



Ultrasonic heat and cooling energy meters

UH50..

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

- Non-wearing due to non-moving parts
- Approved in accordance with EN 1434 and MID 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

Application

The UH50.. heat and cooling energy meter acquires energy consumption in a physically correct way. 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/PN 25
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
Approval	As per EN 1434, class 2 MID 2004/22/EG
Energy unit	kWh/MWh

Heat meter

<i>Options</i>	<i>Stock number</i>	<i>Product no.</i>
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
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, integrated in the flow measuring section, energy unit kWh	S55561-F117	UH50-A61-00
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-F118	UH50-A65-00

Heat/cooling energy meter

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-F119	UH50-A70-00
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-F120	UH50-A74-00
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-F121	UH50-A83-00
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-F122	UH50-C05-00
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-F123	UH50-C21-00
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-F124	UH50-C36-00
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-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, 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 number</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 number</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

<i>Component (optional)</i>	<i>Stock number</i>	<i>Product no.</i>
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 number</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
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 number</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	S55563-F124	WZM-E34
Mounting kit, consisting of: - 2 coupling nuts G 1" - 2 inserts R ¾" - 2 gaskets	S55563-F123	WZM-E1
Mounting kit, consisting of: - 2 coupling nuts G 1¼" - 2 inserts R 1" - 2 gaskets	S55563-F125	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,	LYU:WZM-F190	WZM-F190

incl. 2 gaskets		
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 M10 x 1 mm, length 28 mm, max. water temperature 130 °C, PN 25	S55563-F104	WZT-K12
Ball valve Rp ¾" for mounting the sensor DS M10 x 1 mm, length 28 mm, max. water temperature 130 °C, PN 25	S55563-F120	WZT-K34
Ball valve Rp 1" for mounting the sensor DS M10 x 1 mm, length 28 mm, max. water temperature 130 °C, PN 25	S55563-F119	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	S55563-F105	9930128002
Adapter G ⅜ B" with threaded hole for sensor DS M10x1 mm, incl. gasket G ⅜" made of copper	LYU:WZT-A38	WZT-A38
Adapter G ½ B" with threaded hole for sensor DS M10x1 mm, incl. gasket G ½" made of copper	S55563-F116	WZT-A12
Adapter G ¾ B" with threaded hole for sensor DS M10x1 mm, incl. gasket G ¾" made of copper	LYU:WZT-A34	WZT-A34

Protection pocket G ½ B" made of stainless steel, with threaded hole G ¼", mounting length 100 mm, incl. gasket G ½" made of copper	S55563-F117	WZT-S100
Protection pocket G ½ B" made of stainless steel, with threaded hole G ¼", mounting length 150 mm, incl. gasket G ½" made of copper	S55563-F118	WZT-S150
Protection pocket G ½ B" made of brass, Ø 5.2x35 mm for sensor Ø 5.2x45 mm	S55563-F103	WZT-M35
Protection pocket G ½ B" made of brass, Ø 5.2x50 mm for sensor Ø 5.2x45 mm	LYU:WZT-M50	WZT-M50
Adapter for protection pocket Ø 6 mm to install temperature sensor Ø 5.2x45 mm	LYU:WZT-R32	WZT-R32
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 ½ B" with threaded hole G ¼" 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 ½" 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
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 standard, first license, CD with dongle for printer interface	LYU:WZX-UA-SED	WZX-UA-SED
- UltraAssist standard, second license, with dongle for printer interface	LYU:WZX-UA-SFD	WZX-UA-SFD
- UltraAssist standard, first license, CD with dongle as PCMCIA card	LYU:WZX-UA-SEP	WZX-UA-SEP
- UltraAssist standard, second license, with dongle as PCMCIA card	LYU:WZX-UA-SFP	WZX-UA-SFP
- UltraAssist standard, first license, CD with dongle for USB interface	LYU:WZX-UA-SEU	WZX-UA-SEU
- UltraAssist standard, second license, with dongle for USB interface	LYU:WZX-UA-SFU	WZX-UA-SFU

Read and parameterization software

The UltraAssist Light read and parameterization software is free and available on request.

Ordering

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

Order numbers

<i>Product no.</i>	<i>Stock number</i>	<i>Description</i>
UH50-A36-00	S55561-F114	Ultrasonic heat meter

Scope of delivery

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

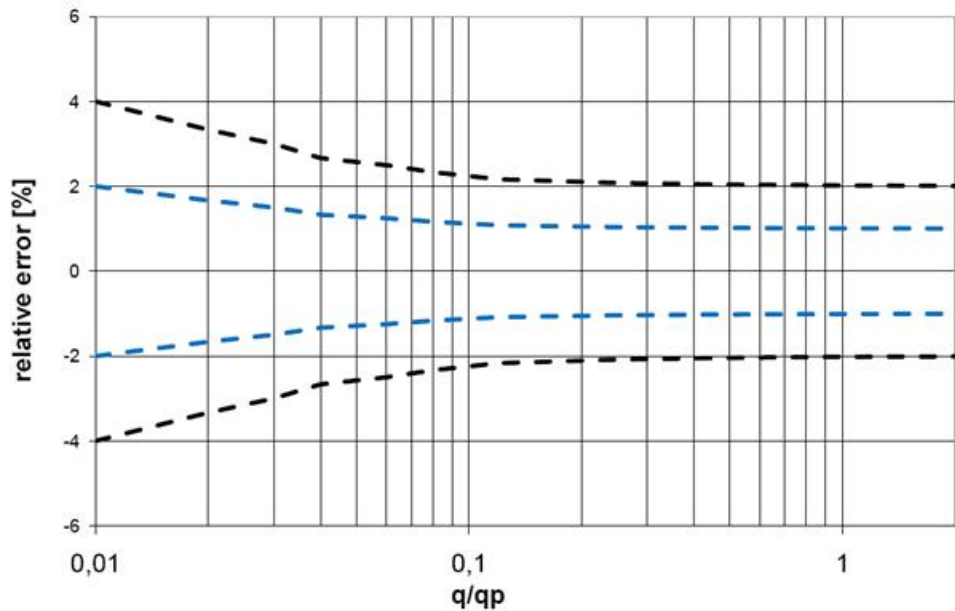
Languages

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

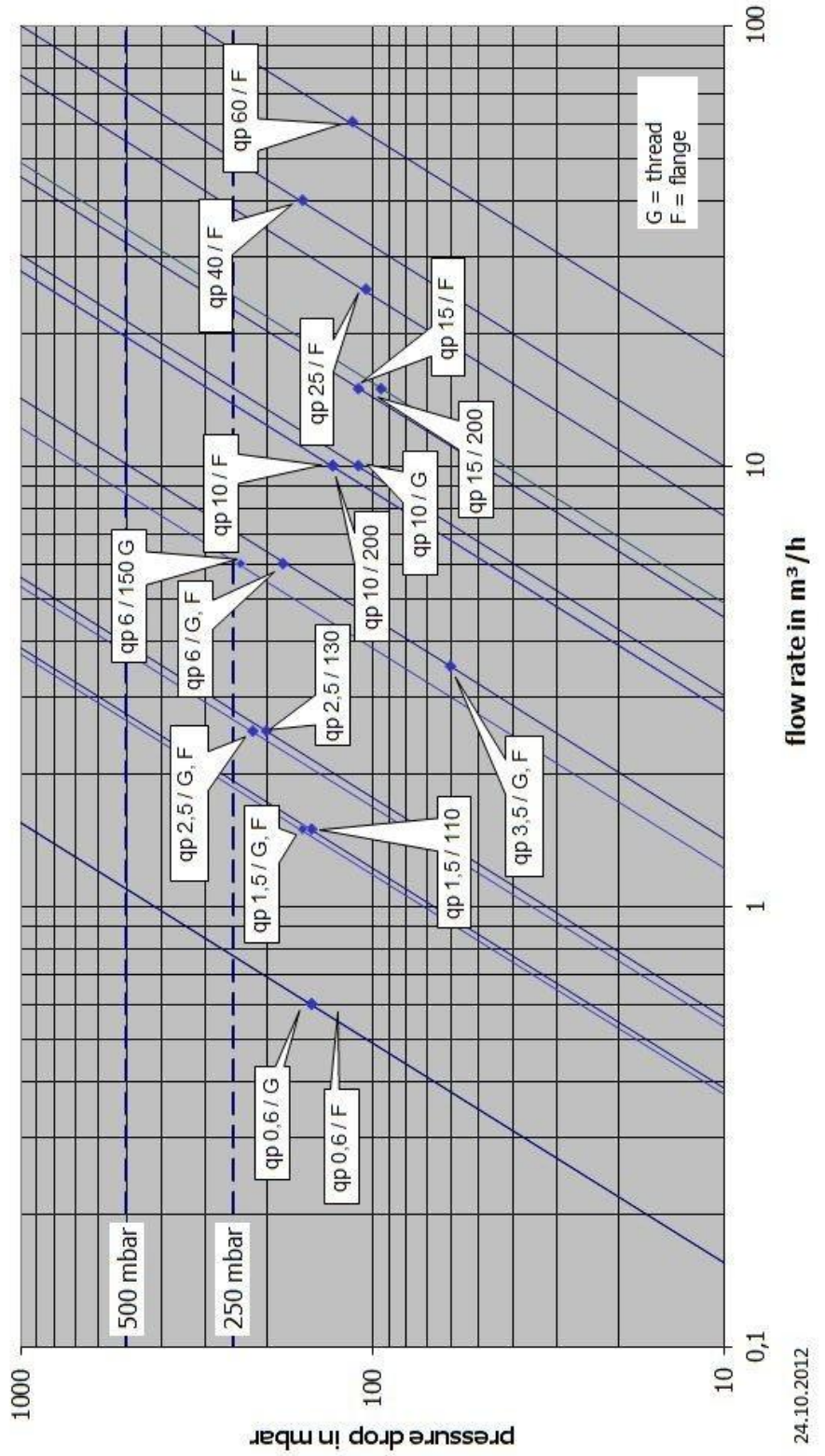
The diagram below shows the typical metering accuracy of the UH50.. in comparison with the error limits as per to EN 1434, class 2.



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

Pressure drop characteristic

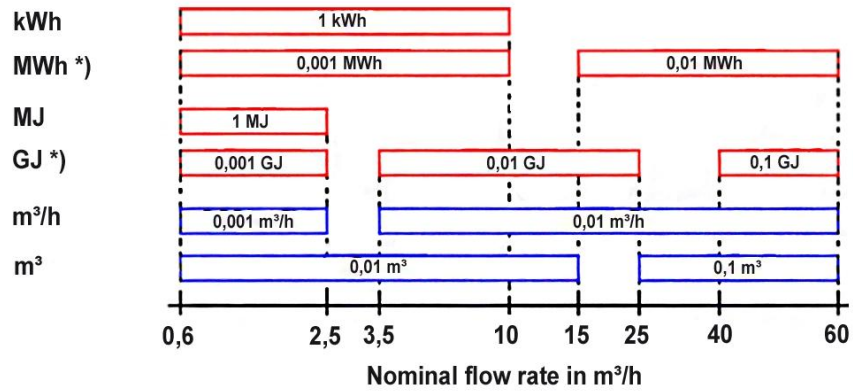
Pressure drop



24.10.2012

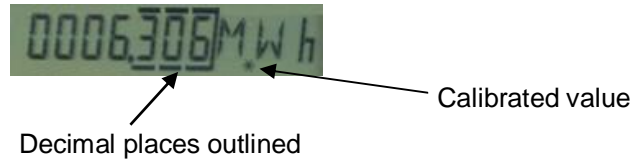
The meter displays current readings in kWh, MWh, MJ or GJ.
 The selection available on the meter is merely kWh or MWh and MJ or GJ.

Resolution of display



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

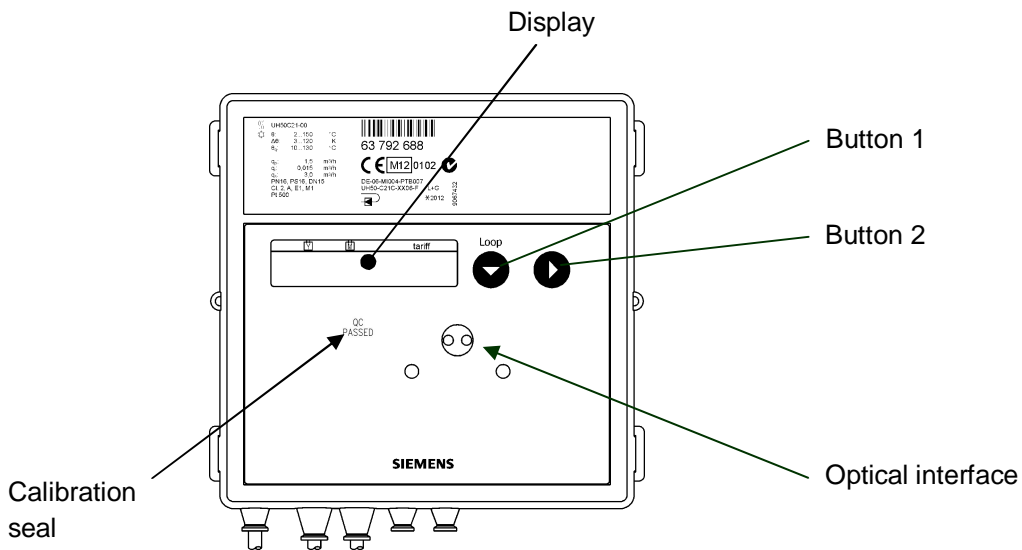
To avoid reading errors, the decimal places of displayed values are outlined. Calibrated values are identified by a star symbol.



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	
	Od 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
Service loop LOOP 3	0 107.11 M	Monthly value (set day)
	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 0.000 m ³ /h	Current tariff,
' 0.000 m ³ /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 125,00 Wh/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.

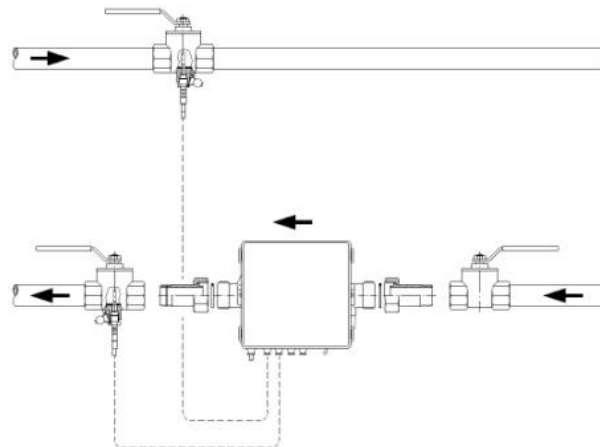
The flow measuring section must always be installed in the return.

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 properly mix.

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). 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 2 bar with q_s (at 80 °C).

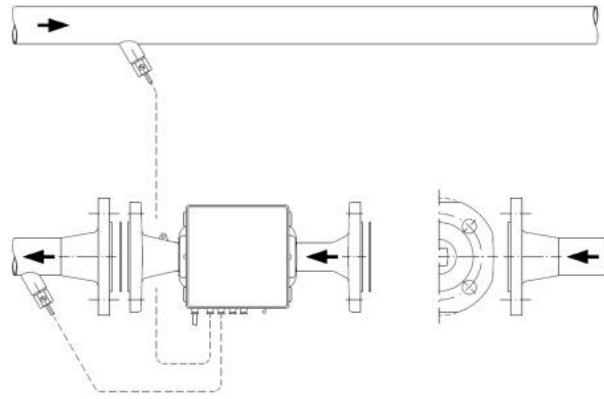
Only authorized persons are allowed to remove and replace calibration seals when carrying out service work.

Ball valve



Example of mounting with a ball valve (recommended up to DN 25)

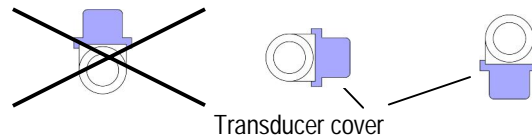
Welded sleeve with protection pocket



Example of mounting with protection pockets (recommended above DN 25)

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).

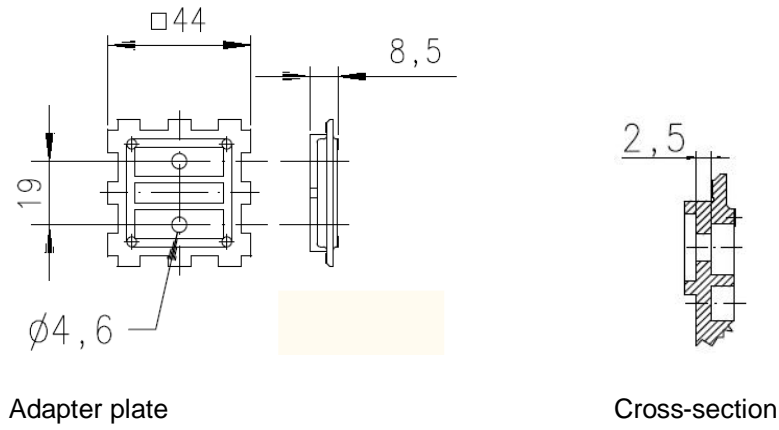
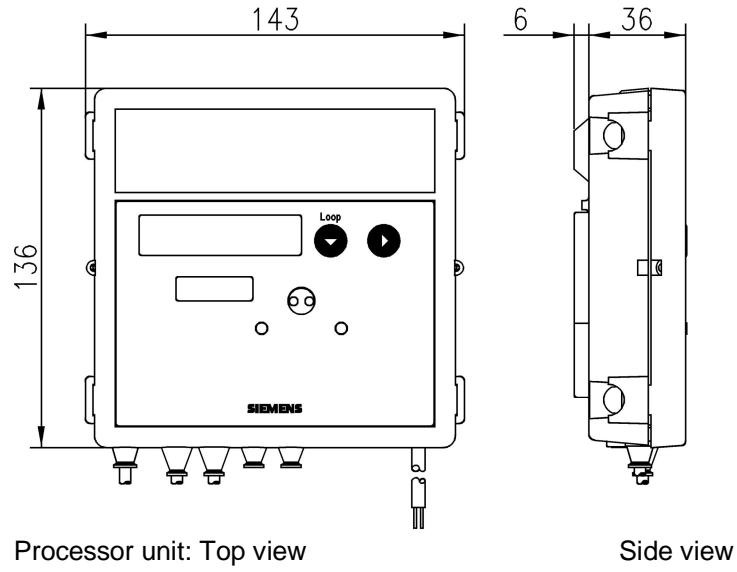
To fit the processor unit to the wall, remove it from the flow measuring section and undo the screws of the adapter plate. The latter must then be secured to the wall so that the processor unit can be replaced on the adapter plate, snapping into place.

Protection of housing	Safety class	II as per EN 61010-1		
	Degree of protection - Processor unit	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		
	Product standard	DIN EN 1434-1 (heat/cooling energy meters)		
Directives and standards	- MID directive	2004/22/EG (European Measuring Instruments Directive) Mechanical class M1 Electromagnetic class E1		
	- Type approval	- As per EN 1434-4 Environment class A Measuring accuracy class 2		
	Conformity, approvals, certification and compatibility			
	CE conformity as per	See document CE2T5324xx		
	C-Tick	See document CE2T5372en_C1		
Environmental compatibility	Environmental Declaration CE1E5372de			
	contains data on environment-compatible product design and assessment (RoHS conformity, materials used, packing, environmental use, and disposal)	ISO 14001 (environment) ISO 9001 (quality)	See environmental declaration CE2E5324	
Dimensions	(W x H x D):			
	- Processor unit - Flow measuring section	143x136x42 mm 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		

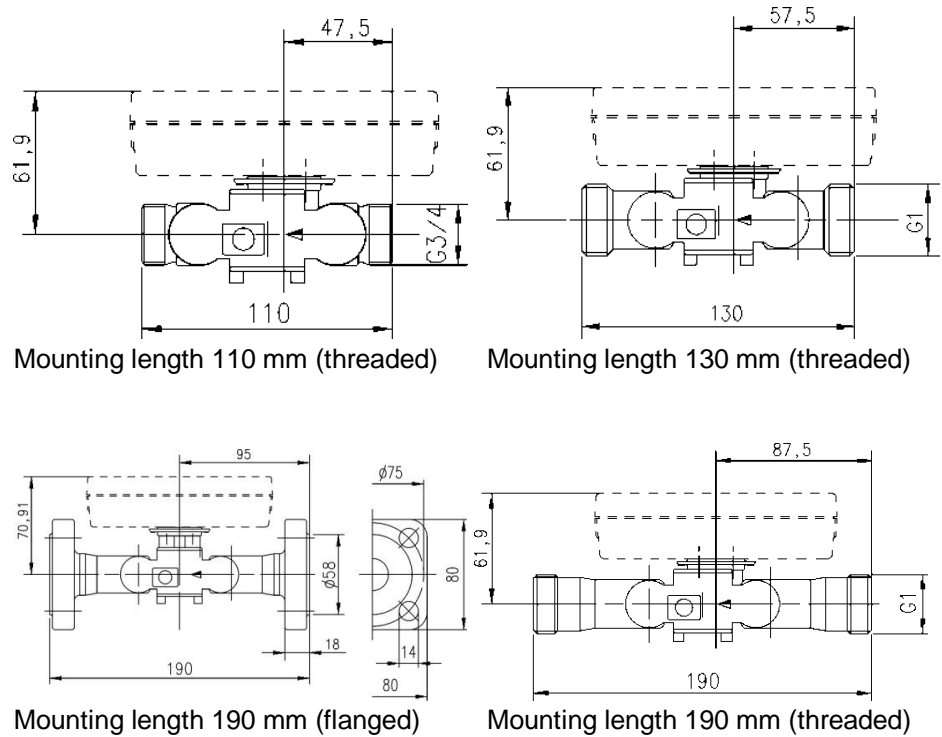
Dimensions

Dimensions in mm

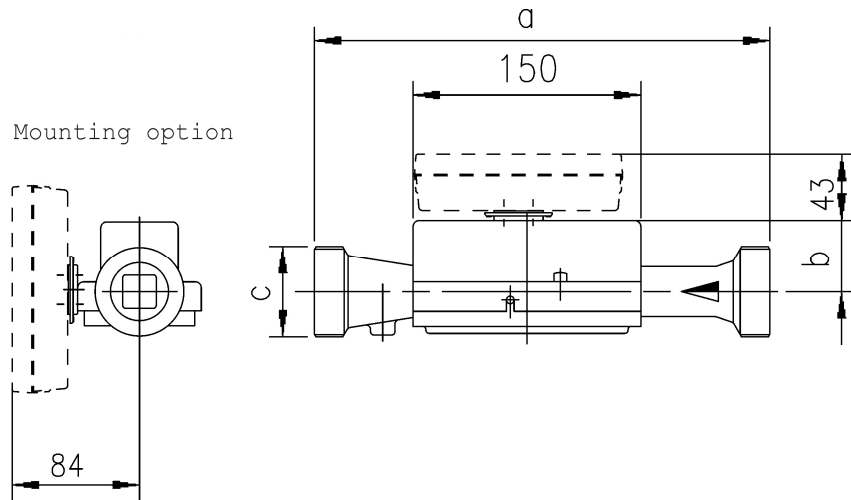
Processor unit



Flow measuring section 0.6...2.5 m³/h

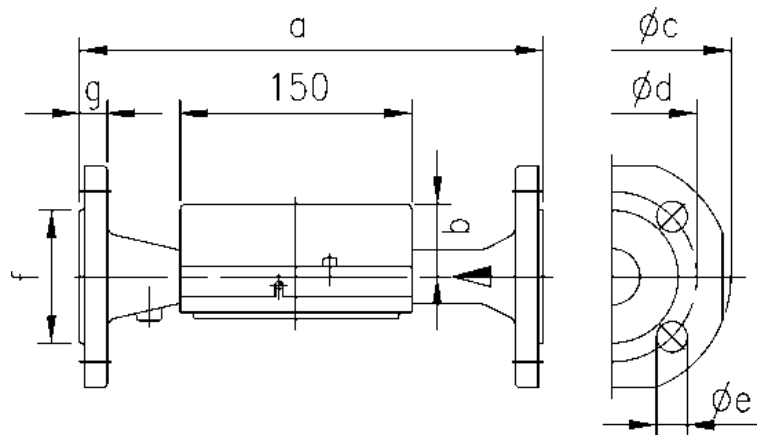


Flow measuring section up to 3.5 m³/h, threaded connections



Product no.	qp m ³ /h	PN bar	a	b	c
UH50-x45	3,5	16	260	51	G 1¼
UH50-x47		25			
UH50-x50	6	16	260	51	G 1¼
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