

Ultrasonic compact heat and heat/cooling energy meters

WS.5.., WS.6..



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

- Non-wearing due to non-moving parts
- Approved in accordance with EN 1434 and MID accuracy class 2
- Compact meter with flow measuring section
 - WS.5.. made of high-tech plastic
 - WS.6.. made of brass
- Any mounting position (horizontal or vertical)
- Mounting location can be changed one time (preset for return)
- Measuring range of flow 1:100 conforming to EN 1434 (total range 1:1000)
- Optical interface as per EN 62056-21
- M-bus wired or M-bus RF communication (optional: LoRa®)
- Available as pure heat energy meters, cooling energy meters (optional) as as a combined heat/cooling energy meters
- Batteries can be replaced in the field
- Self diagnostics

Application

The heat (WSM5../WSM6..) and cooling energy meters (WSB5../WSB6..) and combined heat/cooling energy meters (WSN5../WSN6..) are measuring devices to physically acquire energy consumption. The device consists of a flow measuring section made of high-tech plastic (WS.5..) or brass (WS.6..), 2 ready connected temperature sensors, and an electronic unit which calculates the energy consumption from the flow and temperature differential. The compact meter WS.. is of compact design and therefore ideally suited for use in apartments. It is available in different versions for metering heat (WSM..) or cooling (WSB..) energy or combined heat/cooling energy.

Restrictions:

The temperature sensors on the WS.. compact meters cannot be replaced.

The meter is not suitable for potable water.

Functions

Meter design

The meter consists of an electronic unit, flow measuring section, and 2 temperature sensors. The electronic unit is equipped with long-life batteries (up to 11 years).

Ultrasonic measuring principle

The flow is acquired based on the non-wear ultrasonic measuring principle, which requires no moving parts.

The amount of energy transferred from the medium to the consumer over a defined period of time is proportional to the temperature difference between the warmer and colder side and the volume of water that has passed through.

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 difference between the transmitter and receiver is reduced, upstream it is increased. The water volume is calculated based on the difference in runtime.

The flow and return temperature is acquired by platinum resistors.

The water volume as well as the temperature difference between the warmer and cooler side is multiplied using a heat coefficient and the product is integrated. The result, which is the consumed amount of thermal energy, is stored and displayed in the physical unit kWh, the volume in m³.

The WS.. uses an intelligent, adaptive temperature-measuring interval. With changing system conditions (e.g. rapid increase of flow), the WS.. changes for a certain time to a fast temperature-measuring interval. Thus, the meter always adapts itself to the current situation and acquires the system temperatures very accurately.

NOTICE



In addition to heat energy, the meters measure cooling energy as an option that is added to a separate tariff register (uncalibrated). Heat energy is always measured if the temperature difference ($>+0.2$ K) and flow is positive. Cooling energy is measured if the temperature difference (<-0.2 K) is negative and flow is positive.

Processor unit

A common electronic unit applies to all flow variables.

Optical communication interface

The meter is equipped with an optical communication interface which facilitates readout and configuration on site with the help of the optical read head WZR-OP-USP and matching UltraAssist software.

M-bus communication (optional)

The meter can be read out from a remote location via an M-bus master unit, if the meter uses M-bus communication.

M-bus RF communication (optional)

If the meter uses M-bus RF communication, it can be read out remotely.

LoRa® communication (optional)

LoRa® transmits data over long distances of up to 10 km within a LoRa® network.

Batteries

Installers can replace batteries in the field.

For details on replacing batteries, see section 'Product documentation [► 17]'.

Tampering

To open the device, the calibration seal at the top of the WS.. must be destroyed.

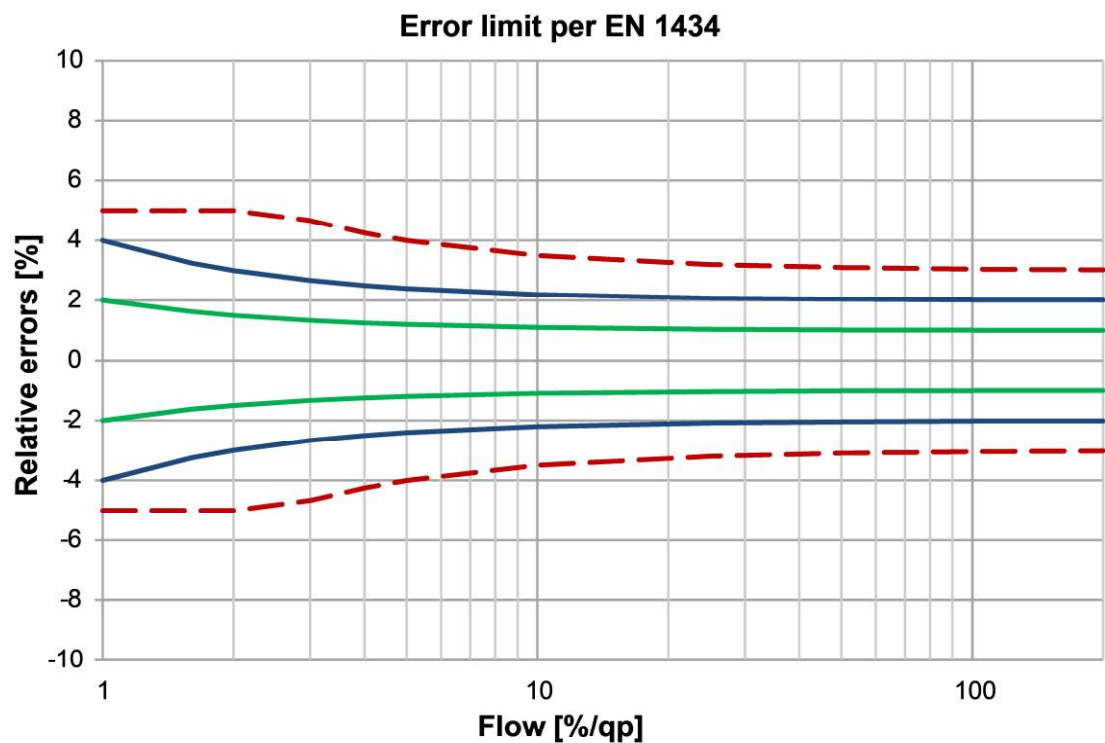
Self diagnostics

The meter continuously performs self-diagnostics to detect and display various mounting or device errors.

Technical design

The diagram below shows the typical accuracy of the WS.5.. / WS.6.. compared to the error limits per EN 1434 class 2.

Metering accuracy as per EN 1434



Key:

- - - - - EN 1434, class 3
- EN 1434, class 2
- WS.5.. / WS.6.. typical (EN 1434, ½ class 2)

- q Current flow that determines the precision as a percentage of the continuous flow q_p
- q_i Lower flow limit (value 1 on the x axis = 1 % of q_p):
The smallest flow above which the heat meter must operate without exceeding the fault limits.
- q_p Continuous flow of meter = Value 100 on the x axis.

The pressure loss in a flow sensor is indicated as continuous flow q_p .

Actual pressure loss at the indicated flow can be calculated using the K_v value, which indicates flow at 1 bar differential pressure:

$$\Delta p = 1 \text{ bar} \times (Q / K_v)^2$$

Δp = Pressure loss in bar

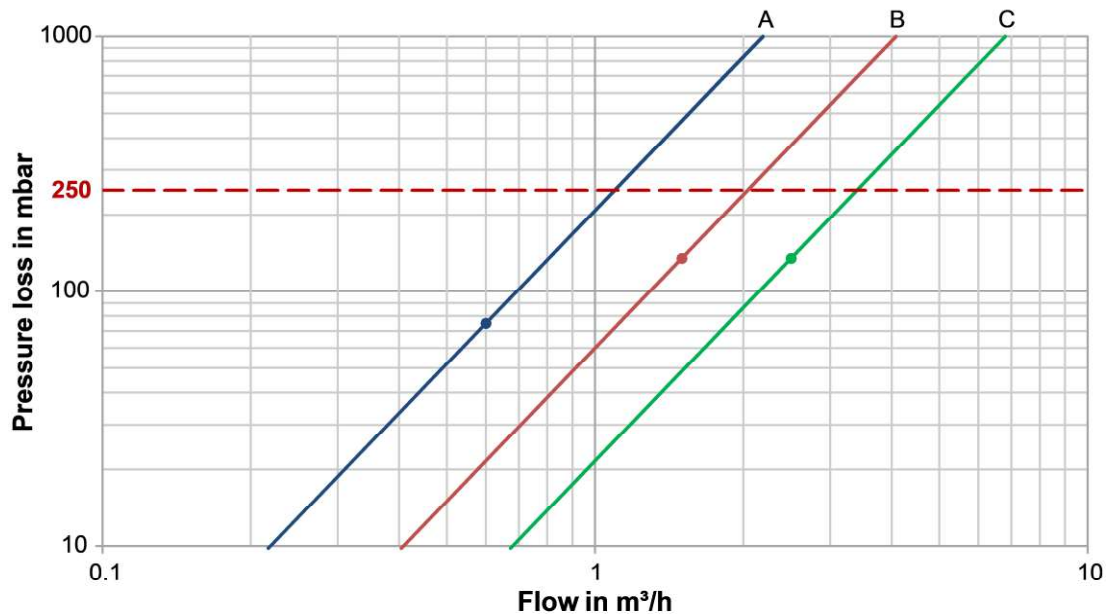
Q = Flow in m^3 / h

$K_v = K_v$ – Value at $\Delta p = 1 \text{ bar}$

Pressure loss characteristic WS.5..

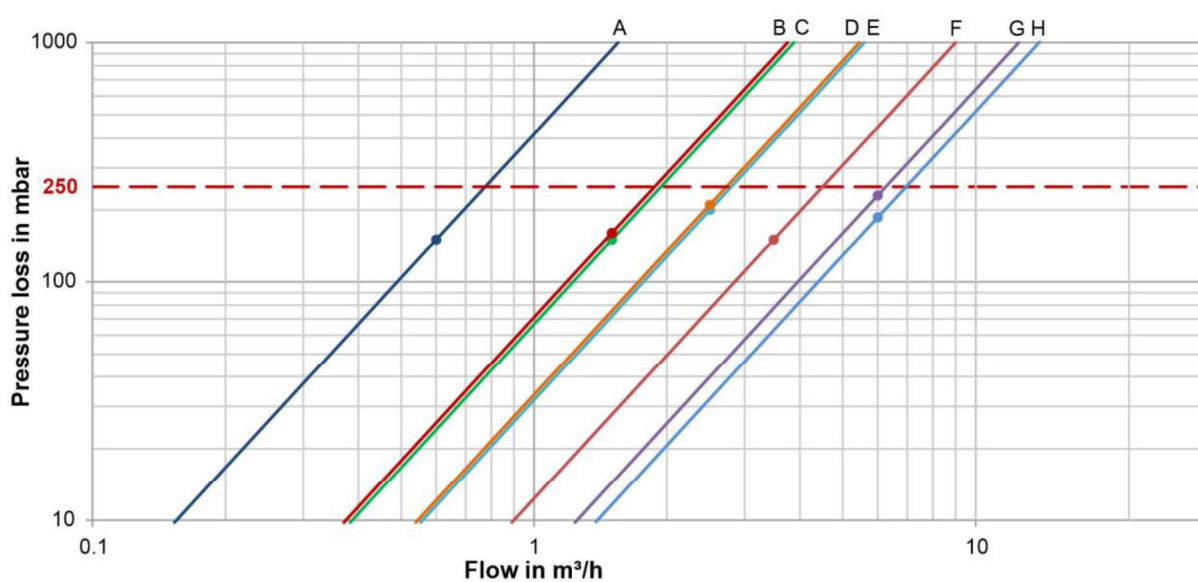
Nominal flow q_p m^3/h	Mounting length mm	Connecting thread	Pressure loss at q_p mbar	K_v value at $\Delta p = 1 \text{ bar}$ m^3/h	Curve in the diagram
0.6	110	G $\frac{3}{4}$	75	2.2	A
1.5	110, 130	G $\frac{3}{4}$, G 1	135	4.1	B
2.5	130	G 1	135	6.8	C

The value can also be read graphically using the diagram as an alternative.



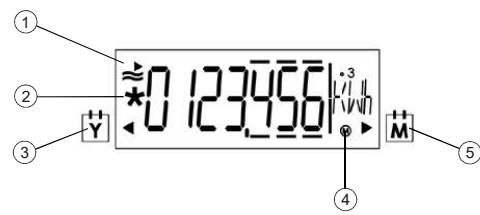
Pressure loss characteristic WS.6..

Nominal flow q_p m^3/h	Mounting length mm	Connecting thread G / DN	Pressure loss at q_p mbar	Kv value at $\Delta p = 1 \text{ bar}$ m^3/h	Curve in the diagram
0.6	110, 190	G $\frac{3}{4}$	150	1.5	A
1.5	130, 190	G 1	160	3.8	B
1.5	110	G $\frac{3}{4}$	150	3.9	C
2.5	190	G 1	210	5.3	D
2.5	130	G 1	200	5.6	E
3.5	260	G $1\frac{1}{4}$	155	9.0	F
6	150	G $1\frac{1}{4}$	190	14.0	G
6	260	G $1\frac{1}{4}$	230	12.8	H



Display

The WS.. has a large, easy-to-read LCD with 7 digits to display different values (e.g. energy or flow). This new type of dynamic display enables users to identify positive flow at a glance. Icons for previous year values and previous month values support the easy-to-understand display concept.



- | | | | |
|---|--|---|---|
| 1 | Activity indicator at flow | 4 | Icon for maximum |
| 2 | Star icon: Calibrated value | 5 | Icon for previous month value
Calibrated value |
| 3 | Icon for previous year value
Calibrated value | | |

The meter's display is subdivided into multiple loops. A short press on the button (<2 s) lets the current loop pass through line by line. The first line displays again after the last line. A long press (>3 s) displays the first line of the next loop. The first loop is displayed again after the last loop.

The arrow icons mark the display of a stored value of the previous year or previous month. A calibrated value (e.g. energy) is marked on the display by a star symbol. The decimal places of displayed values are indicated by a frame.



- 1

Calibration seal
- 2

Display
- 3

Optical interface
- 4

Optical interface

NOTICE	
!	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 on the meter. Moreover, certain push button functions can be locked.

User loop LOOP 0		
1234567	kWh	Energy amount heat
1234567 cold	kWh	Energy amount cooling (optional)
1234567	m ³	Volume
0000000		Segment test
F-----		In case of error message with error code

Current values LOOP 1		
1234567	m ³ /h	Current flow rate
1234567	kW	Current thermal energy
80.0	°C	Current temperature heat side at 2 second exchange with cooling side
50.0	°C	Change with the current temperature with cooling side
21.0	K	Temperature difference
P hot		Mounting location (Here: Heat side, can be changed; optional)
Bd 1234	h	Runtime totalizer
Fd 123	h	Error time
Pd 1234	h	Time with flow rate
Monthly values LOOP 2		
2011-06-01		Monthly date (due date) saving day
1234567	kWh	Monthly value (due date) energy amount heat
1234567 cold	kWh	Monthly value (due date) energy amount cooling (optional)
1234567	m ³	Monthly value (due date) volume on set day
Fd 123	h	Missing time on set day
3,123	m ³ /h	Maximum flow rate on set day, at 2-second intervals with date stamp
03.02.10		
279.4	kW	Maximum output at 2-second intervals
03.02.10		
93.7	°C	Maximum output heat side at 2-second intervals with date stamp
03.02.10		
64.8	°C	Maximum output cooling side at 2-second intervals with date stamp
03.02.10		


General / Communication LOOP 3		
1234567		Device number, 7 digits
OMS		RF standard (M-bus RF only)
Unbind		Meter not connected (M-bus RF only)
Bind		Meter connected (M-bus RF only)
Mbus		Interface (only for M-bus)
127A		Primary address (only for M-bus)
0000000A		Secondary address (only for M-bus)
01.01		Due date (yearly set day)
01.--.--		Monthly value (monthly set day)
I 5-00	FW	Firmware version
CrC 1234		CRC code, part requiring calibration
Other LOOP 4		
17.11.11		Current date [DD.MM.YY]
10.38.57		Current time of day [hh.mm.ss]
-----	C	Code entry for test/parameter operation

Error codes

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

FL	nEG	Wrong direction of flow
DIFF	nEG	Negative temperature differential
F0		Flow cannot be measured
F1		Break in sensor heat side
F2		Break in sensor cold side
F3		Electronics for temperature assessment defective
F4		Battery empty, power supply problem
F5		Short circuit sensor, heat side
F6		Short circuit sensor, cold side

F7	Disruption of internal memory operation
F8	F1, F2, F3, F5 or F6 persist longer than 8 hours Detection of tampering No further measurements are made
F9	Error in the electronics

NOTICE	
	Manually reset message F8 in configuration mode or using the service software. All other error messages are deleted automatically as soon as the error is eliminated.

Previous year's values

The electronic unit stores the meter readings for energy, volume, missing time, and flow measuring time as well as the current maximum values of flow rate, power, temperature heat and cold side with their date stamps on a yearly set day.

The set day for previous year values can be parameterized.

Monthly values

The electronic unit stores the meter readings for energy, volume, missing time, and flow measuring time as well as the monthly maximum values of flow rate, power, temperature heat and cold side with their date stamp for up to 24 months on the set day of each month.

The set day for previous monthly values can be parameterized.

In addition, a second programmable monthly set day is available for 24 months – the day on which energy and volume are stored.

Standard parameters

It is programmed at the factory as follows:

- Set day [TT.MM]: 01.01

Data telegram for mobile data acquisition on WSM5xx-FE and WSN5xx-FE

The following data is factory set to acquire data (send interval 120 seconds at a battery life of 11 years):

- Device time
- Current energy amount
- Current energy amount for incorrect installation / in the cooling registers
- Previous year value storage time
- Prev. year value energy
- Current energy amount for incorrect installation / in the cooling register
- 1. previous month storage day
- 1. previous month energy amount
- 1. previous month energy amount for incorrect installation / in the cooling register
- Error time
- Error bits



Cooling energy meter WSB.. is available upon request.

Heat meters WSM and combined heat/cold meters WSN..

The types of meters listed below are equipped as follows:

Mounting location	In return
Rated pressure	PN 16
Length of control cable	1.5 m
Sensor mounting	Return sensor, integrated in the flow measuring section
Sensing type	Pt500, Ø 5.2 mm, length = 45 mm
Temperature sensor cable length	1.5 m
Approval	EN 1434, class 2 MID 2004/22/EG
Display	kWh

Heat meter continuous flow flow 0.6 m³/h with flow measuring section WSM5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 110 mm, connecting thread G 3/4", Battery life 6-years, without communication	LYU:WSM506-0A	WSM506-0A
Mounting length 110 mm, connecting thread G 3/4", Battery life 11-years, without communication	S55561-F133	WSM506-0E
Mounting length 110 mm, connecting thread G 3/4", Battery life 11-years, M-bus	S55561-F194	WSM506-BE
Mounting length 110 mm, connecting thread G 3/4", Battery life 11-years, M-bus RF	S55561-F246	WSM506-FE

Heat meter continuous flow flow 1.5 m³/h with flow measuring section WSM5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 110 mm, connecting thread G ¾", Battery life 6-years, without communication	LYU:WSM515-0A	WSM515-0A
Mounting length 110 mm, connecting thread G ¾", Battery life 11-years, without communication	S55561-F135	WSM515-0E
Mounting length 110 mm, connecting thread G ¾", Battery life 11-years, M-bus	S55561-F195	WSM515-BE
Mounting length 110 mm, connecting thread G ¾", Battery life 11-years, M-bus RF	S55561-F247	WSM515-FE

Heat meter continuous flow flow 2.5 m³/h with flow measuring section WSM5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 130 mm, connecting thread G 1", Battery life 6-years, without communication	LYU:WSM525-0A	WSM525-0A
Mounting length 130 mm, connecting thread G 1", Battery life 11-years, without communication	S55561-F137	WSM525-0E
Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus	S55561-F196	WSM525-BE
Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus RF	S55561-F248	WSM525-FE

Heat meter with brass flow measuring section WSM6..

Options	Order number	Type
Continuous flow 0.6 m ³ /h Mounting length 110 mm, connecting thread G ¾", Battery life 11-years, M-bus	S55561-F249	WSM606-BE
Continuous flow 1.5 m ³ /h Mounting length 110 mm, connecting thread G ¾", Battery life 11-years, M-bus	S55561-F250	WSM615-BE
Continuous flow 2.5 m ³ /h Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus	S55561-F251	WSM625-BE

Heat/cooling energy meter continuous flow 0.6 m³/h with flow measuring section WSN5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus	S55561-F278	WSN506-BE
Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus RF	S55561-F281	WSN506-FE

Heat/cooling energy meter continuous flow 1.5 m³/h with flow measuring section WSN5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus	S55561-F279	WSN515-BE
Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus RF	S55561-F282	WSN515-FE

Heat/cooling energy meter continuous flow 2.5 m³/h with flow measuring section WSN5.. made of high-tech plastic.

Options	Order number	Type
Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus	S55561-F280	WSN525-BE
Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus RF	S55561-F283	WSN525-FE

Combined heat/cooling energy meters with brass flow measuring section WSN6..

Options	Order number	Type
Continuous flow 0.6 m ³ /h Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus	S55561-F266	WSN606-BE
Continuous flow 1.5 m ³ /h Mounting length 110 mm, connecting thread G $\frac{3}{4}$ ", Battery life 11-years, M-bus	S55561-F267	WSN615-BE
Continuous flow 2.5 m ³ /h Mounting length 130 mm, connecting thread G 1", Battery life 11-years, M-bus	S55561-F268	WSN625-BE



The WS.6.. is available upon request with a nominal flow q_p of 3.5 m³/h or 6 m³/h.

Accessories

Mounting accessories only for meters with high-tech plastic flow measuring sections:

Options	Order number	Type
Flat seal G ¾"	LYU:9060951	9060951
Flat seal G1"	LYU:9060952	9060952

Mounting accessories only for meters with brass flow measuring sections:

Accessories for WS.6..

Options	Order number	Type
Sealing disk for thread G ¾"	LYU:9060944002	9060944002
Sealing disk for thread G 1"	LYU:9060944003	9060944003
Sealing disk for thread G 1 ¼"	LYU:9060944004	9060944004
Mounting set for sensor Ø 5.2x45 mm, consisting of: - 1 sensor fitting DS M10x1 mm, brass - 2 O-rings - 1 grooved pin	LYU:WZT-FA	WZT-FA

Mounting accessories for both compact meter types:

Accessories for WS.5../WS.6..

Options	Order number	Type
Replacement battery 1x (AA)	LYU:T45-BA-1	T45-BA-1
Replacement battery 2x (AA)	LYU:T45-BA-2	T45-BA-2
Replacement battery 3x (AA)	LYU:T45-BA-3	T45-BA-3
Mounting set 110 mm, consisting of: 2x ball valve Rp ¾" with union nut G ¾" (WZT-K34-34) 1x ball valve Rp ¾" with connection for the direct installation of temperature sensors M10x1 mm (WZT-K34) 1x spacer 110 mm (WZM-G110) 2x flat seals	LYU:WZT-MS110	WZT-MS110

Options	Order number	Type
Mounting set 130 mm, consisting of: 2x ball valve Rp 1" with union nut G 1" (WZT-K1-1) 1x ball valve Rp 1" with connection for the direct installation of temperature sensors M10x1 mm (WZT-K1) 1x spacer 130 mm (WZM-G130) 2x flat seals	LYU:WZT-MS130	WZT-MS130
Mounting kit G ¾", consisting of: 2x threaded connection G ¾" x R ½" 2x cap nuts G ¾"	S55563-F124	WZM-E34
Mounting kit 1", consisting of: 2x threaded connection G 1" x R ¾" 2x cap nuts G 1"	S55563-F123	WZM-E1
Mounting kit 1¼", consisting of: 2x threaded connection G 1¼" x R 1" 2x cap nuts G 1 ¼"	LYU:WZM-E54	WZM-E-54
Adapter piece 110 mm G ¾" to 130 mm G ¾": 1x extension G ¾ B" to G ¾ B" 1x gasket G ¾"	LYU:WZM-V130	WZM-V130
Adapter piece 110 mm G ¾" to 130 mm G 1": 2x extension G ¾ B" to G 1 B" 2x gaskets G 1"	LYU:WZM-V130.G1	WZM-V130.G1
Adapter piece 110 mm G ¾" to 165 mm G ¾": 1x extension G ¾ B" to G ¾ B" 1x gasket G ¾"	LYU:WZM-VE165	WZM-VE165
Adapter piece 110 mm G ¾" to 190 mm G 1": 2x extension G ¾ B" to G 1 B" 2x gaskets G 1"	LYU:WZM-V190	WZM-V190
Sealing disk, copper, for protection pocket G ½" or adapter WZT-A12, Ø 27.9/ 21.2 mm x 1.5 mm	LYU:9060948	9060948
Ball valve R½" with union nut G ¾"	LYU:WZT-K12-34	WZT-K12-34
Ball valve R¾ " with union nut G ¾"	LYU:WZT-K34-34	WZT-K34-34
Ball valve R¾ " with union nut G 1"	LYU:WZT-K34-1	WZT-K34-1
Ball valve R1" with union nut G 1"	LYU:WZT-K1-1	WZT-K1-1
Ball valve R 1 ¼" with union nut G 1 ¼"	LYU:WZT-K54-54	WZT-K54-54

Options	Order number	Type
Ball valve R ½" to install a DS sensor M10 x 1 mm, length = 28 mm, max. 130°C, PN 25	S55563-F104	WZT-K12
Ball valve R ½" to install a DS sensor M10 x 1 mm, length = 28 mm, max. 130°C, PN 25	S55563-F120	WZT-K34
Ball valve R 1" to install a DS sensor M10 x 1 mm, length = 28 mm, max. 130°C, PN 25	S55563-F119	WZT-K1
Ball valve R 1 ¼" to install a DS sensor M10 x 1 mm, length = 38 mm, max. 130°C, PN 25	LYU:WZT-K54	WZT-K54
Adapter G3/8" with threaded hole M10x1 mm for sensor, including gasket G 3/8", copper	LYU:WZT-A38	WZT-A38
Adapter G1/2B with threaded hole M10x1 mm for sensor, including gasket G ½", copper	S55563-F116	WZT-A12
Adapter G3/4B with threaded hole M10x1 mm for sensor, including gasket G ¾", copper	LYU:WZT-A34	WZT-A34
Protection pocket G1/2B made of brass, Ø 5.2x35 mm for temperature sensor Ø 5.2x45 mm, including gasket G ½", copper	S55563-F103	WZT-M35
Protection pocket G1/2B made of brass, Ø 5.2x35 mm for temperature sensor Ø 5.2x45 mm, including gasket G ½", copper	LYU:WZT-M50	WZT-M50
Protection pocket G1/2B made of stainless steel, Ø 5.2x50 mm for temperature sensor Ø 5.2x45 mm, including gasket G ½", copper	LYU:WZT-S43V	WZT-S43V
Adapter kit, consisting of: - 1x plastic adapter Ø 5.2x45 mm - 1 mounting aid for sensor Ø 5.2x45 mm - 2 O-rings	LYU:9956230	9956230
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 ¼", length 260 mm, incl. 2 gaskets	LYU:WZM-G260	WZM-G260
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"	LYU:WZT-G12	LYU:WZT-G12

Options	Order number	Type
Welding sleeve G 1/2", 90° to pipe axis, with threaded hole G 1/2"	LYU:WZT-GLG	LYU:WZT-GLG
Self-lock seal with sealing wire	LYU:9956186001	9956186001
10 wall adapters for mounting the electronic unit on the wall, including 2 screws and 2 dowels	LYU:T23-WA10	T23-WA10

Programming accessories

Options	Order number	Type
Optical read head with USB plug for PC interface	LYU:WZR-OP-USB	WZR-OP-USB
Readout and configuration software: - UltraAssist	Download	-

Ordering

Please specify the quantity, order number, and type when ordering.

Delivery

The ultrasonic meter is supplied complete with Mounting Instructions in different languages, an adapter kit, 2 gaskets and a seal.

Languages

The Installation Instructions are supplied in the following languages:

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

Product documentation

Topic	Title	Document ID
User's guide	Replace battery on ultrasonic heat and cooling energy meters and heat/cooling meters WS.5../WS.6..	A6V14765200

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:



<http://siemens.com/bt/download>



Notes

Mounting

Flow measuring section

The mounting orientation is optional, the mounting location (heat or cold side) must correspond to the meter type.

On heat energy meters or combined heat/cooling energy meters, the mounting location of the cooling side corresponds to the return  and the mounting location of the heating side to the flow .

On cooling energy meters, the mounting location of the heating side corresponds to the return  and the mounting location of the cooling side to the flow .

On meters with **adjustable mounting location 'P'**, the mounting location, heat side, is displayed as 'hot'. The mounting location, cooling side is displayed as 'cold'.

NOTICE	
!	The mounting location is locked and can no longer be changed once the meter recognizes a volume of 10 liters. After that, 'P' is no longer displayed: 'hot' or 'cold'.

Settling paths are not required, neither upstream of nor downstream from the meter. If the meter is installed in the common return of 2 heating circuits, the mounting location must be at an adequate distance from the T-piece (min. 10 x DN) to allow the different water temperatures to properly mix.

Thoroughly flush the plant prior to installing the meter.

Mount 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). Do not separate, shorten, or extend the lines. The sensors can be fitted in T-pieces or ball valves, or can be immersed, either directly or in pockets (observe all national regulations). 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.

NOTICE	
!	<ul style="list-style-type: none"> Comply with all local mounting regulations for meters when mounting the meter. Protect the meter against damage from shocks and vibrations at the mounting location. Ensure that no water can enter the processor unit at the mounting location.

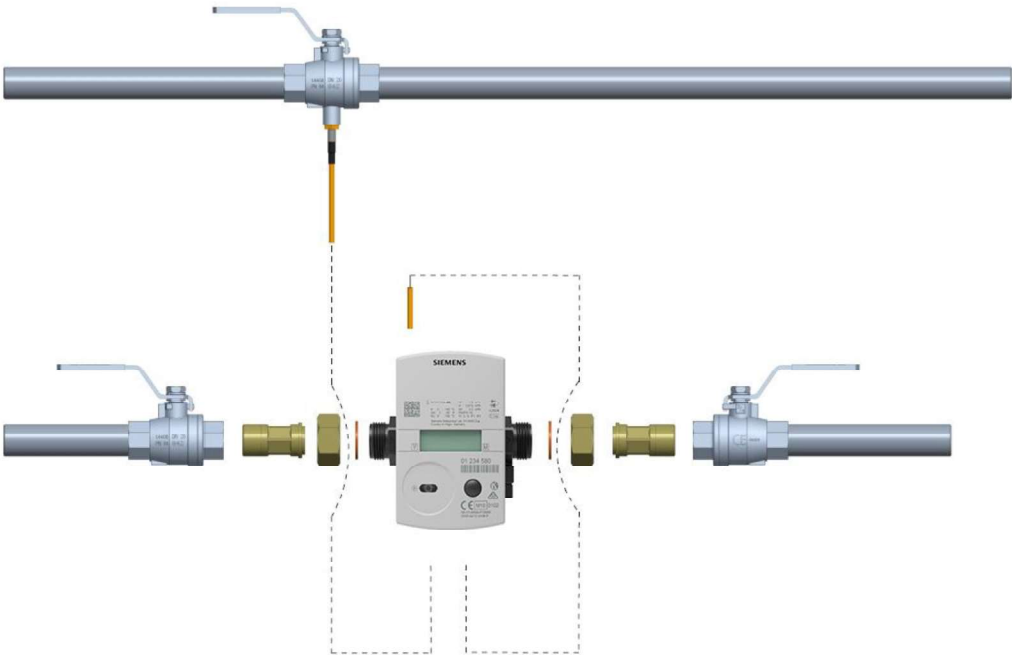
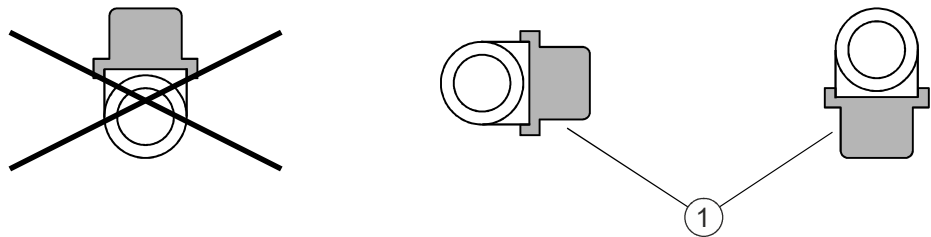


Fig. 1: Mounting with ball valve

Required position for the cooling energy meter

To avoid the formation of condensation on cooling energy or combined heat/cooling energy meters, make sure the cover on the measuring tube points to the side or downward. Install the protection pockets so that the temperature sensor is horizontal or vertical, pointing down. Mount the processor unit away from the flow measuring section (e.g. on the wall). Make sure that condensation cannot run along the connected lines, entering the processor unit (forming a loop downward).

Permissible mounting position when metering cooling energy:

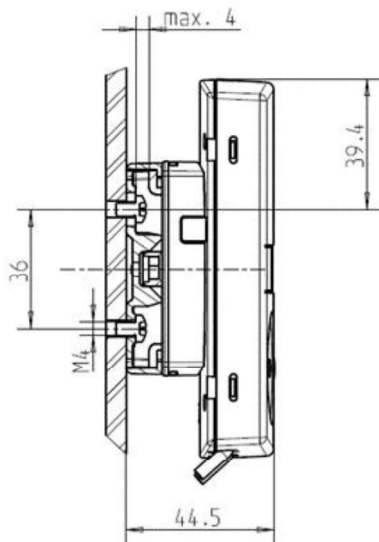


1 Transducer cover (only applies to WS.6..)

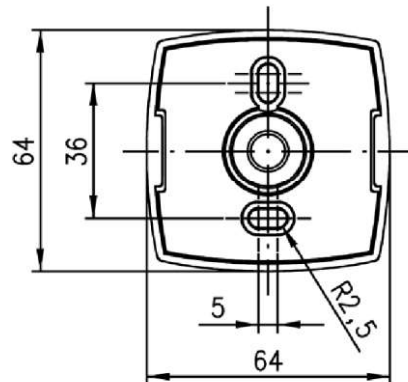
Processor unit

The ambient temperature of the processor unit cannot exceed 55 °C. Avoid direct sunlight. Ensure that no water can enter the processor unit at the mounting location. For water temperatures between 10 °C and 90 °C, the processor can be secured to the flow measuring section. For water temperatures above 90 °C and/or below 10 °C, mount the processor unit on the wall (split mounting). The adapter plate on the wall or the flow measuring section can be aligned as needed to ensure ease of reading. To remove the electronic unit, turn the housing by 45° to the side and lift. To fit the processor unit to the wall, remove it from the flow measuring section and screw the adapter plate to the wall and slide the processor unit to the adapter base, snapping into place.

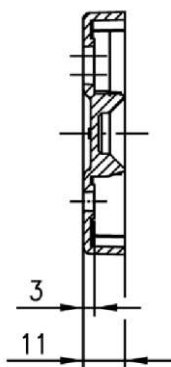
NOTICE	
!	WS.5...: The adapter plate cannot be removed. The wall adapter must be ordered separately as an accessory. WS.6...: The adapter plate can be removed from the flow measuring section.



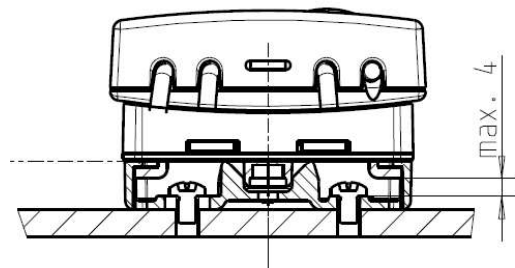
Wall mounting



Wall adapter (view from above)



Wall adapter (side view)



Maximal screw head height
(if using the wall bracket)

Maintenance

The meters are maintenance-free.
Observe all national calibration regulations.

Disposal



This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.
For additional details, refer to [Siemens information on disposal](#).

Warranty service

The application-related technical data is only guaranteed together with the products mentioned in this data sheet. Siemens rejects any and all warranties in the event that third-party products are used.

Processor unit

Power supply	
Battery type	Lithium battery (cannot be replaced)
Battery voltage	3.6 V
Battery life <ul style="list-style-type: none"> WS.5.. WS.6.. 	<ul style="list-style-type: none"> Up to 11 years Up to 12 years

Operating data	
Measuring range	0...180 °C
Range of temperature differential $\Delta\Theta$	3 ... 80 K
Temperature response threshold	0.2 K.
Thermal coefficient	Shifting compensated
Temperature-measuring error without sensor	(0.5 + $\Delta\Theta_{\min.}/\Delta\Theta$) %, Max. 1.5% at $\Delta\Theta = 3$ K

Temperature sensor	
Sensing element	Pt500
Type	Ø 5.2 x 45 mm

Flow measuring section

Operating data						
Temperature range (national approvals may differ) <ul style="list-style-type: none"> Heating Cooling 		5...90 °C (Plastic flow measuring section) 5...105 °C (Brass flow measuring section) 5...50 °C (Observe national approvals)				
Maximum temperature t_{\max}	°C	90				
Rated pressure	MPa	1.6 (PN 16)				
Continuous flow q_p	m³/h	0.6	1.5	2.5	3.5	6
Meteorological class		1:100	1:100	1:100	1:100	1:100
Maximum flow q_s	m³/h	1.2	3	5	7	12
Minimum flow q_i	l/h	6	15	25	35	60

Operating data						
Response threshold	l/h	1.2	3	5	7	12
Pressure drop at qp						
• Mounting length 110 mm Δp	mbar	75 ¹⁾ /150 ²⁾	135 ¹⁾ /170 ²⁾	---	---	---
• Mounting length 130 mm Δp	mbar	---	135 ¹⁾ /160 ²⁾	135 ¹⁾ /175 ²⁾	---	---
• Mounting length 150 mm Δp	mbar	---	---	---	---	190 ²⁾
• Mounting length 190 mm Δp	mbar	150 ²⁾	160 ²⁾	210 ²⁾	---	---
• Mounting length 260 mm Δp	mbar	---	---	---	155 ²⁾	230 ²⁾
Flow rate at Δp = 1 bar, Kv, m³/h						
• Mounting length 110 mm Δp	mbar	2.2 ¹⁾ /1.5 ²⁾	4.1 ¹⁾ /3.6 ²⁾	---	---	---
• Mounting length 130 mm Δp	mbar	---	4.1 ¹⁾ /3.8 ²⁾	6.8 ¹⁾ /6.0 ²⁾	---	---
• Mounting length 150 mm Δp	mbar	---	---	---	---	14.0 ²⁾
• Mounting length 190 mm Δp	mbar	1.5 ²⁾	3.8 ²⁾	5.5 ²⁾	---	---
• Mounting length 260 mm Δp	mbar	---	---	---	9.0 ²⁾	12.8 ²⁾
Mounting position		Any				
Cable length, control cable		1.5 m				
1) Plastic flow measuring section 2) Brass flow measuring section						

Communication	
Optical interface	
• Basic design	Similar to EN 62056-21
• Protocol	Per EN 13757-2 / -3
M-bus wired interface	Optional
• Voltage V _{max} .	• 50 V
• Power consumption	• 1 M-bus load
• Addressing	• Primary or secondary
• Baud rate	• 300 or 2400 baud
• Update	• Continuous (WS.5..) / 5 min (WS.6..)
• Max. permissible reading frequency	• 1x per minute at 2400 baud
• Protocol	• As per EN 13757-2/-3, EN 1434-3
• Connection cable length and cross section	• 1.5 m, 2x AWG24/0.2 mm ²

Communication	
Wireless M-bus RF interface <ul style="list-style-type: none"> • Transmission frequency • Transmitter power • Power supply • Send interval <ul style="list-style-type: none"> – Mobile data acquisition – Stationary data acquisition – User defined telegrams 	Optional <ul style="list-style-type: none"> • 868.95 MHz (868.90 ... 869.00 MHz) • Min. 3.16 mW (5 dBm) to max. 25 mW (13.9 dBm) • Max. 3 AA batteries <ul style="list-style-type: none"> – 20...34 s – 15 minutes. – 12...900 s (depending on telegram length)
Protocol	Per EN 13757-4
LoRa® communication <ul style="list-style-type: none"> • Transmission frequency • Transmitter power • Receiver sensitivity • Device class • Send interval • Data rate • Configuration 	<ul style="list-style-type: none"> • 868 MHz • 14 dBm • -143 dBm • A, bidirectional • 15 minutes to 24 hours • DR0-DR5 (250 bit/s to 5470 bit/s) • Via NFC



The battery life is up to 11 years in operating mode 'Economy' (default setting). The module automatically lengthens the send interval (to max. 1/120 min) if the receive quality does not suffice.

Housing type	
Protection class	III
Degree of protection <ul style="list-style-type: none"> • Processor unit • Flow measuring section 	IP54 (optional IP65) WS.5...: IP65 WSM6...: IP54 WSB6../WSN6...: IP65 WS.6...: Optional IP68

Ambient conditions			
	Operation EN 60721-3-3	Transportation 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

Ambient conditions			
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. 2000 m above sea level		

Standards and guidelines	
Product standards	DIN EN 1434-x (heat meters)
EU conformity (CE)	CE2T5372xx *)
RCM Conformity	CE2T5372en_C1 *)

Environmental compatibility
The product environmental declaration CE2E5372en *) contains data on environmentally compatible product design and assessments (RoHS compliance, material composition, packaging, environmental benefit, and disposal).

Dimensions	
Processor unit	116 x 71 x 32 mm
Flow measuring section	See "Dimensions"

Housing material	
Cover	PC-GF10, PC, TPE
Bottom section	PC-GF10
Battery compartment	PC-GF10

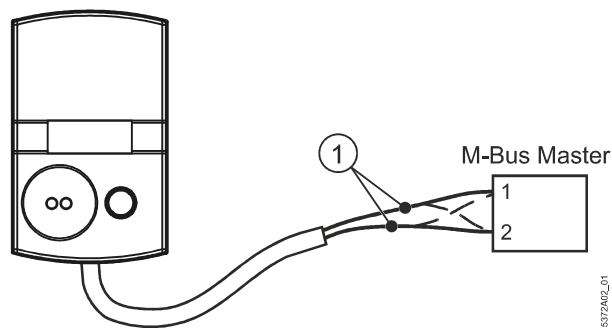
Housing colors	
Cover	RAL 9006
Bottom section	RAL 9002

Weight	
Device packed complete with inserts	WSM506...: 0.52 kg WSM515...: 0.52 kg WSM525...: 0.56 kg WS.606...: 0.80 kg WS.615...: 0.76 kg WS.625...: 0.84 kg

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

Connection diagram

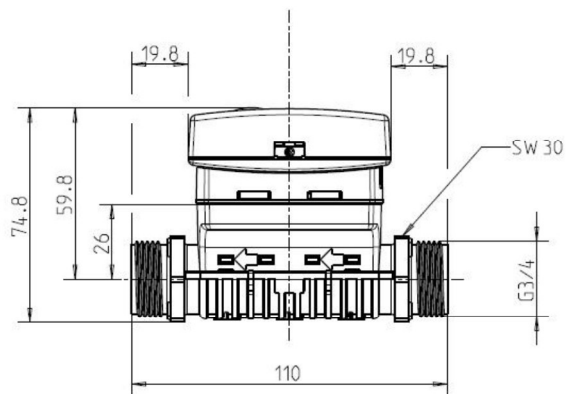
For meters with M-bus communication



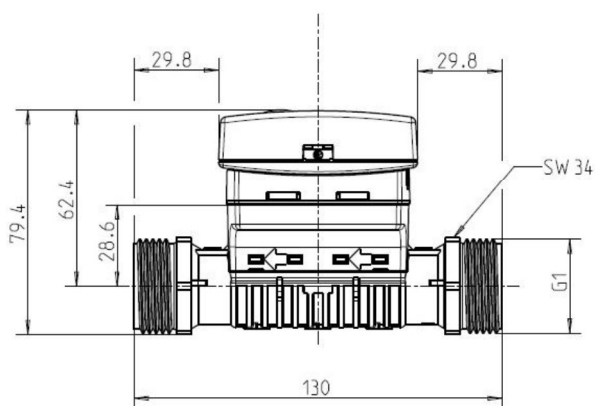
1 Brown / white

Dimensions

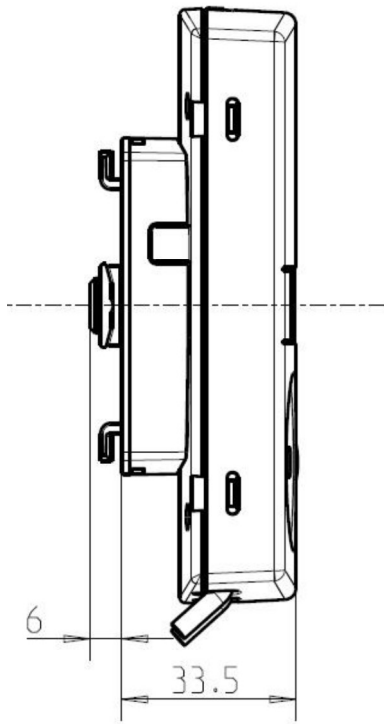
WS.5..



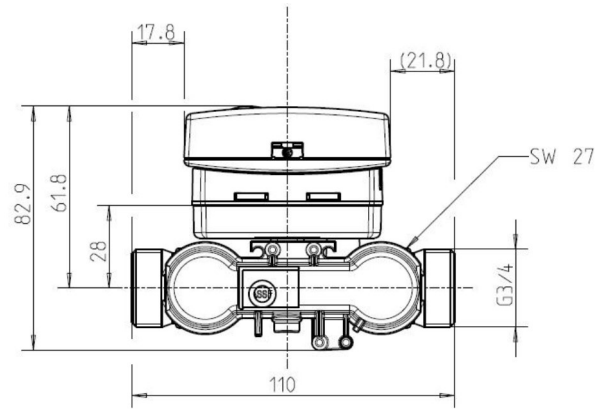
Mounting length 110 mm



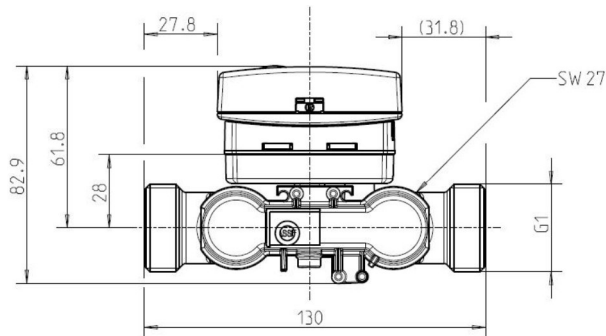
Mounting length 130 mm



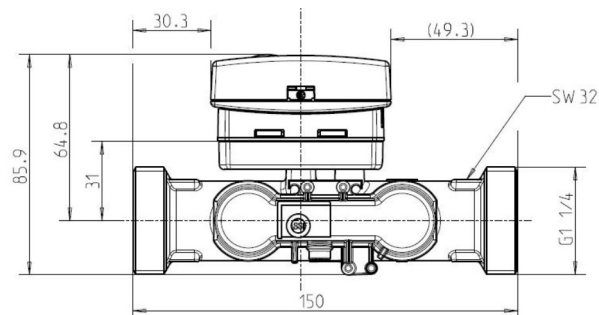
WS.6..



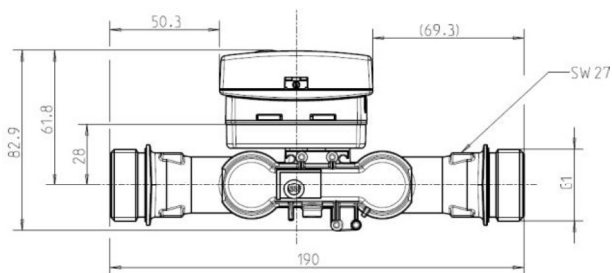
Mounting length 110 mm



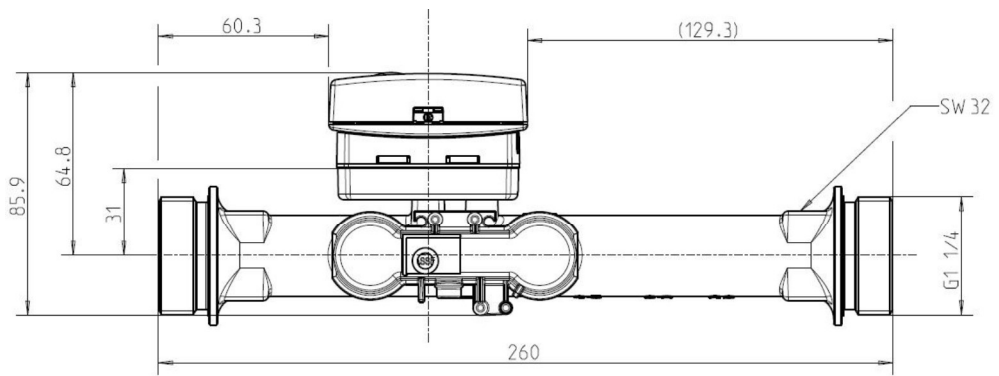
Mounting length 130 mm



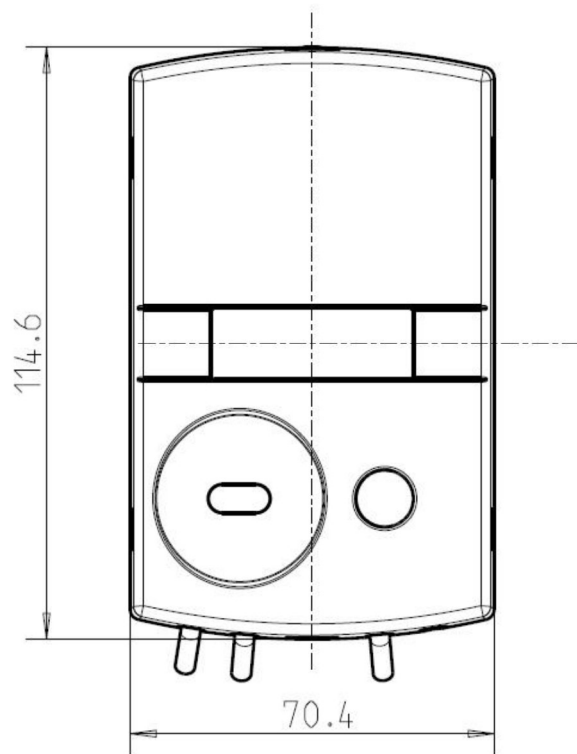
Mounting length 150 mm



Mounting length 190 mm (threaded)



Mounting length 260 mm (threaded)



Dimensions in mm

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