit kWh</p> | S55561-F117 | UH50-A61-00 |
| <p>15 m³/h nominal flow rate, mounting length 270 mm, flanged DN 50, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 100 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh</p> | S55561-F118 | UH50-A65-00 |
| <p>25 m³/h nominal flow rate, mounting length 300 mm, flanged DN 65, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 100 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh</p> | S55561-F119 | UH50-A70-00 |
| <p>40 m³/h nominal flow rate, mounting length 300 mm, flanged DN 80, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 150 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh</p> | S55561-F120 | UH50-A74-00 |
| <p>60 m³/h nominal flow rate, mounting length 360 mm, flanged DN 100, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 150 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh</p> | S55561-F121 | UH50-A83-00 |
| <p>0.6 m³/h nominal flow rate, mounting length 110 mm, connecting thread G ¾", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh</p> | S55561-F122 | UH50-C05-00 |
| <p>1.5 m³/h nominal flow rate, mounting length 110 mm, connecting thread G ¾", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh</p> | S55561-F123 | UH50-C21-00 |
| <p>2.5 m³/h nominal flow rate, mounting length 130 mm, connecting thread G 1", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh</p> | S55561-F124 | UH50-C36-00 |
| <p>3.5 m³/h nominal flow rate, mounting length 260 mm, connecting thread G 1¼", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 38 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh</p> | S55561-F125 | UH50-C45-00 |

| | | |
|---|-------------|-------------|
| 6 m³/h nominal flow rate, mounting length 260 mm, connecting thread G 1¼", PN 16, control cable length 1.5 m, Pt500, DS M10x1 mm, sensor length 38 mm, cable length 1.5 m, return sensor, integrated in the flow measuring section, energy unit kWh | S55561-F126 | UH50-C50-00 |
| 10 m³/h nominal flow rate, mounting length 300 mm, flanged DN 40, PN 25, control cable length 1.5 m, Pt500, Ø 6 mm, sensor length 100 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit kWh | S55561-F127 | UH50-C61-00 |
| 15 m³/h nominal flow rate, mounting length 270 mm, flanged DN 50, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 100 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh | S55561-F128 | UH50-C65-00 |
| 25 m³/h nominal flow rate, mounting length = 300 mm, flanged DN 65, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length = 100 mm, cable length = 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh | S55561-F129 | UH50-C70-00 |
| 40 m³/h nominal flow rate, mounting length 300 mm, flanged DN 80, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 150 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh | S55561-F130 | UH50-C74-00 |
| 60 m³/h nominal flow rate, mounting length 360 mm, flanged DN 100, PN 25, control cable length 3 m, Pt500, Ø 6 mm, sensor length 150 mm, cable length 5 m, return sensor, not integrated in the flow measuring section, energy unit MWh | S55561-F131 | UH50-C83-00 |

Note

Other types available on request.

Power supply modules

| <i>Component (optional)</i> | <i>Stock no.</i> | <i>Product no.</i> |
|---|-------------------|--------------------|
| Power pack AC 230 V , cable length 1.5 m | S55563-F111 | WZU-AC230-15 |
| Power pack AC 230 V , cable length 5 m | LYU:WZU-AC230-50 | WZU-AC230-50 |
| Power pack AC 230 V , cable length 10 m | LYU:WZU-AC230-100 | WZU-AC230-100 |
| Power pack AC/DC 24 V , with terminals, standard battery for 6 years, complete with fastener | S55563-F112 | WZU-ACDC24-00 |
| Standard battery (2 AA), for 6 years , complete with fastener, application standard pulses, standard M-bus readout (every 15 minutes) | S55563-F114 | WZU-BA+GUM |
| Universal battery (D-cell), for 6 and 16 years respectively , applications for 16 years: standard pulses, standard M-bus readout (every 15 minutes), applications for 6 years: all communication modules | S55563-F113 | WZU-BDS |

Note

Other types available on request.

Communication modules WZU-GPRS and WZU-GPRS-ANT are supplied complete with power supply. In that case, none of the above mentioned power supply modules need be ordered.

Communication modules

| <i>Component (optional)</i> | <i>Stock no.</i> | <i>Product no.</i> |
|---|------------------|--------------------|
| Pulse module with 2 channels to output standard or "definable" pulses | S55563-F107 | WZU-P2 |
| Pulse module with opto MOS output | LYU:WZU-P2L | WZU-P2L |
| M-bus module for heat and heat/cooling energy meters, generation 2, recommended up to firmware 5.14 | S55563-F109 | WZU-MB |
| M-bus module for heat and heat/cooling energy meters, generation 4, firmware 5.15 and higher from meter firmware 5.17 and module firmware 4.10 | S55563-F110 | WZU-MB-G4 |
| M-bus module with 2 pulse inputs for heat and heat/cooling energy meters, generation 4, firmware 5.15 and higher from meter firmware 5.17 and module firmware 4.10 | S55563-F108 | WZU-MI |
| CL module , digital passive 20-mA interface | LYU:WZU-CL | WZU-CL |
| RF module, 433 MHz , with integrated antenna and 2 pulse inputs | LYU:WZU-RM | WZU-RM |
| RF module, 433 MHz , with external antenna and 2 pulse inputs | LYU:WZU-RM-EXT | WZU-RM-EXT |
| RF module, 868 MHz , with integrated antenna only from meter firmware 5.17: NTA standard/ DSMR2.2+ | LYU:WZU-RF | WZU-RF |
| RF module, 868 MHz , with external antenna only from meter firmware 5.17: NTA standard/DSMR2.2+ | LYU:WZU-RF-EXT | WZU-RF-EXT |
| GPRS module with external antenna (magnetic attachment) and with power pack AC 110...230 V | LYU:WZU-GPRS | WZU-GPRS |
| GPRS module with external antenna (for screw mounting) and with power pack AC 110...230 V | LYU:WZU-GPRS-ANT | WZU-GPRS-ANT |
| GSM module with 2 pulse inputs | LYU:WZU-GM | WZU-GM |
| Analog module | LYU:WZU-AM | WZU-AM |
| Power pack for analog module | LYU:WZR-NE | WZR-NE |

Note

Other types available on request.

Temperature sensors

| <i>Component</i> | <i>Stock no.</i> | <i>Product no.</i> |
|---|------------------|--------------------|
| Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 1.5 m | LYU:WZU5-2815 | WZU5-2815 |
| Pt500, DS M10x1 mm, sensor length 27.5 mm, cable length 2.5 m | LYU:WZU5-2825 | WZU5-2825 |
| Pt500, DS M10x1 mm, sensor length 38 mm, cable length 1.5 m | LYU:WZU5-3815 | WZU5-3815 |
| Pt500, DS M10x1 mm, sensor length 38 mm, cable length 2.5 m | LYU:WZU5-3825 | WZU5-3825 |
| Pt500, Ø 5.2x45 mm, cable length 1.5 m | LYU:WZU5-4515 | WZU5-4515 |
| Pt500, PS Ø 5.2x45 mm, cable length 5 m | LYU:WZU5-4550 | WZU5-4550 |
| Pt500, PL Ø 6x100 mm, cable length 2 m | LYU:WZU5-1020 | WZU5-1020 |

| <i>Component</i> | <i>Stock no.</i> | <i>Product no.</i> |
|--|------------------|--------------------|
| Pt500, PL Ø 6x100 mm, cable length 5 m | LYU:WZU5-1050 | WZU5-1050 |
| Pt500, PL Ø 6x150 mm, cable length 2 m | LYU:WZU5-1520 | WZU5-1520 |
| Pt500, PL Ø 6x150 mm, cable length 5 m | LYU:WZU5-1550 | WZU5-1550 |

Mounting accessories

Fittings

| <i>Component (optional)</i> | <i>Stock no.</i> | <i>Product no.</i> |
|---|------------------|--------------------|
| Mounting set for L = 110 mm, consisting of: - 1 spacer ¾", length = 110 mm - 2 fittings G ¾ B" with coupling nut G ¾ B" - 1 protection pocket for flow sensor Ø 5.2x45 mm, incl. gasket made of copper - 2 gaskets | LYU:99T34110 | 99T34110 |
| Mounting set for L = 130 mm consisting of: - 1 spacer 1", length = 130 mm - 2 fittings G 1 B" with coupling nut G 1 B" - 1 protection pocket for flow sensor Ø 5.2x45 mm, incl. gasket made of copper - 2 gaskets | LYU:99T01130 | 99T01130 |
| Mounting kit, consisting of: - 2 coupling nuts G ¾" - 2 inserts R ½" - 2 gaskets | LYU:WZM-E34 | WZM-E34 |
| Mounting kit, consisting of: - 2 coupling nuts G 1" - 2 inserts R ¾" - 2 gaskets | LYU:WZM-E1 | WZM-E1 |
| Mounting kit, consisting of: - 2 coupling nuts G 1¼" - 2 inserts R 1" - 2 gaskets | LYU:WZM-E54 | WZM-E54 |
| Mounting kit, consisting of: - 2 coupling nuts G 2" - 2 inserts R 1½" - 2 gaskets | LYU:WZM-E2.1 | WZM-E2.1 |
| Adapter from 110 mm to 130 mm, consisting of: - 1 fitting G ¾ B" to G ¾ B" - 2 gaskets | LYU:WZM-V130 | WZM-V130 |
| Adapter from 110 mm to 130 mm, consisting of: - 1 fitting G ¾ B" to G 1 B" - 2 gaskets G ¾" - 2 gaskets G 1" | LYU:WZM-V130.G1 | WZM-V130.G1 |
| Adapter from 110 mm to 165 mm, consisting of: - 2 fitting G ¾ B" to G ¾ B" - 4 gaskets | LYU:WZM-V165 | WZM-V165 |
| Adapter from 110 mm to 190 mm, consisting of: - 1 fitting G ¾ B" to G 1 B" - 2 gaskets G ¾" - 2 gaskets G 1" | LYU:WZM-V190 | WZM-V190 |

Spacers and gaskets

| | | |
|--|--------------------|-----------------|
| Spacer G ¾", length 110 mm, incl. 2 gaskets | LYU:WZM-G110 | WZM-G110 |
| Spacer G 1", length 130 mm, incl. 2 gaskets | LYU:WZM-G130 | WZM-G130 |
| Spacer G 1", length 190 mm, incl. 2 gaskets | LYU:WZM-G190 | WZM-G190 |
| Spacer G 1¼", length 260 mm, incl. 2 gaskets | LYU:WZM-G260 | WZM-G260 |
| Spacer DN 20, length 190 mm, PN 16, incl. 2 gaskets | LYU:WZM-F190 | WZM-F190 |
| Spacer DN 25, length 260 mm, PN 16, incl. 2 gaskets | LYU:WZM-F260 | WZM-F260 |
| Spacer DN 50, length 270 mm, PN 16, incl. 2 gaskets | LYU:WZM-F270 | WZM-F270 |
| Spacer DN 40, length 300 mm, PN 16, incl. 2 flat gaskets | LYU:WZM-F300 | WZM-F300 |
| Spacer DN 65, length 300 mm, PN 16, incl. 2 flat gaskets | LYU:WZM-F300.65 | WZM-F300.65 |
| Spacer DN 80, length 300 mm, PN 16, incl. 2 flat gaskets | LYU:WZM-F300.80 | WZM-F300.80 |
| Spacer DN 100, length 360 mm, PN 25, incl. 2 flat gaskets | LYU:WZM-F360.10-25 | WZM-F360.100-25 |
| Sealing disk G ¾", for threaded connection R ½" | LYU:9060944002 | 9060944002 |
| Sealing disk G 1", for threaded connection R ¾" | LYU:9060944003 | 9060944003 |
| Sealing disk G 1¼", for threaded connection R 1" | LYU:9060944004 | 9060944004 |
| Sealing disk for DN 40, q _p 10 m ³ /h | LYU:9060944024 | 9060944024 |
| Sealing disk for DN 50, q _p 15 m ³ /h | LYU:9060944025 | 9060944025 |
| Sealing disk for DN 65, q _p 25 m ³ /h | LYU:9060944026 | 9060944026 |
| Sealing disk for DN 80, q _p 40 m ³ /h | LYU:9060944027 | 9060944027 |
| Sealing disk for DN 100, q _p 60 m ³ /h | LYU:9060944028 | 9060944028 |

Accessories

| | | |
|--|----------------|------------|
| Welding sleeve with threaded hole for temperature sensor DS M10x1 mm | S55563-F121 | WZT-G10 |
| Welding sleeve G ½", 45° to pipe axis, with threaded hole G ½" | S55563-F122 | WZT-G12 |
| Welding sleeve G ½", 90° to pipe axis, with threaded hole G ½" | LYU:WZT-GLG | WZT-GLG |
| Ball valve Rp ½" for mounting the sensor DS M10x1 mm, length 28 mm, max. water temperature 130 °C, PN 25 | LYU:WZT-K12 | WZT-K12 |
| Ball valve Rp ¾" for mounting the sensor DS M10x1 mm, length 28 mm, max. water temperature 130 °C, PN 25 | LYU:WZT-K34 | WZT-K34 |
| Ball valve Rp 1" for mounting the sensor DS M10x1 mm, length 28 mm, max. water temperature 130 °C, PN 25 | LYU:WZT-K1 | WZT-K1 |
| Ball valve R ½" with union nut G ¾" | LYU:WZT-K12-34 | WZT-K12-34 |
| Ball valve R ¾" with union nut G ¾" | LYU:WZT-K34-34 | WZT-K34-34 |
| Ball valve R ¾" with union nut G 1" | LYU:WZT-K34-1 | WZT-K34-1 |
| Ball valve R 1" with union nut G 1" | LYU:WZT-K1-1 | WZT-K1-1 |
| Adapter for ball valve to install sensor DS M10x1 mm, length 38 mm | LYU:9930128002 | 9930128002 |

| | | |
|---|----------------|------------|
| Adapter G 3/8 B" with threaded hole for sensor DS M10x1 mm, incl. gasket G 3/8" made of copper | LYU:WZT-A38 | WZT-A38 |
| Adapter G 1/2 B" with threaded hole for sensor DS M10x1 mm, incl. gasket G 1/2" made of copper | LYU:WZT-A12 | WZT-A12 |
| Adapter G 3/4 B" with threaded hole for sensor DS M10x1 mm, incl. gasket G 3/4" made of copper | LYU:WZT-A34 | WZT-A34 |
| Protection pocket G 1/2 B" made of stainless steel, with threaded hole G 1/4", mounting length 100 mm, incl. gasket G 1/2" made of copper | S55563-F117 | WZT-S100 |
| Protection pocket G 1/2 B" made of stainless steel, with threaded hole G 1/4", mounting length 150 mm, incl. gasket G 1/2" made of copper | S55563-F118 | WZT-S150 |
| Protection pocket G 1/2 B" made of brass, Ø 5.2x35 mm for sensor Ø 5.2x45 mm | LYU:WZT-M35 | WZT-M35 |
| Protection pocket G 1/2 B" made of brass, Ø 5.2x50 mm for sensor Ø 5.2x45 mm | LYU:WZT-M50 | WZT-M50 |
| Kit for mounting sensor Ø 5.2x45 mm, consisting of: - 1 sensor fitting DS M10x1 mm, brass - 1 O-ring - 1 grooved pin | LYU:9930127002 | 9930127002 |
| Adapter kit, consisting of: - 1 plastic adapter Ø 5.2x45 mm - 1 mounting aid for sensor Ø 5.2x45 mm - 2 O-rings | LYU:9956230 | 9956230 |
| Mounting set G 1/2 B" with threaded hole G 1/4" for direct mounting of long sensors | LYU:WZT-A100 | WZT-A100 |
| Sealing disk for temperature sensor DS M10x1 mm, Ø 8.6/5.3, size 1 mm | LYU:9060944001 | 9060944001 |
| Sealing disc 1/2" made of copper | LYU:9060948 | 9060948 |
| Service key for calibration mode | LYU:9089885 | 9089885 |
| Mounting plate for top hat rail | LYU:WZU-MH | WZU-MH |
| Mounting plate for wall mounting | LYU:WZU-WA | WZU-WA |
| Self-lock seal with sealing wire | LYU:9956186001 | 9956186001 |

Programming accessories

| | | |
|---|----------------------|------------|
| Optical read head with USB interface for PC | LYU:WZR-OP-USB | WZR-OP-USB |
| UltraAssist read out and parametrization software | Available on request | |

Read and parameterization software

For further information about the UltraAssist Light read and parameterization software see chapter "Functions"

Ordering

When ordering, please give quantity, description, product no. and stock no.

Order numbers

| Product no. | Stock no. | Description |
|-------------|-------------|-----------------------|
| UH50-A36-00 | S55561-F114 | Ultrasonic heat meter |

Scope of delivery

The UH50.. is supplied complete with Mounting Instructions in different languages:

Languages

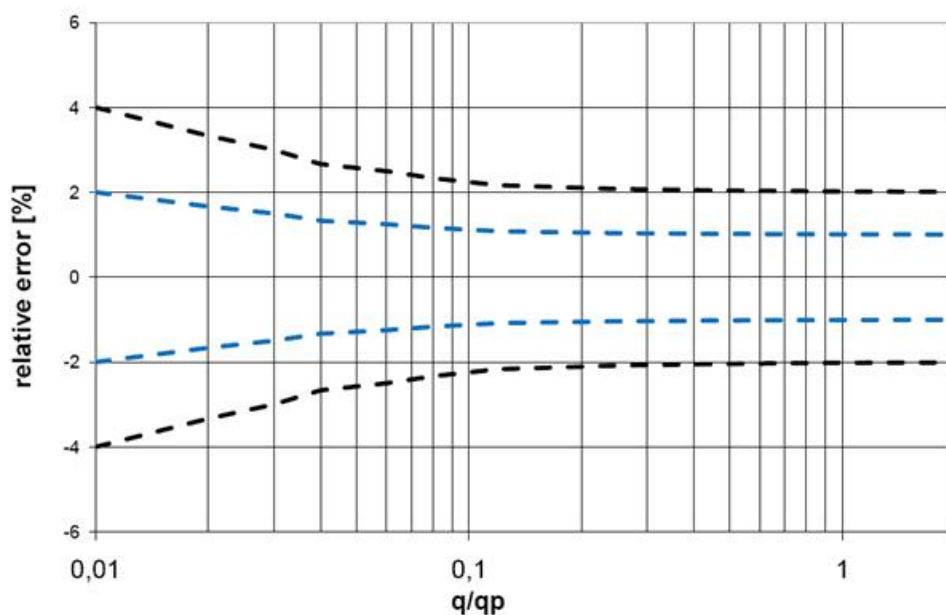
The Mounting Instructions are supplied in 18 languages:

Bulgarian, Chinese, Croatian, Czech, Dutch, English, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Russian, Slovakian, Slovenian, Spanish, and Turkish.

Technical design

Metering accuracy as per EN 1434

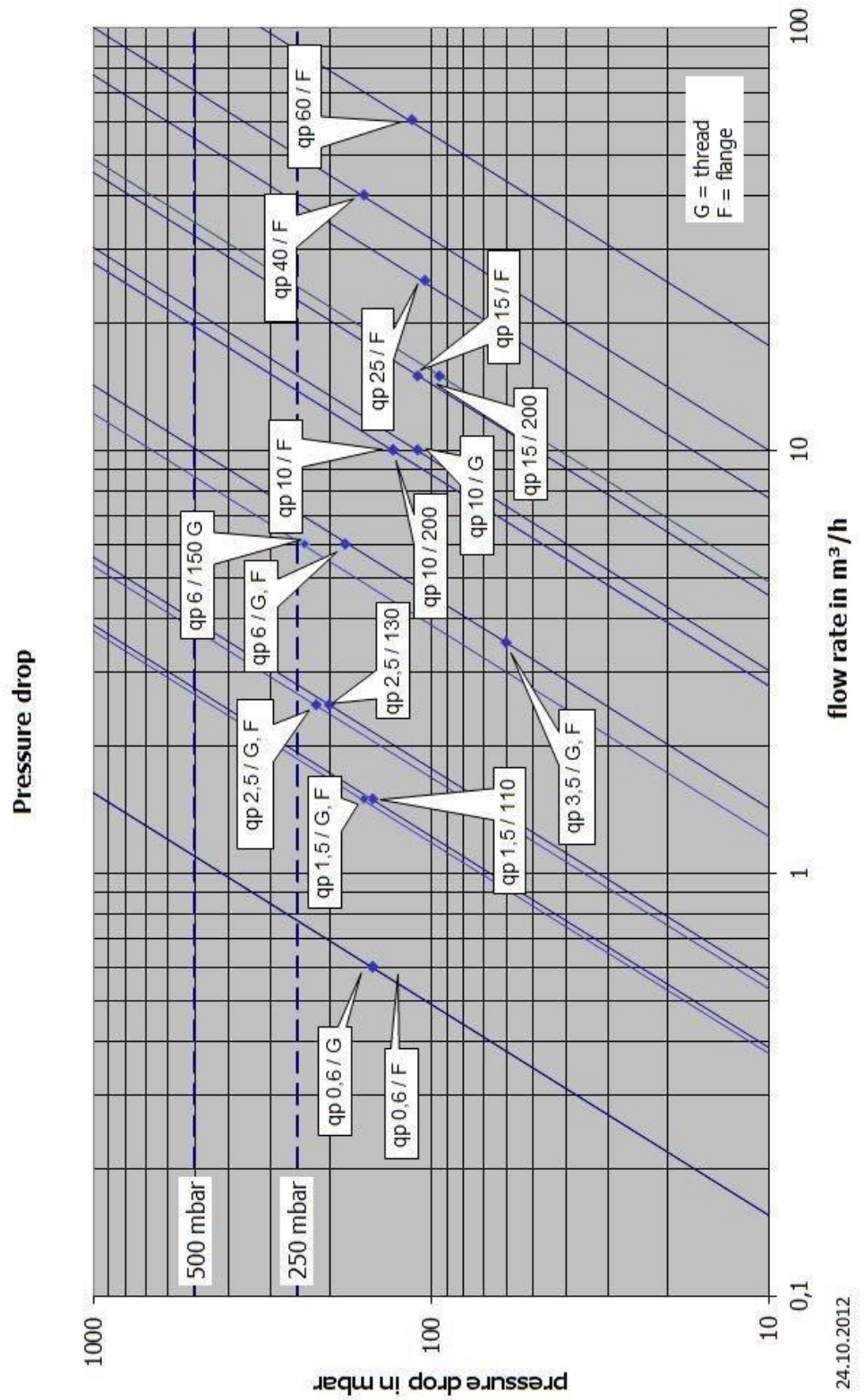
The diagram below shows the typical metering accuracy of the UH50.. in comparison with the error limits as per to EN 1434, class 2.



Key:

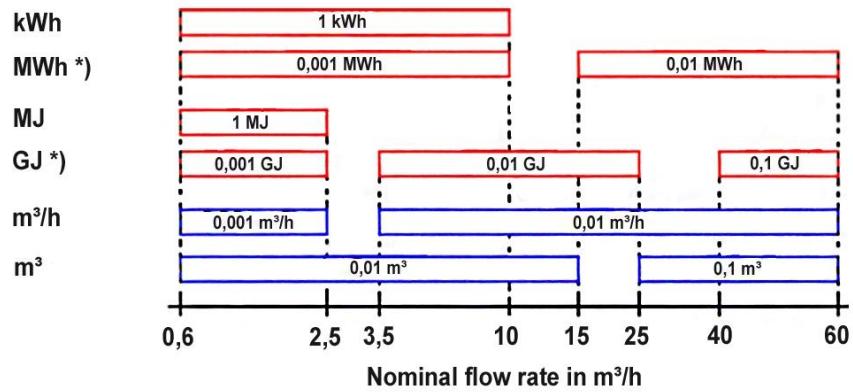
- - - UH50.. typical
- - - EN 1434, class 2

Pressure drop characteristic



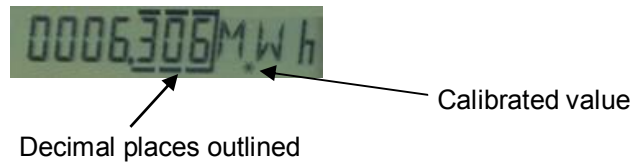
The meter displays current readings in kWh, MWh, MJ or GJ.
 The selection available on the meter is merely kWh or MWh and MJ or GJ.

Resolution of display



*) Decimal places "blinking", "static", or "suppressed"

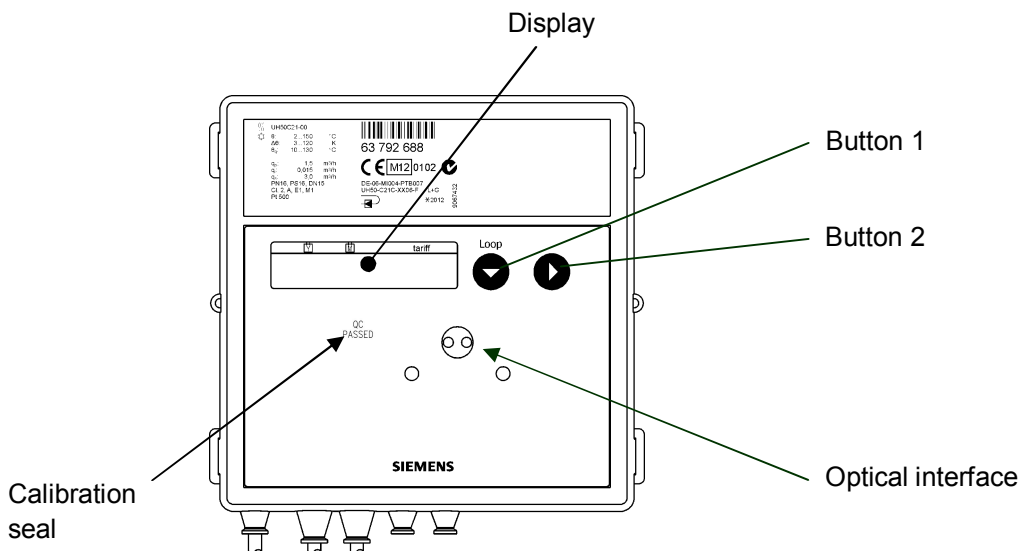
To avoid reading errors, the decimal places of displayed values are outlined.
 Calibrated values are identified by a star symbol.



The number of decimal places of a value depends on the selected measuring path and the selected unit.

The meter's displays are arranged in 5 loops:

- 1 user loop
- 4 service loops



A short press on button 1 enables the required loop to be selected. After the last loop, the user loop reappears.
 When pressing button 2, the values in the respective loop can be read. After the last value of a loop, the first value reappears.

Note

The range of display and the displayed data may deviate from this description and certain button functions may be disabled, depending on the parameter settings made on the meter.

| | | |
|-------------------------------|-------------------------------|---|
| User loop LOOP 0 | F ----- | Error message with error code number (only in case of error) |
| | .. 1234567 kWh | Accumulated energy with tariff state |
| | T' 1234567 kWh | Tariff register 1 (optional) |
| | 1234567 m ³ | Accumulated volume |
| | 8888888 kWh | Segment test |
| Service loop LOOP 1 | 1234 m ³ /h | Current flow rate |
| | 90.9 kW | Current power |
| | TV 9.16 °C | Current flow/return temperature at 2-second intervals |
| | TR 56.2 °C | |
| | 3d 1234 h | Operating time |
| | Pd 1234 h | Operating time with flow rate |
| | Fd 123 h | Missing time |
| | K 12345678 | Property number, 8 digits |
| | D 10.05.06 | Date |
| | SD 3.05.-- | Yearly set day (DD.MM) |
| | 1234567 kWh | Energy previous year on set day |
| | FW1 5-00 | Volume for previous year on set day |
| Service loop LOOP 2 | MP 60 min | Measuring period for maximum calculation |
| | 0 107.11 M | Monthly value (set day) |
| Service loop LOOP 3 | 1234567 kWh | Energy on set day |
| | T' 1234567 kWh | Tariff register 1 on set day |
| | 1234567 m ³ | Volume on set day |
| | Ma 3899 m ³ /h | Max. flow rate on set day, at 2-second intervals with date stamp |
| | St 1306.11 | |
| | Ma 2889 kW | Max. power on set day, at 2-second intervals with date stamp |
| | St 1306.11 | |
| | MV 988 °C | Max. temperatures on set day, at 2-second intervals with date stamp for flow and return maximum |
| | St 1306.11 | |
| | MR 87.7 °C | |
| St 1306.11 | | |
| Fd 123 h | Missing time count on set day | |

Note

If the number of months to be read is changed via the service software, this also affects the number of months that can be called up via the LCD.

Service loop
LOOP 4

| | |
|---------------|---|
| T2 0000 m/h | Current tariff, |
| ' 0000 m/h | at 2-second intervals with threshold value 1 |
| FP 200 SEC | Measuring interval for flow rate |
| TP 30 SEC | Measuring interval for temperature |
| Modul 1 MB | Module 1: M-bus module |
| API 127 | M-bus primary address 1 |
| A 12345678 | M-bus secondary address 8-digit |
| Modul 2-1 CE | Module 2: Pulse module; channel 1 = energy, channel 2 = volume, at 2-second intervals |
| Modul 2-2 CV | |
| PO1 12500Wh/l | Valency for energy pulses *) |
| PO2 00250 l/l | Valency for volume pulses *) |
| PO3 2ms | Pulse duration in ms *) |
| | *) For "fast pulses" |

Previous year's values

The processor unit stores the meter readings of energy, volume, the tariff register, missing time, and flow rate measuring time as well as the current maximum of flow rate, power, temperature differential, flow temperature, and return temperature with their date stamps on a yearly set day.

Monthly values

The processor unit stores the meter readings of energy, volume, the tariff register, missing time, and flow rate measuring time as well as the monthly maxima of flow rate, power, temperature differential, flow temperature and return temperature with their date stamp **for up to 60 months** on the set day of each month.

Note

The standard time used is the Central European Time (CET). If daylight-saving time is activated, storage will be performed accordingly. Previous year's values and monthly values can also be read out via the optical and the 20-mA interface.

Error messages

The meter performs constantly self-diagnostics and can display various error messages.

| Error code | Error | Notes on service |
|--|--|--|
| FL nEG | Wrong direction of flow | Check flow or installation direction; correct if necessary |
| If necessary, alternating with: | | |
| DIFF nEG | Negative temperature differential | Check place of installation of sensors; replace if required |
| If necessary, alternating with: | | |
| F0 | Flow cannot be measured | Air in the measuring section/pipe; vent the pipe (as supplied) |
| F1 | Interruption in the flow temperature sensor | Check sensor; replace if required |
| F2 | Interruption in the return temperature sensor | Check sensor; replace if required |
| F3 | Electronics for temperature assessment defective | Replace meter |
| F4 | Battery exhausted; problem in connection with power supply | Replace battery; check connection |
| F5 | Short-circuit in the flow temperature sensor | Check sensor; replace if required |

| | | |
|----|---|--|
| F6 | Short-circuit in the return temperature sensor | Check sensor; replace if required |
| F7 | Fault in the internal memory | Replace meter |
| F8 | Errors F1, F2, F3, F5, or F6 for more than 8 hours, detection of tampering attempts. No further measurements are made | Action dependent on error code; error message F8 must be reset by service department |
| F9 | Error in the electronics | Replace meter |

Standard parameters

The UH50.. comes programmed as follows:

- Set day [TT.MM]: 01.01

Mounting

Flow measuring section

Note

The mounting position is optional, the mounting location (return or flow) must be in accordance with the type of meter used.

The flow measuring section must always be installed in the return.

Settling paths upstream of and downstream from the meter are not required. If the meter is installed in the common return of 2 heating circuits (e.g. space heating and DHW), the mounting position must be in an adequate distance from the T-piece (min. 10 x DN) to allow the different water temperatures to mix properly.

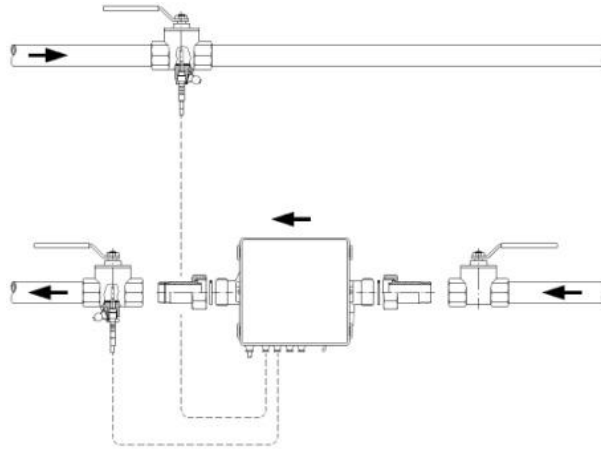
Before installing the meter, the system must be thoroughly flushed. Install the flow measuring section between 2 shutoff valves with the arrow pointing in the direction of flow. The sensors must be mounted in the same water circuit as the flow measuring section (observe mixing). The cables must not be segregated, shortened or extended. Connect the individual wires according to the wiring diagram printed on the meter. The sensors can be fitted in T-pieces or ball valves, or can be immersed, either directly or in pockets (national regulations must be observed).

With meters up to gp 6 and up to PN16 the temperature sensors have to be built in immediately submerged. Immersion sleeves only have to be used in case of higher stress levels.

In any case, the end of the sensors' probe must extend to at least the pipe center. Temperature sensors and fittings must be sealed to prevent tampering. Overpressure must prevent cavitation across the entire measuring range, that is, at least 1 bar with q_p and approximately 3 bar with q_s (at 80 °C).

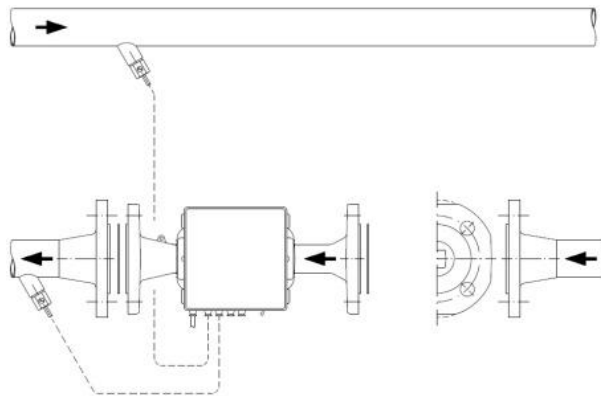
Only authorized persons are allowed to remove and replace calibration seals when carrying out service work.

Ball valve



Example of mounting with a ball valve (recommended up to q_p 6)

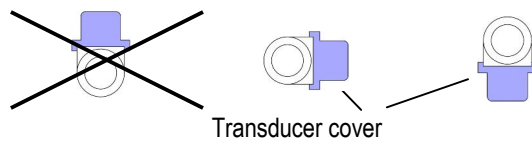
Welded sleeve with protection pocket



Example of mounting with protection pockets (recommended above q_p 10)

Required position of the cooling energy meter

When fitting a **cooling energy** or **combined heat/cooling energy meter**, make sure the black cover on the measuring tube points to the side or downward to prevent condensation. The protection pockets should also be fitted to the side or should point downward. The processor unit must be mounted away from the flow measuring section (e.g. on the wall). Make sure that condensation cannot run along the connected cables, entering the processor unit (forming a loop downward).



Permissible mounting position when metering cooling energy

Processor unit

The ambient temperature of the processor unit must not exceed 55 °C. Avoid direct sunlight.

When fitting the unit, ensure that water cannot enter during operation.

For water temperatures between 10 °C and 90 °C, the processor unit may be left on the flow measuring section or can be fitted to the wall (detached mounting).

For water temperatures above 90 °C or below 10 °C, the processor must be secured to the wall (split mounting).

To fit the processor unit to the wall, remove it from the flow measuring section and undo the screws of the adapter plate. The latter must then be secured to the wall so that the processor unit can be replaced on the adapter plate, snapping into place.

Power supply

The UH50.. can be powered by a power pack or a battery.

Automatic mains detection

The power pack detects whether line voltage is present. This signal is forwarded to the UH50.., enabling the meter to automatically detect whether it is powered by the battery or the power pack.

Power packs



Power pack AC/DC 24 V
WZU-ACDC24-00



Power pack AC 230 V
WZU-AC230-15
WZU-AC230-50
WZU-AC230-100

Batteries



Standard battery (2 AA)
WZU-BA+GUM



Universal battery (D-cell)
WZU-BDS

Battery life

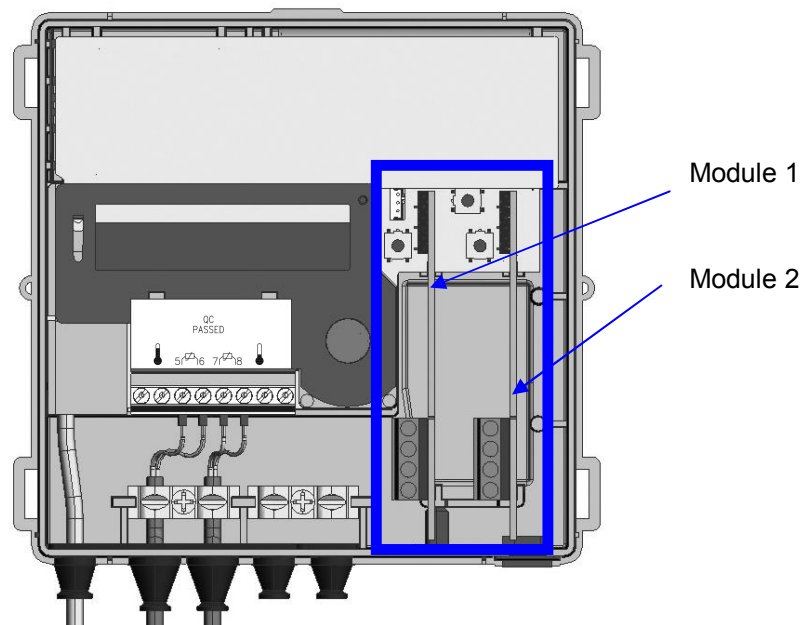
The life of a battery depends on the type of battery and the requirements (e.g. short timebase, analog module, etc.).

| Requirements (with timebase Q = 4 s and T = 30 s) | 6 years | 11 years | 16 years | Power supply (230, 110 V AC; 24 V ACDC) |
|--|---------------|-------------|-------------|--|
| Standard pulses M-bus readout (max. every 15 minutes), CL module | 2x AA cell | C-cell | D-cell | yes |
| RF module 868 MHz | D-cell | D-cell | -- | yes |
| M-bus fast readout (max. every 4 Sec.), fast pulses, analog module | D-cell | -- | -- | yes |
| Fast timebase (for timebase Q =4 s and timebase T = 4 s) | D-cell | -- | -- | yes |

Communication modules

The communication modules are connected via a 6-pole reaction-free plug, enabling them to be installed or replaced at any time.

Compliance with ESD regulations must be ensured.



The UH50.. meters are equipped with an optical interface as standard. Also, up to 2 of the following **communication modules** can be used for remote readout:

- Pulse module WZU-P2/WZU-P2L
- CL module WZU-CL
- M-bus module WZU-MB, WZU-MB-G4
- M-bus module with 2 pulse inputs WZU-MI
- Analog module WZU-AM
- RF module, 433 MHz WZU-RM, WZU-RM-EXT
- RF module, 868 MHz WZU-RF, WZU-RF-EXT
- GPRS module WZU-GPRS, WZU-GPRS-ANT
- GSM module WZU-GM

These modules have no impact on consumption metering and can therefore be **replaced at any time without having to destroy the security seal**.

Within 30 seconds after mounting (in case of the analog module up to 2 minutes), the meter detects automatically the module used and is then ready for communication or for delivering pulses.

The type of module used can be displayed within the service loop (loop 4), depending on the parameter settings made for the display.

Permissible combinations of modules

| AM | analog-module | Step 1: Socket for module 2 is equipped with... | | | | | | | | | | |
|---|--------------------------------|--|--------------|--------------|---------|---------|---------|------|-----|------------|------------|-----|
| MB | M-bus module | | | | | | | | | | | |
| MB G4 | M-bus module | | | | | | | | | | | |
| MB MI | M-bus module | | | | | | | | | | | |
| CL | CL-module | | | | | | | | | | | |
| RF | RF module | | | | | | | | | | | |
| ZB | ZigBee module | | | | | | | | | | | |
| | | AM (5) | Pulse module | | MB | MB G4 | CL | GPRS | GSM | RF 433 MHz | RF 868 MHz | ZB |
| | | | "Standard" | "Schnell" *) | | | | | | | | |
| Step 2: Slot for module #1 can be equipped with... | AM | yes | yes | yes | yes (4) | yes | yes | no | no | yes | yes | no |
| | Pulse module **) "Standard" | yes | yes (3) | yes (2) | yes (4) | yes | yes | yes | yes | yes | yes | yes |
| | MB | yes | yes | yes | yes (4) | yes | yes (1) | yes | yes | yes | yes | yes |
| | MB G4 | yes | yes | yes | yes | yes | yes (1) | yes | yes | yes | yes | yes |
| | MB MI ***) | yes | yes | yes | yes | yes | yes (1) | no | no | yes | yes | no |
| | CL | yes | yes | yes | yes (1) | yes (1) | no | yes | yes | yes | yes | yes |

Restrictions:

*) Only 1 module with fast pulses is possible; only permissible in socket 2;
min. pulse duration :

- 2 ms, if pulse module 1 is not fitted
- 5 ms, if pulse module 1 is fitted

**) Subsequent mounting of a further pulse module in module socket 1 can result in changed output values for module 2!

***) If you build in the WZU-MI on slot no. 2, then you need a battery supply.

- (1) For M-bus with fast readout, CL readout can take up to 40 seconds
- (2) Pulse length of the fast pulses min. 5 ms
- (3) The first and second channel can be parameterized individually
- (4) The secondary address for both modules can only be changed via module no. 1
- (5) Analog module not possible

Terminals

Multipolar connection terminals are used to connect external cables to the modules.

Choice of connections:

- Solid or stranded wire 0.2...2.5 mm²
- Stranded wire with ferrule 0.25...1.5 mm²
- Cable sizes 26 - 14 AWG

Multiline connection (2 lines of same cross-sectional area)

- Solid or stranded wire 0.2...0.75 mm²
- Stranded wire with ferrule without plastic sleeve 0.25...0.34 mm²
- Stranded wire with TWIN ferrule and plastic sleeve 0.5...0.75 mm²

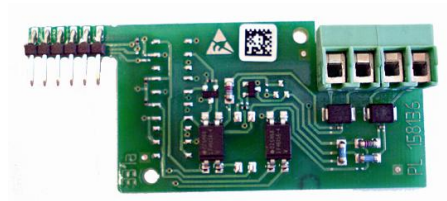
Recommended screwdriver 0.6x3.5 mm

Tightening torque 0.4 Nm

The outer diameter of the cable must be between 4 mm and 6 mm. All cables must enter through the meters' bushings. It may be convenient to connect the cables before the meter in a single multi-conductor cable on a split box.

If a shielded cable is used, the shield must not be connected to the side of the meter (connect to one end only).

Pulse modules WZU-P2/WZU-P2L



Function data

The pulse modules (WZU-P2 and WZU-P2L) enable the meter to communicate with a pulse collector to transmit measured values. It permits the output of pulses that can be derived from the quantity of heat, volume, tariff register 1 or tariff register 2. Two channels are available whose functions can be parameterized with the service software.

The outputs are in the form of standard pulses or "fast pulses". The pulse duration is identical for channel 1 and channel 2.

Note

The modules can be plugged into both sockets, but fast pulses can only be output via socket 2.

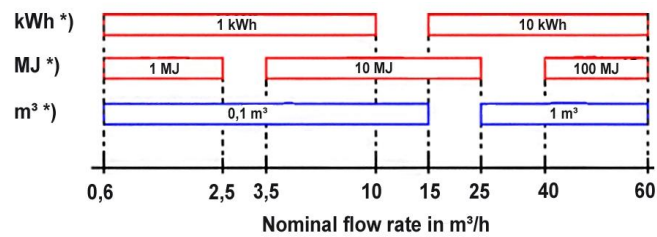
The pulse modules are available in 2 different versions:

WZU-P2 **Pulse module** with 2 channels to output standard or "definable" pulses

WZU-P2L **Pulse module with opto MOS output**, low voltage drop and reversed polarity protection

Standard pulses

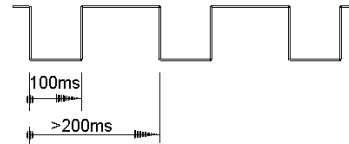
Standard pulse valencies



*) depending on the unit for heat display

Pulses for energy, volume, and tariff register

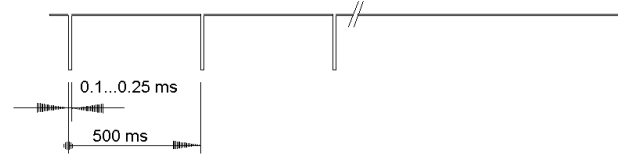
Period duration >200 ms
Pulse duration 100 ms conducting



Pulses for operating states

"Ready" pulsed "conducting", i.e. 0.1...0.25 ms pulse duration, 500 ms period

"Fault" constantly "non-conducting"



Fast pulses

Applications, such as controllers or flow measuring sections, require higher pulse rates. The parameters required for this purpose (pulse valency, pulse duration), can be configured via the service software. The maximum pulse frequency is 33 Hz.

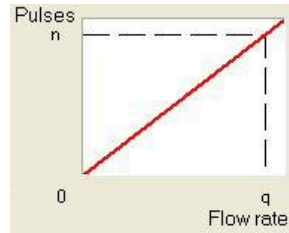
Note

When battery-powered, a D-cell is required!

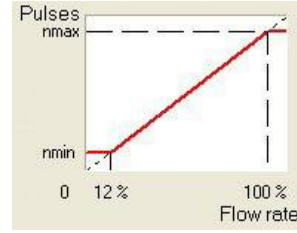
Following can be set:

- Pulse type: "linear" or "scaled" pulses
- Pulse output: Energy or volume
- Pulse duration, if only 1 pulse module is fitted:
 - From 2 ms to 100 ms in increments of 1 ms
- Pulse duration, if 2 pulse modules are fitted:
 - From 5 ms to 100 ms in increments of 5 ms

A suitable device can be used to receive and evaluate the pulses. The settings must be made in accordance with the controller's Data Sheet. Linear pulses are output proportionally to the measured value. In the case of scaled pulses, the number of pulses at the upper and lower end of the range can be defined. In this case, the pulse receiving device can detect a wiring error, for example.



Linear pulses

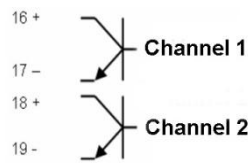


Scaled pulses (example)

LCD

Connection of outputs (standard version):

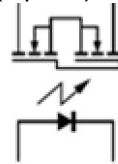
CE, C2, CV, CT or RI



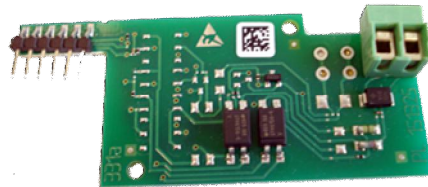
The impulse module is available as special edition with an Opto-MOS-output
Advantages

Low voltage drop and Reverse polarity protected (bipolar)

Circuit



CL module WZU-CL



Function data

The CL module (WZU-CL) can be used to set up a point-to-point link, enabling the meter to be read from a remote location (e.g. from the front door).

Note

The CL module can be plugged into any of the 2 sockets. The meter can accommodate only 1 CL module.

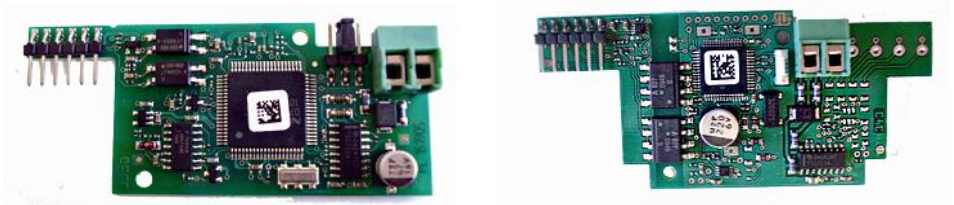
Data are refreshed each time a readout is made:

Property number, serial number, firmware version, error messages, missing time, operating time, energy, tariff register, volume, mounting location, adjustment values, unit configuration data, measuring range, M-bus addresses, system date, and time of day.

Previous year's values with set day for: Energy, tariff register, volume, maximum power, and missing time.

18 monthly values for: Energy, tariff register, volume, missing time, maximum power, maximum flow rate, maximum flow temperature, maximum return temperature, and actual values for power.

M-bus modules
WZU-MB
WZU-MB-G4
WZU-MI



Function data

The M-bus modules (WZU-MB, WZU-MB-G4, and WZU-MI) are used by the meter to communicate with an M-bus central unit to transmit measured values.

For the WZU-MB, the scope of data can be preset with a jumper. With the 2 M-bus modules, the secondary address is identical for both modules. This address can be changed on the meter via the module plugged into socket 1 or via M-bus. The data in the M-bus module are refreshed at 15-minute intervals. Using the UltraAssist software, a shorter sampling cycle can be set on the WZU-MB-G4 and WZU-MI.

The modules are available in 3 different versions:

- WZU-MB** **M-bus module** for heat and heat/cooling energy meters, generation 2, recommended up to firmware 5.14 as per EN 1434-3
- WZU-G4** **M-bus module** for heat and heat/cooling energy meters, generation 4, firmware 5.15 as per EN 13757 and EN 1434-3, and higher from meter firmware 5.17 and module firmware 4.10: NTA standard/ DSMR2.2+ and 3.0
- WZU-MI** **M-bus module with 2 pulse inputs** for heat and heat/cooling energy meters, generation 4, firmware 5.15 as per EN 13757 and EN 1434-3 and higher from meter firmware 5.17 and module firmware 4.10: NTA standard/DSMR2.2+ and 3.0

Note

Modules WZU-MB and WZU-MB-G4 can be plugged into any of the 2 sockets. Module WZU-MI must always be plugged into socket 1.

M-bus module WZU-MI with 2 pulse inputs



Function data

In addition to the M-bus connection facility, the WZU-MI module has 2 pulse inputs for the connection of metering pulses from hot and cold water meters with Reed contact, relay or open collector. The cumulated volume is calculated based on the pulses and the set pulse valency, stored in the processor unit at 5-minute intervals and passed on via M-bus.

Note

The volume values calculated by the meter from the pulse inputs are not capable of being officially calibrated.

In addition to possible power supply from the M-bus connection, the WZU-MI module is equipped with a battery. It powers the module processor and the pulse input, if no M-bus voltage is applied. As pulse transmitters for the pulse inputs, either isolated contacts (e.g. relay or Reed contacts) or electronic transmitters (open collectors) can be used. If an open collector circuit is used as the transmitter of the pulse inputs, the cable must always be electrically isolated from the M-bus inputs of the MI module.

Analog module WZU-AM



Function data

The analog module (WZU-AM) converts the measured value from the heat meter to an analog signal. Each module has 2 channels whose functions can be configured independently. Parameterization (selection of measured value and output range) is performed with the service software. The output signal is refreshed at 4-second intervals.

Note

The analog module can be plugged into any of the 2 sockets. Both modules can be used concurrently.

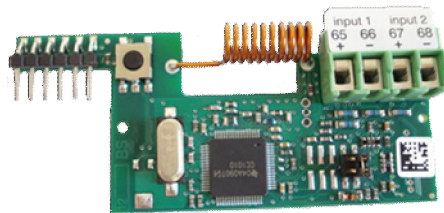
Power supply

The module must be powered via an external power pack (e.g. NZR-NE). The 2 cables of the power pack are interchangeable. If 2 analog modules are used, they can be powered by the same power pack. If the meter is mains-powered (AC/DC 24 V), the module(s) and the meter can be connected to the same power outlet. In this case, the wires must be bridged on the module. The connection terminals on the meter's power pack are not suited for that purpose. If a meter is used with an analog module, a D-cell is required – if battery-powered.

External fuse

Each analog module requires **its own** external fuse.

RF module, 433 MHz, WZU-RM



Function data

The RF module (WZU-RM) permits wireless readout from distances of up to 100 meters. The module features 2 additional pulse inputs for counting external metering pulses.

Note

The RF module must be plugged into socket 2 of the meter. Operation with a pulse module in "fast pulses" mode is not allowed.

Power supply

The module is powered via the heat meter. To reduce power consumption, the sampling rate can be extended using a jumper or the transmitter power can be reduced. If the meter is to be powered by a battery, a D-cell must be used.

Pulse inputs

With regard to the pulse inputs, please note:

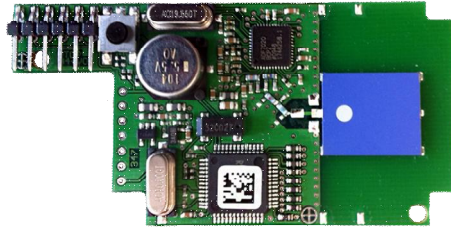
- Connect only potentialfree contacts (Reed contacts)
- Inputs and electronics of the meter are not galvanically isolated
- External power supply or earthing is not permitted

Meter ID, pulse valency and the meter readings for the pulse inputs can be predefined by telegram.

Note

In the RF module, the pulses are not multiplied by their pulse valencies. The pulse valencies are merely stored in one register each for information. The assignment is made only when the data read out are evaluated.

RF modules, 868 MHz, WZU-RF/WZU-RF-EXT



Function data

The RF modules (WZU-RF and WZU-RF-EXT) enable the meter to communicate wirelessly with a center using 868 MHz radio frequency. They support data transmission conforming to OMS and DSMR. When operating in conformance with DSMR, the meter time can be set. The maximum range is 400 meters.

Note

The module must be plugged into socket 2.

The module is available in 2 different versions:

- WZU-RF Module with internal antenna
- WZU-RF-EXT Module with external antenna

Data output conforming
to OMS

The following data are available:

- Current energy
- Current volume
- Current power
- Current flow rate
- Current flow and return temperature
- Error (manufacturer-specific)
- Current time stamp (type I)

Other data telegrams are available on request (e.g. special telegrams for mobile data acquisition).

Power supply

The RF module is powered via the meter. If the meter is to be powered by a battery, a D-cell must be used.

GPRS module WZU-GPRS



Function data

The WZU-GPRS module is a GSM/GPRS module with M-bus master. The module reads the values of the meter that supports the M-bus protocol and stores the data. It is supplied complete with an external antenna.

Features

- Reading and storing measured values of the heat/cooling energy meter

- Reading and storing measured values of any metering device conforming to the M-bus standard protocol
- Collection of measured values per e-mail, FTP, http, SMS transparent GSM or TCP
- Configurable report templates for manufacturer-specific reports on values, about the system, etc.
- Configurable per SMS, http, or Telenet
- Updating applications, firmware and resources via GPRS remote control

Note The module must be plugged into socket 2.

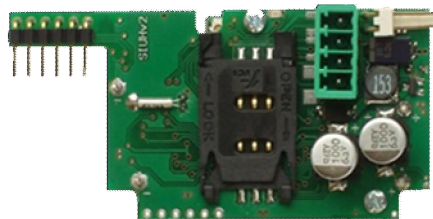
M-bus The module has a built-in M-bus master, capable of reading up to another 8 M-bus meters. If the bus is overloaded, communication problems with the connected slaves occur.
All connected M-bus devices (slaves) must have an unambiguous M-bus secondary address.

Power supply The module (WZU-GPRS) is supplied complete with the required power supply module (rated voltage AC 100...240 V).

Communication protocols

- E-mail via SMTP with authentication mode HELO, EHLO
- Passive FTP mode with authentication and change of remote directory
- HTTP POST and GET
- GSM data transparent M-bus @ 300 and 2'400 baud and GSM data console TCP Transparent M-bus @300 and 2'400 baud and TCP console
- SMS for configuration
- Internet time synchronization with NTP or daytime protocol

GSM module WZU-GM



Function data The WZU-GM is a complementary module used for wireless data transmission in the form of SMS via a GSM network. Messages with data are sent at preconfigured times. When no SMS are sent, the module operates in idle/Eco mode and is separated from the GSM network. It sends 2 types of SMS – service and data messages. The module is programmed via configuration SMS and can be installed either with an internal or external antenna.

Note The module must be plugged into socket 1.

Pulse inputs The module is equipped with 2 pulse meters and is galvanically isolated from the meter (pulse inputs I1 and I2 have a common ground). It has its own lithium battery and powers the pulse inputs, in addition to the GSM processor.
The pulse sources used for the respective inputs are either potentialfree contacts (e.g. relay or Reed contacts) or electronic signal sources (e.g. open collector). The pulse valency can be set from 0.01 liters/pulse to 10,000.00 liters/pulse in increments of 0.01 liters/pulse.

The display (only with firmware ≥ 5.15) is made in m3 with 7 digits, depending on the parameter settings made (without or with 1 decimal place).

Note When using the open collector circuit, the polarity of the inputs must be observed.

Note

The following options are available for tariff control.

The summation of energy and volume in the standard registers is performed independently of the tariff situation!

Threshold value tariff (tariffs T2, 3, 4, 5, 6)

Tariff registers 1, 2 and 3 can be controlled via up to 3 threshold values.

Either energy or volume can be summated in the tariff registers.

The threshold values can be derived from the flow rate (tariff T2), the power (tariff T3), the return temperature (tariff T4), the flow temperature (tariff T5), or the temperature differential (tariff T6).

Supplied quantity of energy (tariff T7)

In tariff register 1, the energy calculated from the flow temperature is summated (and not from the temperature differential).

Returned quantity of energy (tariff T8)

In tariff register 1, the energy calculated from the return temperature is summated (and not from the temperature differential).

Heat/cooling energy meter (tariff T9)

In tariff register 1, the measured cooling energy is summated, in tariff register 2, the measured thermal energy. In both cases, a threshold can be defined via the flow temperature (cold threshold, heat threshold).

Temperature above heat threshold and temperature differential $>+0.2$ K
=> thermal energy is acquired

Temperature below "cold threshold" and temperature differential <-0.2 K
=> cooling energy is acquired

Tariff control via time switch (tariff T10)

For tariff control, one switch-off time and one switch-on time per day can be defined. At the switch-on time, the summation of energy or volume is started in tariff register 1. At the switch-off time, it is ended.

Tariff control via M-bus (tariff T11)

In tariff registers 1, 2 and 3, either energy or volume can be summated. With the relevant M-bus command, one of the 3 tariffs can be activated or all tariffs can be deactivated.

Surcharge quantity tariff by means of return temperature (tariff T12)

The energy is summated depending on the return temperature in tariff registers 1 or 2.

The summated energy is calculated from the temperature differential of return and defined return threshold (and not from the temperature differential).

Above return threshold: T1 is summated.

Below return threshold: T2 is summated.

Display of tariff situation on the LCD

The current tariff state is shown in the user loop together with the energy or the volume.

No tariff state is shown for tariffs T7 and T8.

For tariffs T2, T3, T4, T5, T6, T10, T11, and T12:

| | |
|----------------|---------------------------|
| .. 1234567 kWh | No tariff register active |
| :: 1234567 kWh | Tariff register 1 active |
| .. 1234567 kWh | Tariff register 2 active |
| :: 1234567 kWh | Tariff register 3 active |

For tariff T9 (cooling energy/heat meter)

| | |
|----------------|---------------------------|
| :: 1234567 kWh | No tariff register active |
| .. 1234567 kWh | Tariff register 1 active |
| .. 1234567 kWh | Tariff register 2 active |

The type of tariff and the associated parameters are displayed in service loop 4.

| | |
|-------------|--|
| T2 0000 m/h | For T2, T3, T4, T5, and T6 |
| ' 0000 m/h | At 2-second intervals with threshold value 1/2/3 |
| T7 0 °C | For T7 |
| T8 0 °C | For T8 |
| T9c 18 °C | For T9 |
| T9h 45 °C | At 2-second intervals |
| T10 ----- | For T10 |
| B1 0000 0 | Switching times at 2-second intervals |
| B2 1200 1 | |
| T11 ----- | For T11 |
| T12 50 °C | For T12 |

The contents of the tariff registers is displayed in the user loop after the energy.

For tariffs T2, T3, T4, T5, T6, T10, T11, and T12

| | |
|------------------|---------------------------------|
| T' 1234567 kWh | Tariff register 1 |
| T'' 1234567 kWh | Tariff register 2 |
| T''' 1234567 kWh | Tariff register 3 (not for T12) |
| TH 1234567 kWh | For tariff T7 |
| RH 1234567 kWh | For tariff T8 |
| HE 1234567 kWh | For tariff T9 |
| Co 1234567 kWh | |

Log functions

In the internal logbook, metrologically relevant events (errors, states, actions) are stored in chronological order with their time of occurrence. The acquired events are predefined. Logbook data cannot be deleted.

Each event is stored in a separate 4-level shift register. The overflows are transferred to a 25-level circulating buffer. This way, at least the last 4 times can be traced for each event.

In a monthly register, the error states are stored for the current month and the past 18 months (without time stamp).

| Serial no. | Description |
|------------|---|
| 1 | F0 = air in measuring tube |
| 2 | F1 = interruption flow temperature sensor |
| 3 | F2 = interruption return temperature sensor |
| 4 | F3 = error temperature electronics |
| 5 | F5 = short-circuit flow temperature sensor |

| | |
|----|--|
| 6 | F6 = short-circuit return temperature sensor |
| 7 | F8 = sensor error >8 hours |
| 8 | F9 = ASIC error |
| 9 | Above max. temperature in the flow measuring section |
| 10 | Below min. temperature in the flow measuring section |
| 11 | Max. flow rate qs exceeded |
| 12 | Soiling prewarning |
| 13 | Mains voltage off |
| 14 | CRC error occurred |
| 15 | Adjustment values parameterized |
| 16 | F7-(EEPROM) prewarning |
| 17 | Reset made |
| 18 | Date/time of day parameterized |
| 19 | Yearly set day parameterized |
| 20 | Monthly set day parameterized |
| 21 | Master reset performed |
| 22 | All times deleted |
| 23 | Missing time deleted |
| 24 | Maxima deleted |

Readout is performed via the optical interface with the service software.

Data logger

The data logger (optional) permits archiving of data that the user can select from a predefined set of values. The data logger contains 4 archives whose 8 channels can be assigned. The data can be assigned to any of the channels. Parameterization is performed with the service software.

| Archive | Time base | Storage depth | Averaging time for maximum |
|------------------------|-----------|---------------|----------------------------|
| Hourly archive | 1 hour | 45 days | 1 hour |
| Daily archive | 1 day | 65 days | 1 hour |
| Monthly archive | 1 month | 15 months | 1 hour |
| Yearly archive | 1 year | 15 years | 1 hour/24 hours |

*) For measuring periods below 1 hour, the largest value from the maximum values calculated within 1 hour applies

The data are recorded with their values and time stamps. Parameterization and readout are performed via the optical interface with the service software.

Note

Data transmission is in a manufacturer-specific format.

| | Value set for data to be recorded |
|---|---|
| Meter readings at the end of the period for... | Energy Tariff register 1, 2, 3 Volume Operating time *) Fault duration *) Pulse input 1 Pulse input 2 *) Depending on parameter setting: Hours or days |
| Instantaneous values at the end of the period for... | Power Flow rate Flow temperature Return temperature Temperature differential Error display |
| Maximum for... | Power Flow rate Flow temperature Return temperature Temperature differential |

Maintenance notes

Maintenance

The meters are maintenance-free.
National calibration regulations must be observed.

Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and must not be disposed of as domestic waste.

- Dispose of the device via the channels provided for this purpose
- Comply with all local and currently applicable laws and regulations
- Dispose of empty batteries at designated collection points

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used

Technical data

| | | |
|-------------------------------|--|---|
| Processor unit | Measuring range | 0...180 °C |
| | (national approvals may differ) | |
| Function data | Range of temperature differential $\Delta\Theta$ | 3...120 K |
| | Temperature response threshold | 0.2 K |
| | Thermal coefficient | Shifting compensated |
| | Temperature-measuring error without sensor | $(0.5 + \Delta\Theta_{\text{min.}}/\Delta\Theta) \%$, Max. 1.5% at $\Delta\Theta = 3 \text{ K}$ |
| Temperature sensor | Sensing element | Pt500 as per EN 60751 |
| | Temperature range | 0...150 °C (up to 45 mm mounting length) 0...180 °C (from 100 mm mounting length) |
| Optical interface | Design | Similar to EN 62056-21 |
| | Protocol | As per EN 62056-21 |
| Cable length | Control cable | 1.5 m 3.0 m |
| | Dimensions | DS M10x1 mm, sensor length 27.5 mm DS M10x1 mm, sensor length 38 mm Pocket short $\varnothing 5.2 \times 45 \text{ mm}$ Pocket long $\varnothing 6 \times 100 \text{ mm}$ Pocket long $\varnothing 6 \times 150 \text{ mm}$ |
| Flow measuring section | | |
| Function data | Temperature range | 5...130 °C |
| | (national approvals may differ) | |
| | Recommended temperature range | |
| | - Thermal energy | 10...130 °C |
| | - Cooling energy | 5...50 °C |
| | Max. temperature (for 2,000 hours) | 150 °C |
| | Rated pressure | 1,6 MPa (PN 16; PS 16)/2,5 MPa (PN 25; PS 25) |
| | Mounting position | Optional |
| Mounting location | Return or flow | |

| Nominal flow rate q_p | Overall length | Connection | Maximum flow rate q_s | Minimum flow rate q_i | Response threshold (variable) | Pressure drop at q_p | Kv flow rate at Δp 1 bar | Kv flow rate at Δp 100 mbar | Weight |
|-------------------------|----------------|------------|-------------------------|-------------------------|----------------------------------|------------------------|-------------------------------------|--|--------|
| m^3/h | mm | G/DN | m^3/h | l/h | l/h | mbar | m^3/h | m^3/h | kg |
| 0.6 | 110 | G $3/4$ | 1.2 | 6 | 2.4 | 150 | 1.5 | 0.5 | 1 |
| 0.6 | 190 | G1 | 1.2 | 6 | 2.4 | 150 | 1.5 | 0.5 | 1.5 |
| 0.6 | 190 | DN20 | 1.2 | 6 | 2.4 | 150 | 1.5 | 0.5 | 3 |
| 1.5 | 110 | G $3/4$ | 3 | 15 | 6 | 150 | 3.9 | 1.2 | 1 |
| 1.5 | 130 | G1 | 3 | 15 | 6 | 160 | 3.8 | 1.2 | 1.5 |
| 1.5 | 190 | G1 | 3 | 15 | 6 | 160 | 3.8 | 1.2 | 1.5 |
| 1.5 | 190 | DN20 | 3 | 15 | 6 | 160 | 3.8 | 1.2 | 3 |
| 2.5 | 130 | G1 | 5 | 25 | 10 | 200 | 5.6 | 1.8 | 1.5 |
| 2.5 | 190 | G1 | 5 | 25 | 10 | 210 | 5.3 | 1.7 | 1.5 |
| 2.5 | 190 | DN20 | 5 | 25 | 10 | 210 | 5.3 | 1.7 | 3 |
| 3.5 | 260 | G $1\ 1/4$ | 7 | 35 | 14 | 55 | 15 | 4.7 | 3 |
| 3.5 | 260 | DN25 | 7 | 35 | 14 | 55 | 15 | 4.7 | 5 |
| 6 | 150 | G $1\ 1/4$ | 12 | 60 | 24 | 190 | 14 | 4.4 | 3 |
| 6 | 260 | G $1\ 1/4$ | 12 | 60 | 24 | 140 | 16 | 5.1 | 3 |
| 6 | 260 | DN25 | 12 | 60 | 24 | 140 | 16 | 5.1 | 5 |
| 10 | 200 | G2 | 20 | 100 | 40 | 130 | 28 | 8.8 | 2.6 |
| 10 | 300 | G2 | 20 | 100 | 40 | 110 | 30 | 9.5 | 4 |
| 10 | 300 | DN40 | 20 | 100 | 40 | 130 | 28 | 8.8 | 7 |
| 15 | 200 | DN50 | 30 | 150 | 60 | 95 | 49 | 15.4 | 5 |
| 15 | 270 | DN50 | 30 | 150 | 60 | 110 | 45 | 14.3 | 8 |
| 25 | 300 | DN65 | 50 | 250 | 100 | 105 | 77 | 24.4 | 11 |
| 40 | 300 | DN80 | 80 | 400 | 160 | 160 | 100 | 31.6 | 13 |
| 60 | 360 | DN100 | 120 | 600 | 240 | 115 | 177 | 56.0 | 22 |

Tolerance in the event of pressure drop: +/- 5%

Power supply optional

| | | |
|---|--|---|
| Standard battery WZU-BA+GUM | Standard battery | |
| | - Battery type | 2 AA lithium batteries (Li-SOCI2) |
| | - Battery voltage | 3.6 V |
| | - Battery life | Up to 6 years |
| - Universal battery WZU-BDS | Universal battery | |
| | Battery type | 1 D-cell lithium battery (Li-SOCI2) |
| | Battery voltage | 3.6 V |
| | Battery life | 6...16 years (depending on configuration) |
| - Power pack AC 230 V WZU-AC230-15 WZU-AC230-50 WZU-AC230-100 | Power pack AC 230 V | |
| | - Safety class | II |
| | - Voltage range | AC 196...253 V |
| | - Frequency | 50/60 Hz |
| | - Max. power consumption | 0.8 VA |
| | - Overvoltage category II as per EN 61010-1 | 2,500 V surge voltage |
| | - Length of connecting cable | 1.5 m/5 m/10 m |
| | - External fusing of supply line | Automatic cutout 6 A |
| | - Backup in the event of a power failure | >20 minutes |
| - Power pack AC/DC 24 V WZU-ACDC24-00 | Power pack AC/DC 24 V | |
| | - Safety class | III (SELV) |
| | - Voltage range | AC 12...36 V or DC 12...42 V |
| | - Frequency | 50/60 Hz or DC |
| | - Max. power consumption | 0.8 VA |
| | - Terminals | 2x1.5 mm ² , |
| | - For connecting line | Ø 5.0...6.0 mm |
| | - Backup in the event of a power failure | >20 minutes |

Communication

| | | |
|----------------------------------|--------------------------------|--|
| - Pulse module WZU-P2/WZU-P2L | Pulse outputs | |
| | - Number of outputs per module | 2 |
| | - Standard pulses | For energy, volume and tariff register |
| | - Pulse valencies | 1 kWh, 10 kWh, 1 MJ, 10 MJ, 100 MJ, 0.1 m ³ , 1 m ³ per pulse |
| | - Pulse duration | 100 ms conducting |
| | - Period duration | >200 ms |
| | - Pulse for operating states | |
| | - Pulse duration for "Ready" | 0.1...0.25 ms conducting |
| | - Pulse duration for "Fault" | Constantly non-conducting |
| | - Period duration | 500 ms |
| | - Fast pulses | If 1 pulse module is fitted |
| | - Pulse duration | 2...100 ms in increments of 1 ms |
| | - Max. pulse frequency | 33 Hz |
| | - Fast pulses | If 2 pulse modules are fitted |
| | - Pulse duration | 5...100 ms in increments of 5 ms |
| | - Max. pulse frequency | 33 Hz |

| | | |
|---|-----------------------------------|---|
| | - Type | Open collector |
| | - Voltage | Max. DC 30 V |
| | - Current | Max. 30 mA |
| | - Classification as per EN 1434-2 | OB |
| | - Voltage drop | Approx. 1.3 V at 20 mA |
| | - Classification as per EN 1434-2 | OC |
| | - Voltage drop | Approx. 0.3 V at 0.1 mA |
| | Dielectric strength | 500 V _{eff} against ground |
| - CL module WZU-CL | Passive current loop | As per EN 62056-21 mode B |
| | - Voltage | Max. DC 30 V |
| | - Current | Max. 30 mA |
| | - Voltage drop | <2 V at 20 mA |
| | - Baud rate | 2400 baud, fixed |
| | - Galvanic isolation | Yes |
| | - Polarity | Yes |
| - M-bus modules WZU-MB/WZU-MB G4 WZU-MI | M-bus slave interface | As per EN 1434-3 and EN 13757-2 /-3 |
| | - Voltage | Max. DC 50 V |
| | - Current draw | 1 M-bus load (1.5 mA) |
| | - Addressing | Primary or secondary |
| | - Baud rate | 300, 1200, 2400, 4800, 9600 baud |
| | - Polarity | Optional |
| | - Galvanic isolation | |
| | - From meter | Yes |
| | - From pulse inputs | No |
| - M-bus module WZU-MI Part of pulse input | Pulse inputs | As per EN 1434-2, class IB |
| | - Number of inputs | 2 |
| | - Module battery | |
| | - Battery type | 1 BR2477A (LiCF) |
| | - Battery voltage | 3 V |
| | - Battery life | In operation: Up to 5 years Storage time: +1 year; if M-bus voltage is fed to the module for at least 90% of the operating time, battery life is extended to 10 years |
| | - Pulse duration (Low) | ≥50 ms |
| | - Pulse duration (High) | ≥50 ms |
| | - Frequency | Max. 10 Hz |
| | - Polarity | Yes |
| | - Galvanic isolation | |
| | - From meter | Yes |
| | - From M-bus inputs | No |
| | - Pulse valency | 0.01 to 10,000.00 liters per pulse, in increments of 0.01 liters per pulse |
| | - Display | In m ³ , 7 digits, without or with 1 decimal place, depending on parameter setting |
| | - Output voltage | Approx. 3.3 V |
| | - Internal resistance | Approx. 1 MΩ |

| | | |
|---------------------------------------|---------------------------------|---|
| | - Source current | Approx. 3 μ A |
| | - Pulse input closed (Low) | |
| | - Switching threshold low | <0.2 V |
| | - Resistance | <50 k Ω |
| | - Pulse input open (High) | |
| | - Switching threshold high | Collector not fully activated |
| | - Resistance | \geq 6 M Ω |
| | - Max. cable length | 10 m |
| - Analog module WZU-AM | Analog output | |
| | - Number of outputs | 2 |
| | - Output variable | Current or voltage configurable |
| | - Max. load at current output | 300 Ω |
| | - Max. load at voltage output | 2 k Ω |
| | - Accuracy | $\leq \pm 1\%$ of parameterized max. value |
| | - Max. cable length | 100 m |
| | - Cross-sectional area | Max. 1.5 mm ² |
| | - Outputs short-circuit-proof | Yes |
| | - Galvanic isolation from meter | Yes |
| | External power supply | |
| | - Voltage range | AC 12...30 V or DC 12...42 V |
| | - Current draw | Max. 170 mA at 12 V |
| | - Power consumption | Max. 2 VA |
| | External fuse (not enclosed) | As per EN 60127-2 |
| | - < AC/DC 24 V | 200 mA, slow |
| | - \geq AC/DC 24 V | 100 mA, slow |
| | - Breaking capacity | 35 A (L) |
| - RF module, 433 MHz, WZU-RM | Radio interface | |
| | - Frequency | 433 MHz |
| | - Transmitter power | 8 mW, can be changed to 5 mW with jumper |
| | - Antenna | Built-in |
| | - Readout frequency | Max. 1 readout per day (average) |
| | - Sampling rate (RF) | 8 s, can be changed with jumper |
| | - RF protocol | Proprietary |
| | - RF range | Up to 100 m |
| - RF module WZU-RM Pulse inputs | Pulse inputs | As per EN 1434-2, class IB |
| | - Number of inputs | 2 |
| | - Pulse duration (Low) | \geq 50 ms |
| | - Pulse duration (High) | \geq 50 ms |
| | - Frequency | Max. 10 Hz when using 1 input Max. 5 Hz when using both inputs |
| | - Polarity | Yes |
| | - Galvanic isolation from meter | No |
| | - Pulse valencies | 0.001... 999.999 per pulse input |
| | - Metering range | 0...99,999.999 (8 digits) |
| | - Meter ID | 8 digits for each pulse input |
| | - Output voltage | 3 V |
| | - Internal resistance | 0.3 M Ω |

| | | |
|--|---|---|
| | - Source current | 10 μ A |
| | - Pulse input closed (Low) | |
| | - Switching threshold low | 0.5 V |
| | - Resistance | 50 k Ω |
| | - Pulse input open (High) | |
| | - Switching threshold high | 2 V |
| | - Resistance | 2 M Ω |
| | - Max. cable length | 10 m |
| - RF module, 868 MHz, WZU-RF / WZU-RF-EXT | RF interface | As per EN 13757-2/ -4 |
| | - Frequency | 868.95 MHz |
| | - Transmitter power | 3.16...25 mW |
| | - Receive frequency | 868.30 MHz |
| | - Antenna | WZU-RF: Built-in WZU-RF-EXT: External |
| | - RF protocol | OMS-/DSMR-compliant data transmission |
| | - RF range | Max. 400 m/typically 30 m in buildings |
| - GPRS module WZU-GPRS | GPRS interface | Class 12 |
| | - Band | 850/900/1,800/1,900 MHz |
| | - External antenna | WZU-GPRS with magnetic base WZU-GPRS-ANT with screwed connection |
| | - Protocols | E-mail via SMTP Passive FTP mode HTTP POST and GET GMS data transparent M-bus TCP transparent M-bus |
| | - Configuration | SMS, HTTP, FTP, GSM CSD |
| | - Data storage | 1.3 MByte |
| | - Backup real-time clock | 3 days |
| | - Max. humidity in operation | 80% r.h. |
| | - Power supply | Enclosed |
| | - Voltage range | AC 100...230 V, -20%...+15% |
| | - Frequency | 50/60 Hz |
| | - Power consumption | Max. 2.5 VA |
| | - Rated consumption | Max. 1 VA |
| | - Overvoltage category as per EN 61010-1 | II |
| - GPRS module WZU-GPRS M-bus master | M-bus master interface | As per EN 13757 |
| | - Baud rate | 300 and 2400 baud |
| | - Number of M-bus slaves | Max. 8 |
| | - Cable length | Max. 1000 |
| | - Connection | 2-wire connection, interchangeable |

| | | |
|--|---|--|
| - GSM module WZU-GSM | GSM interface | |
| | - Band | 900/1,800/1,900 MHz |
| | - Antenna | Built-in or external (optional) |
| | - Transmitter power | Max. 2 W at 800 MHz Max. 1 W at 1,800 or 1,900 MHz |
| | - Range | Depending on availability of GSM network |
| | - Module battery | |
| | - Battery type | 2 AA lithium batteries (Li-SOCl ₂) |
| | - Battery voltage | 3.6 V |
| | - Battery life | Approx. 1,600 SMS or 6 years (depending on strength of GSM signal) |
| | - SMS | Forwarding service and data messages |
| - GSM module WZU-GMS Pulse input section | Pulse inputs | |
| | | As per EN 1434-2, class IB |
| | - Number of inputs | 2 |
| | - Pulse duration (Low) | ≥50 ms |
| | - Pulse duration (High) | ≥50 ms |
| | - Frequency | Max. 10 Hz |
| | - Storing the pulse count | Once per hour (FW ≤5.13) in EEPROM |
| | - Polarity | Yes |
| | - Galvanic isolation from meter | Yes |
| | - Pulse valency | 0.01 to 10,000.00 liters per pulse, in increments of 0.01 liters per pulse |
| | - Display (only with firmware ≥5.15) | In m ³ , 7 digits, without or with 1 decimal place, depending on parameter setting |
| | - Output voltage | Approx. 3.3 V |
| | - Internal resistance | Approx. 1.5 MΩ |
| | - Source current | Approx. 2 μA |
| | - Pulse input closed (Low) | |
| | - Switching threshold low | <0.2 V |
| | - Resistance | <50 kΩ |
| | - Pulse input open (High) | |
| | - Switching threshold high | Collector not fully activated |
| | - Resistance | ≥6 MΩ |
| - Max. cable length | 10 m | |

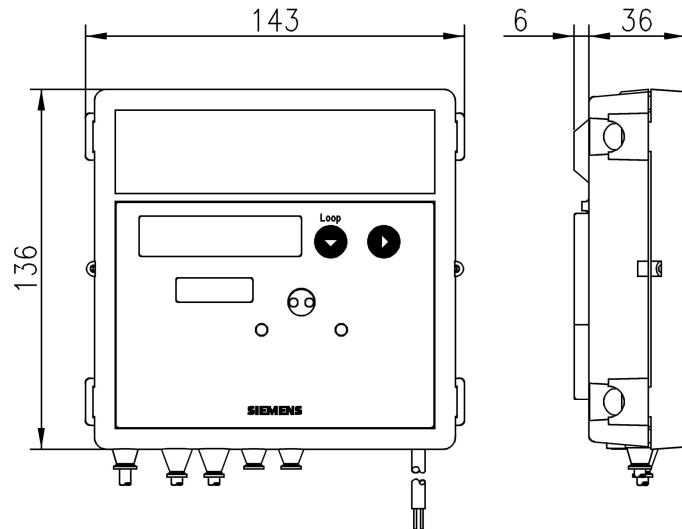
| | | | | |
|------------------------------------|---|---|---|---|
| Protection of housing | Safety class Degree of protection - Processor unit | II as per EN 61010-1 IP54 | | |
| Environmental conditions | | Operation EN 60721-3-3 | Transport EN 60721-3-2 | Storage EN 60721-3-1 |
| | Climatic conditions | Class A | Class A | Class A |
| | Temperature | 5...55 °C | -20...60 °C | -20...60 °C |
| | Humidity | <93% r.h. at 25 °C (non-condensing) | <93% r.h. at 25 °C (non-condensing) | <93% r.h. at 25 °C (non-condensing) |
| | Mechanical conditions | Class M1 | Class M1 | Class M1 |
| | Max. altitude | Min. 700 hPa, corresponding to max. 2,000 m above sea level | | |
| Directives and standards | Product standard | DIN EN 1434-x (heat/cooling energy meters) | | |
| | EU Conformity (CE) | CE2T5324xx ^{*)} | | |
| | RCM Conformity | CE2T5372en_C1 ^{*)} | | |
| Environmental compatibility | The product environmental declaration 8000079744 CE2E5324en ^{*)} contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). | | | |
| Dimensions | (W x H x D): | | | |
| | - Processor unit | 143x136x42 mm | | |
| | - Flow measuring section | See "Dimensions" | | |
| Housing material | Cover | PC | | |
| | Bottom section | PC-GF10 | | |
| Housing colors | Cover | Front crystal-clear, logo PEs plastic foil, RAL 7035 and RAL 5014 | | |
| | Bottom section | RAL 9002 | | |

^{*)} Documents can be downloaded from <http://siemens.com/bt/download>.

Dimensions

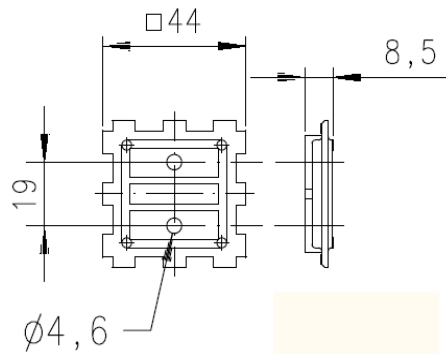
Dimensions in mm

Processor unit

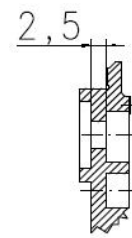


Processor unit: Top view

Side view

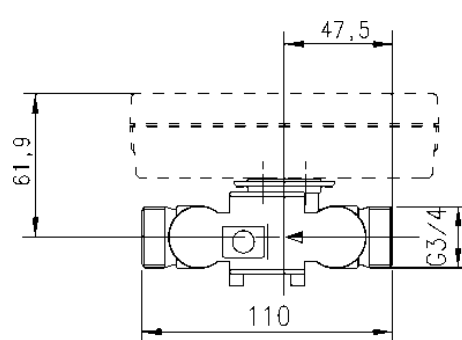


Adapter plate

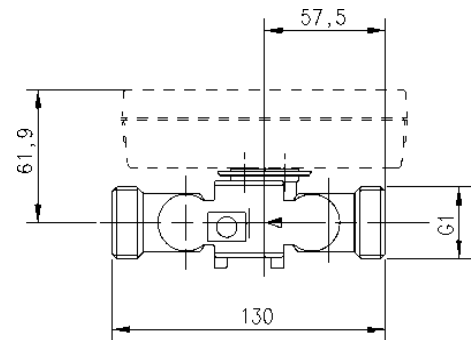


Cross-section

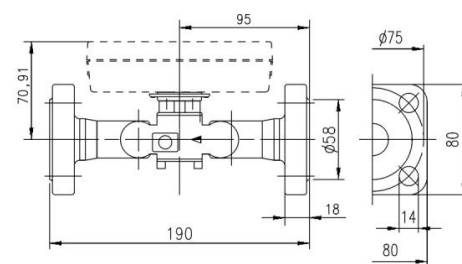
Flow measuring section 0.6...2.5 m³/h



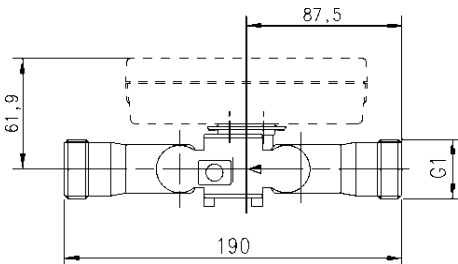
Mounting length 110 mm (threaded)



Mounting length 130 mm (threaded)

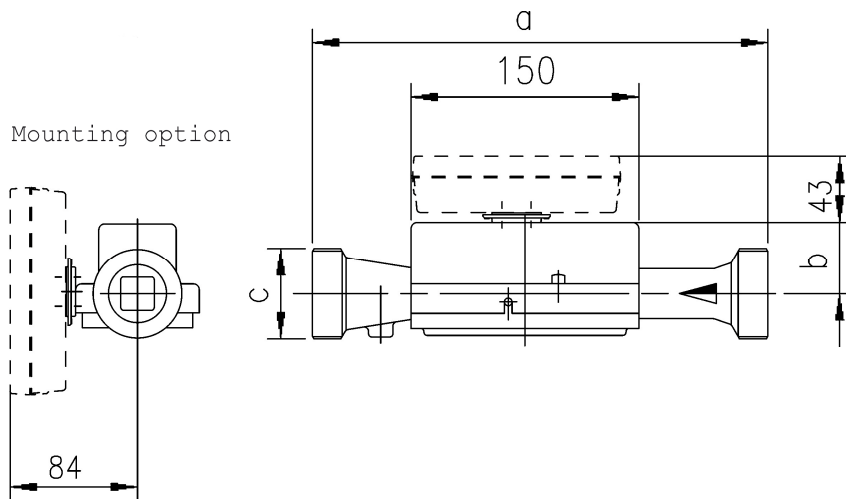


Mounting length 190 mm (flanged)



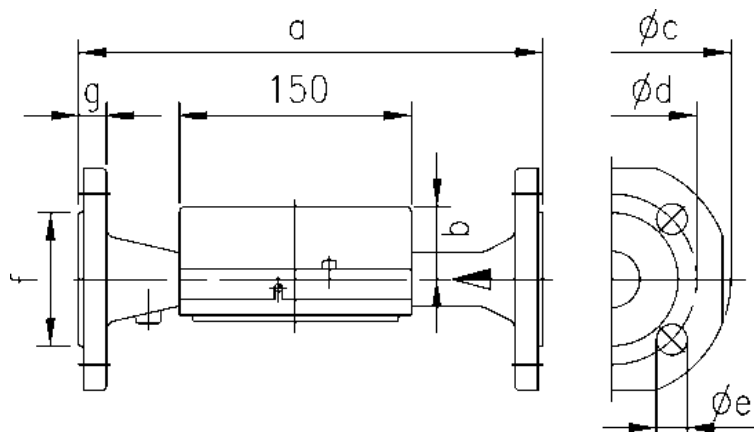
Mounting length 190 mm (threaded)

Flow measuring section up to 3.5 m³/h, threaded connections



| Product no. | qp m ³ /h | PN bar | a | b | c |
|-------------|----------------------|--------|-----|----|----------|
| UH50-x45 | 3.5 | 16 | 260 | 51 | G 1 1/4" |
| UH50-x47 | | 25 | | | |
| UH50-x50 | 6 | 16 | 260 | 51 | G 1 1/4" |
| UH50-x60 | 10 | 16 | 300 | 48 | G 2" |
| UH50-x63 | | 16 | 200 | | |

Flow measuring section up to 3.5 m³/h, flanged connections



| Product no. | qp m ³ /h | PN bar | DN | a | b | Øc | Ød | Øe | No. of holes | f | g |
|-------------|----------------------|--------|-----|-----|----|-----|-----|----|--------------|-----|----|
| UH50-x46 | 3.5 | 25 | 25 | 260 | 51 | 115 | 85 | 14 | 4 | 68 | 18 |
| UH50-x52 | 6 | 25 | 25 | 260 | 51 | 115 | 85 | 14 | 4 | 68 | 18 |
| UH50-x61 | 10 | 25 | 40 | 300 | 48 | 150 | 110 | 18 | 4 | 88 | 18 |
| UH50-x65 | 15 | 25 | 50 | 270 | 46 | 165 | 125 | 18 | 4 | 102 | 20 |
| UH50-x69 | | | | 200 | | | | | | | |
| UH50-x70 | 25 | 25 | 65 | 300 | 52 | 185 | 145 | 18 | 8 | 122 | 22 |
| UH50-x74 | 40 | 25 | 80 | 300 | 56 | 200 | 160 | 18 | 8 | 138 | 24 |
| UH50-x82 | 60 | 16 | 100 | 360 | 68 | 235 | 180 | 18 | 8 | 158 | 24 |
| UH50-x83 | 60 | 25 | 100 | 360 | 68 | 235 | 190 | 22 | 8 | 158 | 24 |

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