



## Heat meter Q heat 5

Screw-type and measuring capsule heat meter with IrDA interface and an interface for retrofitting external modules or with integrated communication.

The devices can be equipped with integrated communication technology for M-Bus and two additional impulse inputs in the factory.

In the versions of the coupling variants and 2" coax also available as heat meter with optional cooling range as well as solar meter for versatile mixtures. (\*)

(\*) Outside the Measuring Instruments Directive

## Application

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The heat meter is used for measuring heat energy. A combined measurement of heat and cooling energy is possible by the heat meter with optional cooling range. The main areas of application are in central heating systems where the heating energy is outputted individually to different consumers. It is possible to separate hot water heating.

This is meaningful in:

- › Apartment buildings
- › Offices and administration buildings

## Functions

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- › IrDA interface for reading out and setting parameters for the heat meter.
- › Mains-independent, for local use, 6 or 10-year lithium battery.
- › Measured values are recorded using two PT 1000 platinum resistance thermometers.
- › Hydraulic impeller wheel sensor with magnet-free scanning according to the inductive principle for low-wear and reliable long-term measuring operation.
- › High resolution thanks to 8-digit LC display that indicates current value, old value, check number and many service and operating parameters.
- › Display loop "fast readout" with the most important consumption values can be opened using control keys.
- › Additional display of 15 monthly values with date.
- › Storage of the maximum supply flow and return flow temperatures as well as the maximum current flow with date.
- › Programming of the device-specific parameters (e.g. fixed date) is possible on site using the control keys or the IrDA interface.
- › Since the module interface is also compatible with the heat meters of the G line (G20 to G54), the add-on modules already in the field can still be used when the meter has been replaced.
- › With the basic version, add-on modules for radio or M-Bus communication can be retrofitted on-site via the module interface.

## Screw-type variant

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- › Heat meter or heat meter with optional cooling range Q heat 5 for direct or indirect installation of the temperature sensors.
- › MID approval

## Capsule variant 2"

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- › 2" capsule heat meter or combined 2" capsule heat meter with optional cooling range for direct or indirect installation of the temperature sensors.
- › Fits in all 2" coax EATs, taking geometric specifications into account.
- › MID approval

## Capsule variant M77 x 1.5 (A1)

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- › AMS capsule heat meter for direct or indirect installation of the temperature sensors. (No cold options)
- › Fits in all M77 x 1.5 (A1) EATs, taking geometric specifications into account.
- › MID approval

## Functions with integrated communication interface<sup>(\*)</sup>

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- › With integrated M-Bus interface according to EN 13757-2.
- › Optionally available with impulse input interface for connection of up to 2 external water meters.

(\*) Screw-type meter as compact version 2" and M77 x 1.5 (A1) capsule heat meter are not available with integrated communication interface.  
The installation of add-on modules is not possible with heat meters with integrated communication interface.

## Technology

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The heat meter comprises a pair of precise temperature sensors and a flow meter which is installed in a hot water or cooling circuit. An electronic calculator unit continually calculates the difference in temperature between the supply and return flow and multiplies the value by the flow rate. The result of this (current heating or cooling capacity) is cumulated, displayed or forwarded to a data-processing system by radio or cable.

The Q heat 5 has up to three communication interfaces.

1. The IrDA interface accessible from outside. This allows parameters to be set for the Q heat 5 on site at any time.
2. The module interface, which can be used to retrofit the heat meter for radio or other communication methods. The respective modules are simply mounted on the calculator unit.
3. Alternatively, internal equipping with communication interfaces for M-Bus and impulse inputs.<sup>(1)</sup>

(1) The installation of add-on modules as described under section 2 is not possible with heat meters with integrated communication interface.  
Internal population is not possible with heat meter types IST and AMS.

## Measuring principle

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The flow sensor of the screw-type meter works according to the single-jet impeller wheel sensor principle. The water flow hits an impeller wheel radially.

The hydraulic sensor of the capsule meter works according to the multi-jet measuring principle. The water flow hits the impeller wheel symmetrically from the walls of the measuring capsule. The wheel impeller speed is scanned electronically. Incorrect direction of flow is detected and indicated by a fault message in the display.

## Determining water consumption

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Using the measured difference in temperature between supply and return flow, the flow rate and the calculated thermal coefficient, the heat quantity is shown on the LC display in physical units (kWh, MWh, MJ, GJ) following an internal calculation process.

To increase measuring accuracy, the density and enthalpy values are determined for every measurement and integrated into the calculation.

## Storing the consumption values

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The heat consumption values are continually cumulated. The current status is stored at 24.00 h on the due date.

The due date is set with the aid of the two keys or a programming tool, December 31 is the default setting.

Every time the current consumption and the annual consumption is saved, the heat meter calculates a checksum.

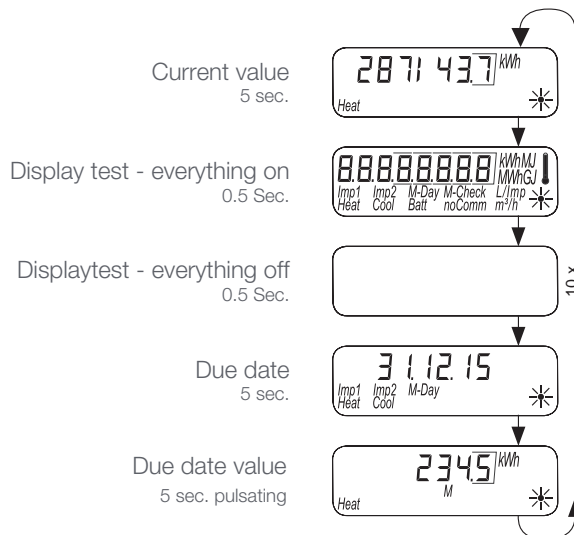
## Displays

Device states, display units and consumption values are shown via the LC display on several levels (up to 10 levels). The heat meter is equipped with two keys that can be used to switch between the individual display steps and levels.

The meter display is usually switched off and is only activated after a key has been pressed.

1. Press the < H > or < V > key **briefly** to open the fast readout display loop.
2. Press the < H > or < V > key **longer than 3 seconds** to open the level operating scheme.

### Fast readout display loop



The fast readout display starts with the current consumption value.

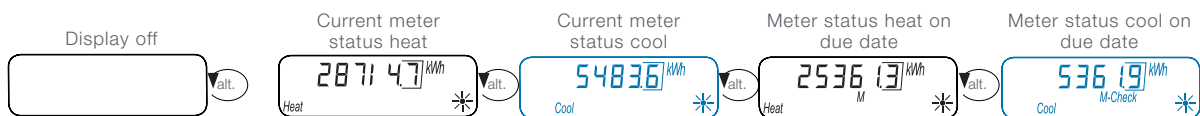
After 10 repetitions, the display automatically changes back to sleep mode.

You can change to the level operating scheme at any time. To do so, press the < H > or < V > key for longer than 3 seconds.

Error messages are displayed with the error number and error date for 5 seconds before the “Current value” display.

### Displays on the level operating scheme

Standard loop (meter status displays depend on the device configuration)



### Error messages



If a serious error occurs with the device, the error code and error date are displayed before the meter status.

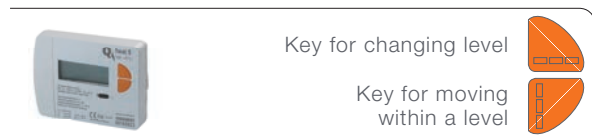
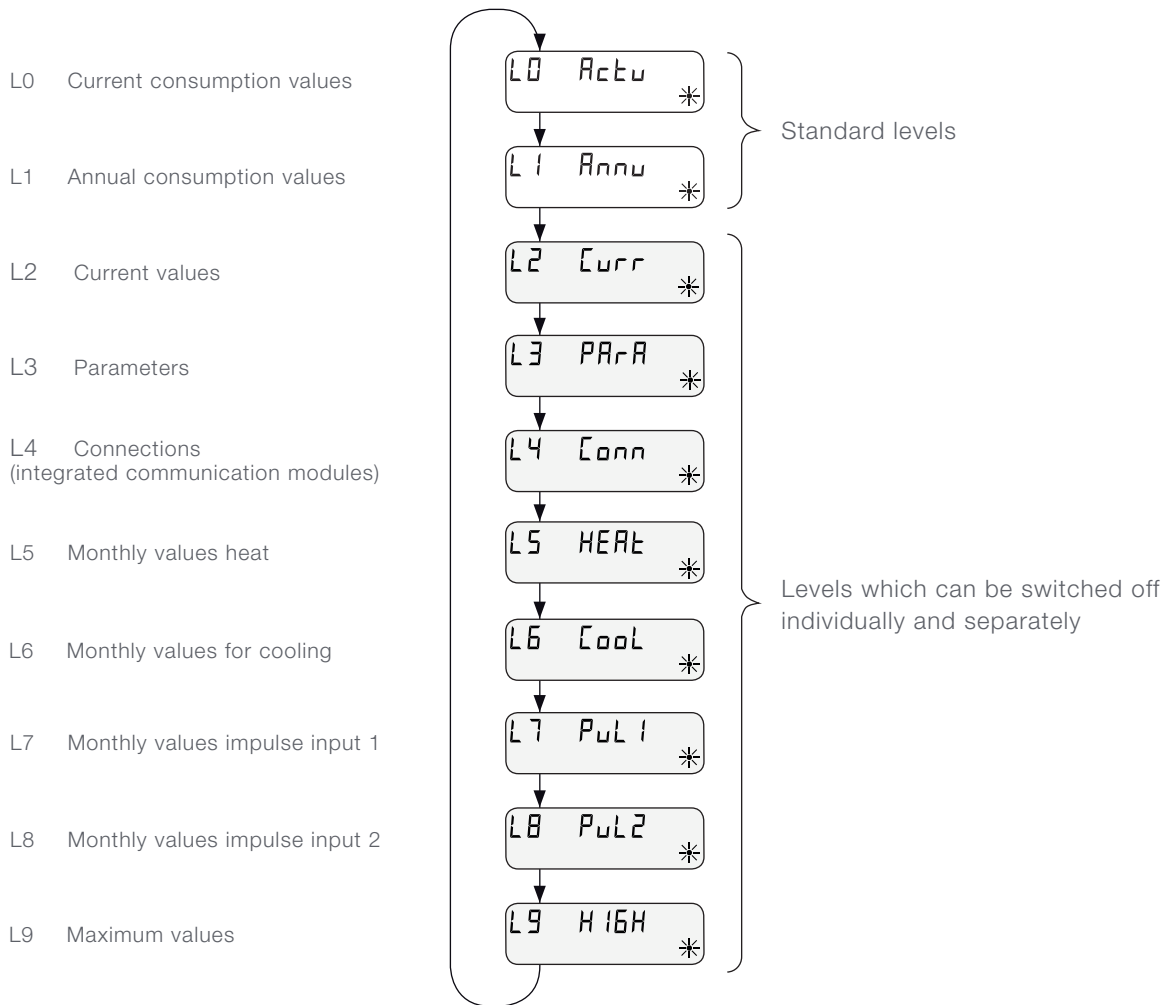
### Wrong direction of flow



If the incorrect direction of flow is established, an error message appears on the display as shown.

## Displays

### Overview of display levels



## Parameter-setting possibilities

Via keys:

- › Next due date
- › Display in kWh or MWh or MJ or GJ
- › Selection of the levels to be displayed
- › Display of the meter statuses with or without check number

In addition with devices with M-Bus:

- › Primary addresses for heat meter, heat meter with optional cooling range, impulse 1, impulse 2

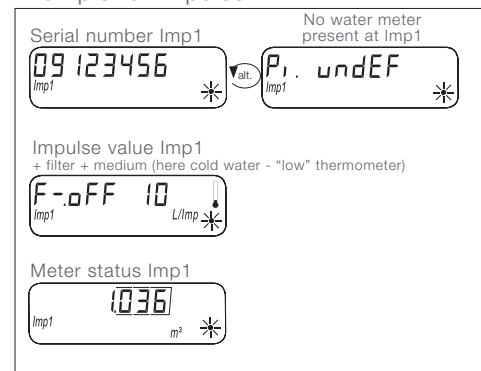
In addition, for devices with 2 additional impulse inputs:

- › Serial numbers of the external meters
- › Impulse values, filter (reduction of scanning frequency), medium (cold or hot water)
- › Starting counting statuses of the external meters

In addition with devices with solar adaptation:

- › Share of glycol or brine

Example for impulse 1:



With PC:

- › Next due date
- › Password for close-range interface
- › Display in kWh or MWh or MJ or GJ
- › Selection of the levels to be displayed
- › Display of the meter statuses with or without check number

In addition with devices with M-Bus:

- › Primary addresses for heat meter, heat meter with optional cooling range, impulse 1, impulse 2

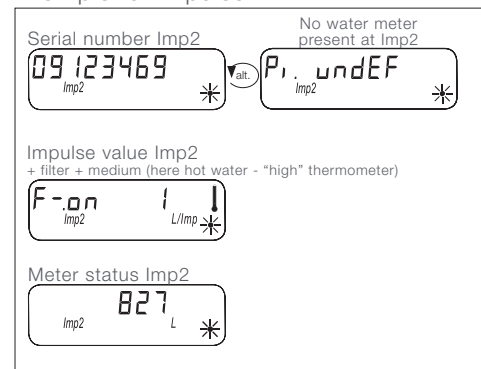
In addition, for devices with 2 additional impulse inputs:

- › Serial numbers of the external meters
- › Impulse values, filter (reduction of scanning frequency), medium (cold or hot water)
- › Starting counting statuses of the external meters

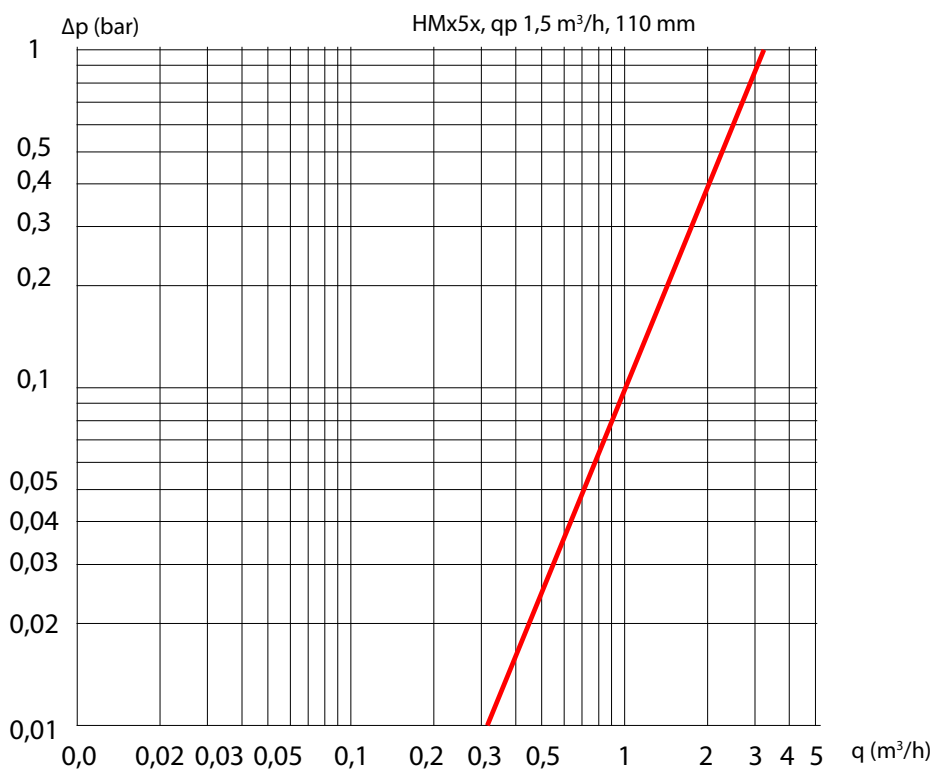
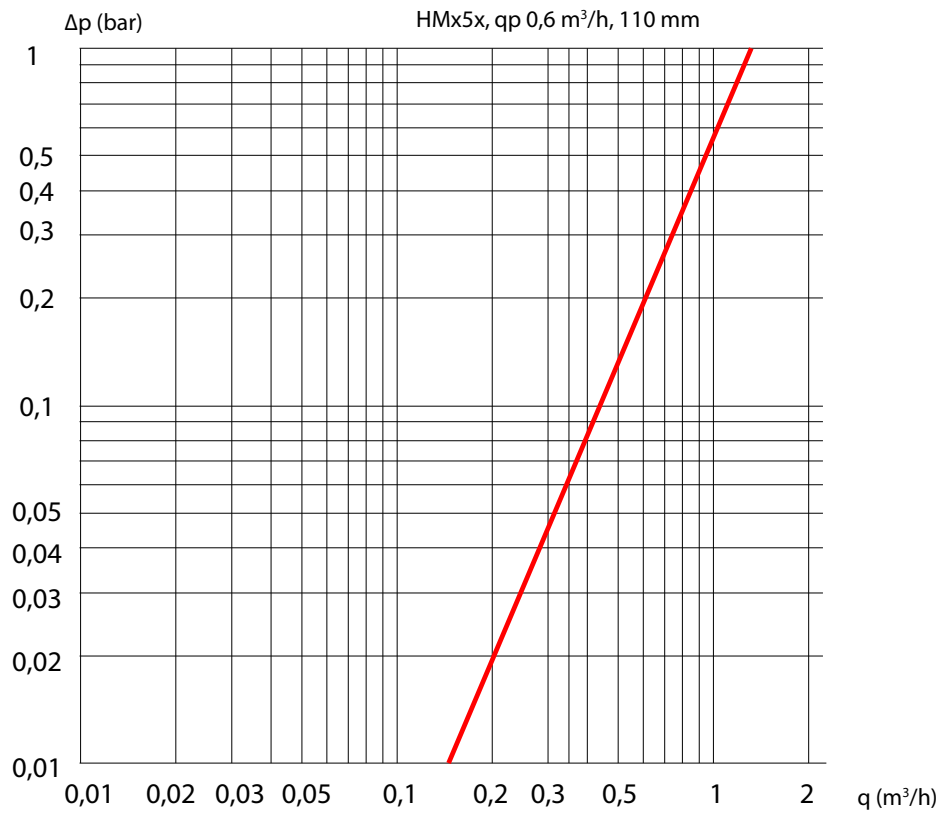
In addition with devices with solar adaptation:

- › Share of glycol or brine

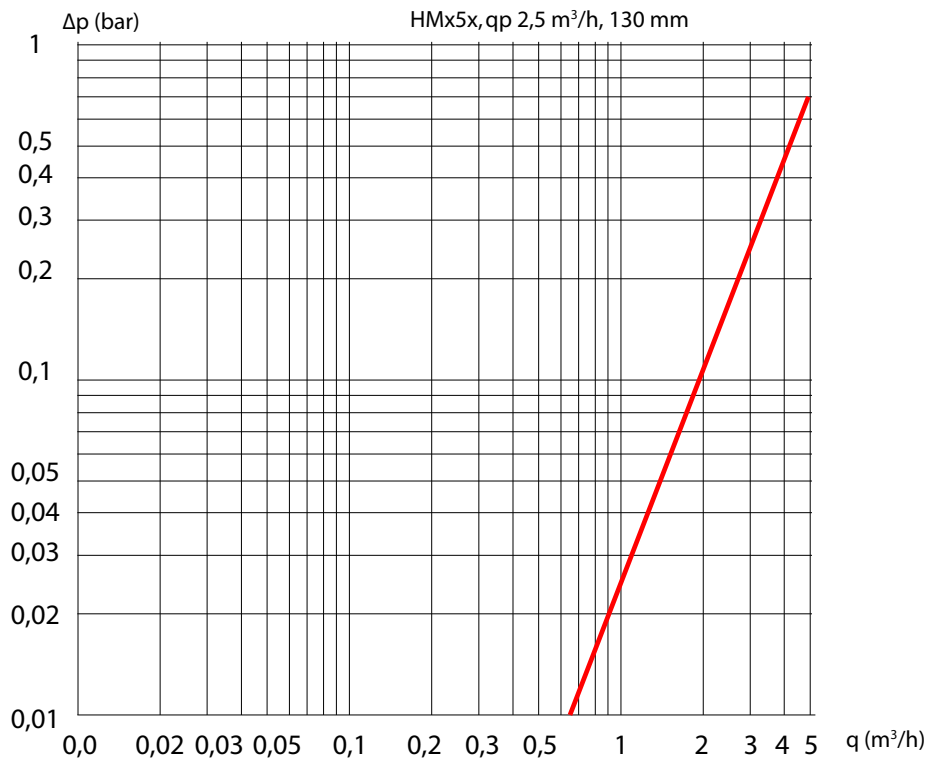
Example for impulse 2:



Pressure loss curves - screw-type meter (QDS)

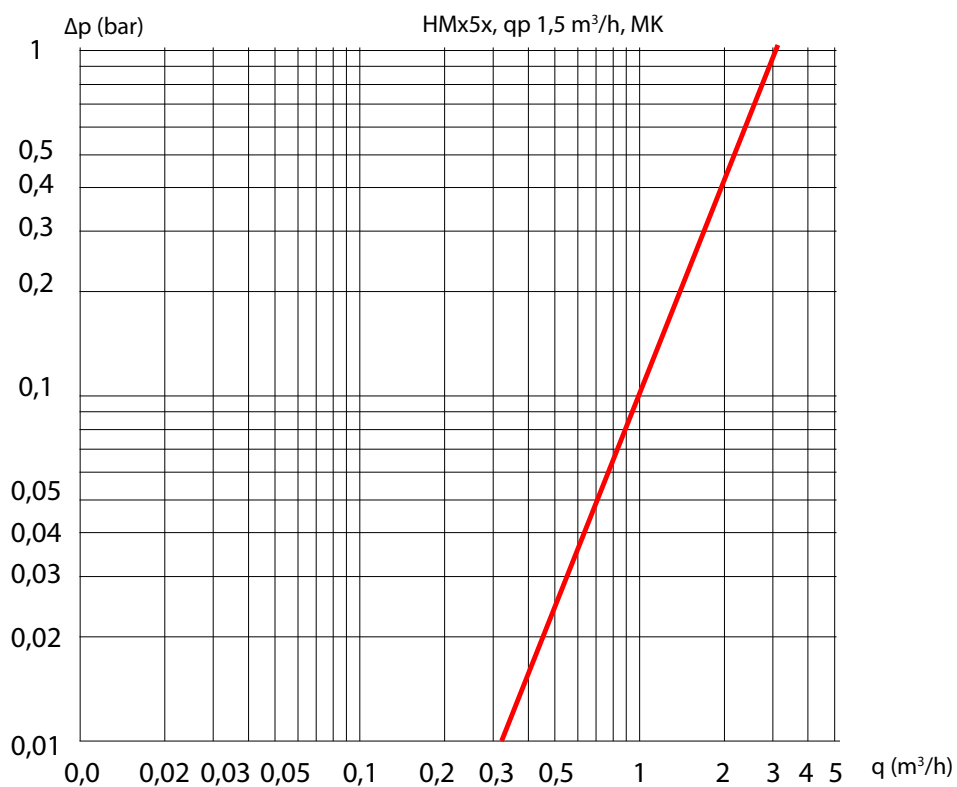
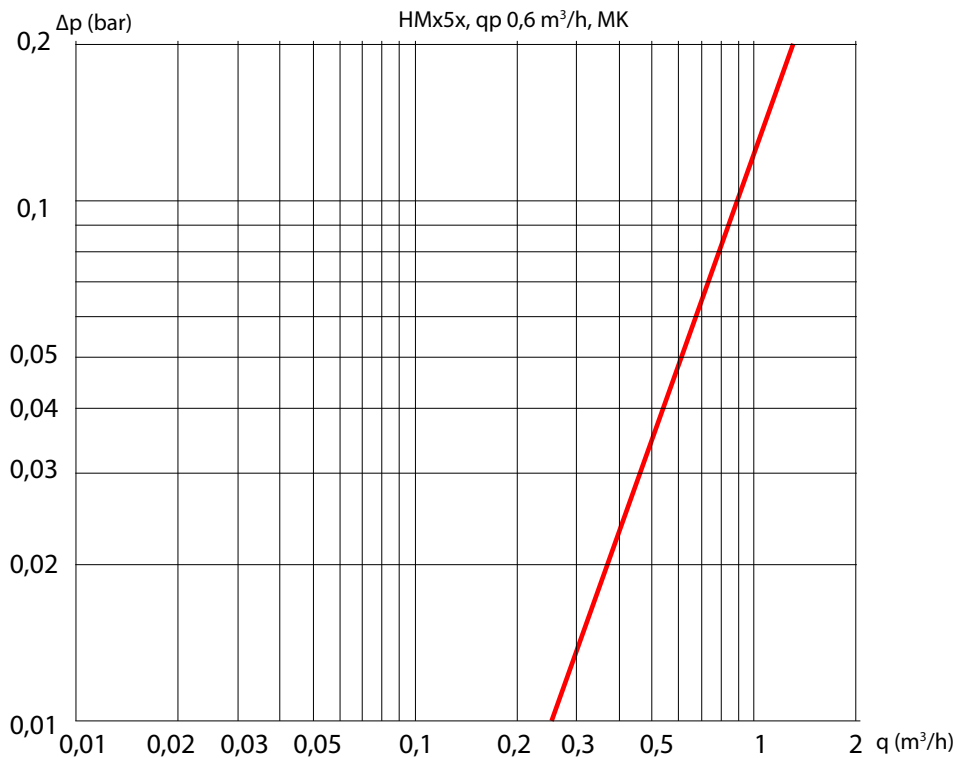


Pressure loss curves - screw-type meter (QDS)

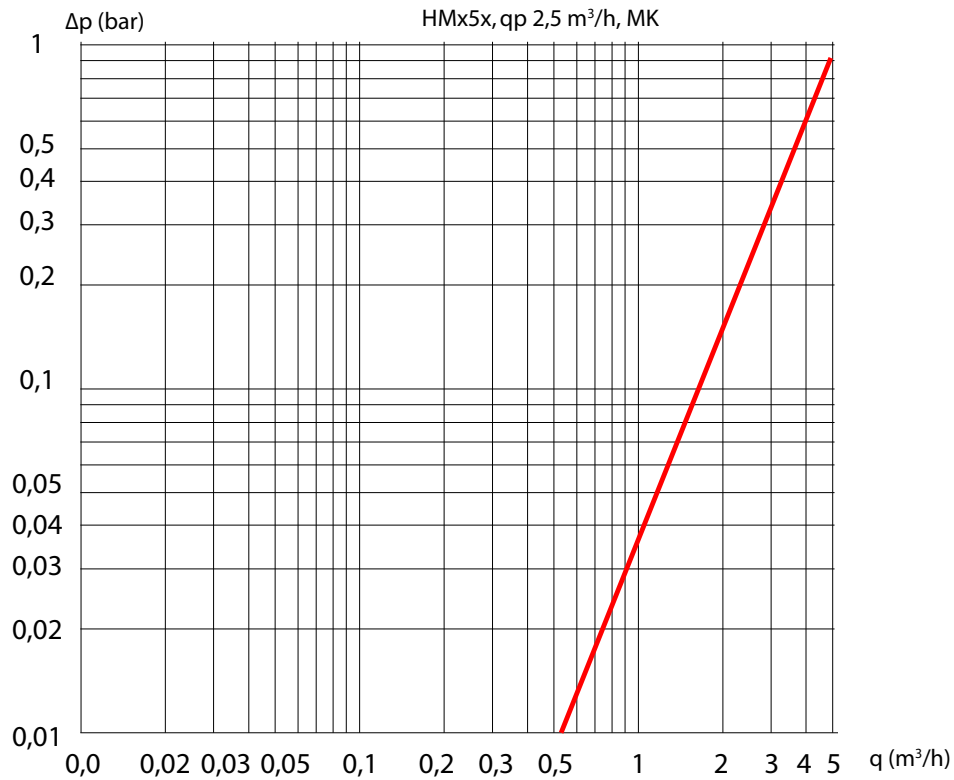




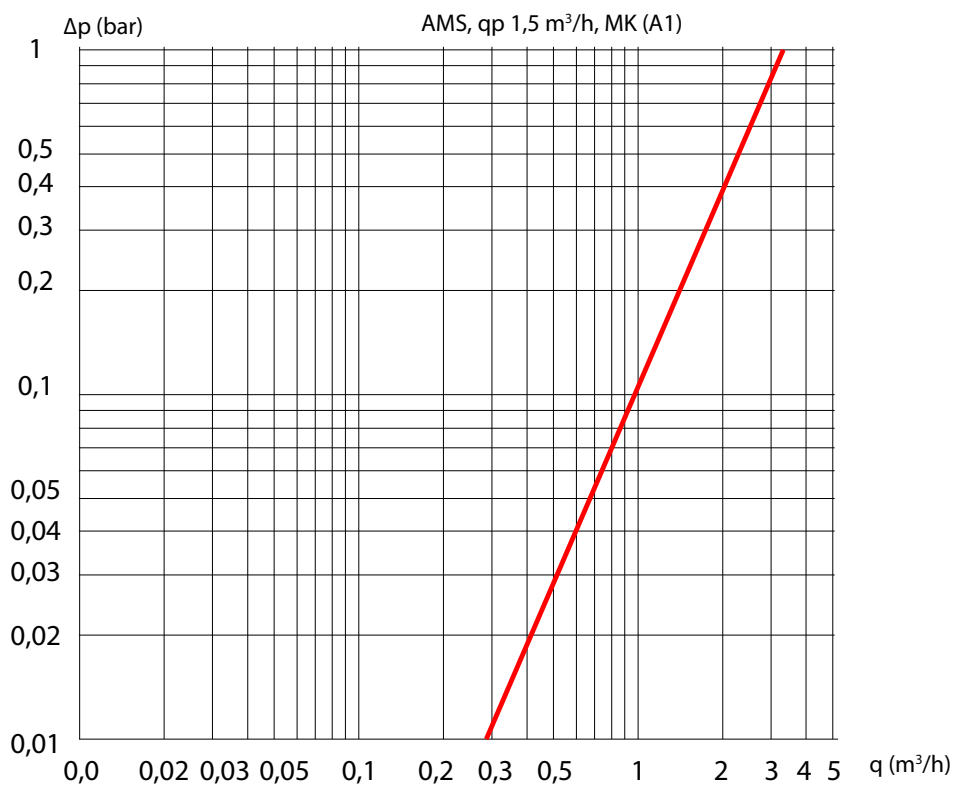
## Pressure loss curves - 2" capsule meter (IST)



Pressure loss curve - 2" capsule meter (IST)




Pressure loss curve - M77 x 1.5 (A1) capsule meter (AMS)



Δp Pressure loss in bar q Flow in m<sup>3</sup>/h

## Technical data

Standards	
	QUNDIS GmbH hereby declares that the Q calorimetric 5.5 complies with directive 2014/53/EU. The complete text of the EU Declaration of Conformity is available at the following internet address: <a href="http://www.qundis.com">www.qundis.com</a> .
Protection rating	
IP protection rating	IP65 according to EN 60529/AMS: IP54
Heat meter	
European Measuring Instruments Directive (MID)	2014/32/EU
EC-type examination certificate	DE-12-MI004-PTB009 / AMS: DE-17-MI004-PTB008
Heat meters	CEN EN1434
Quality of heat medium in accordance with	VDI guideline 2035 / AGFW-standard 510
Influencing quantities	
Electromagnetic class	E1
Mechanical class	M1
Environment class	A
Precision class	3
Minimum length of the pipe section in front of or behind the heat meter	not required (U0/D0)
Environmental condition	Transport: -25 °C to +70 °C, relative air humidity: max. 95 % without condensation Storage: -5 °C to +45 °C, relative air humidity: max. 95 % without condensation Use: +5 °C to +55 °C, relative air humidity: max. 95 % without condensation

## Calculator unit

Temperature range	
Heat meter	10 ... 105 °C / AMS: 20 ... 105 °C
Heat meter with optional cooling range	5 - 105 °C / AMS: -/-
Approved temperature difference	3 - 70 K / AMS: 4 - 70 K
Switch-on value temperature difference	Heat: 1.0 K / cooling <sup>(*)</sup> : 0.2 K (can be selected using art. no.)
Ambient temperature	5 - 55 °C
Power supply	
Lithium battery	Nominal voltage 3.0 V
Service life	> 6 (opt. 10) years + 6 months reserve
Display levels	
Standard	min. 2, up to 10 (depending on the version and options included)
Display	8-digit LCD + pictograms
Energy display	kWh <--> MWh (optionally MJ <--> GJ)
Length of calculator unit cable/flow sensor	approx. 40 cm

(\*) Outside the Measuring Instruments Directive

## Temperature sensor

Measuring element	PT 1000 according to EN 60751	
Execution	Type DS	
Diameter	5.0 mm - 5.2 mm - 6.0 mm <sup>(1)</sup> - AGFW <sup>(1)</sup>	
Type of installation	5.0 mm - direct (ball valve) / indirect (immersion sleeve) 5.2 mm - direct (ball valve) / indirect (immersion sleeve) 6.0 mm - indirect (immersion sleeve) <sup>(1)</sup> AGFW - direct (ball valve) <sup>(1)</sup> Only AMS 6.0 mm x 60 mm - direct (ball valve) / indirect (immersion sleeve)	
Cable length	Standard	1.5 m
	Optional	3.0 m

(1) Not available for heat meters with integrated communication interface.

## Flow sensor screw-type meter

Connection sizes		0.6 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h
Length		110 mm	80 mm	110 mm	130 mm
Connection		G ¾ B	G ¾ B	G ¾ B	G 1 B
Weight	compact	668 g	575 g	650 g	743 g
	detachable	820 g	709 g	802 g	895 g
Installation position		horizontal/vertical			
Nominal flow q <sub>p</sub>		0.6 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h
Minimum flow q <sub>i</sub>	horizontal	24 l/h	30 l/h	30 l/h	50 l/h
	vertical	24 l/h	30 l/h	30 l/h	50 l/h
Ratio q <sub>p</sub> /q <sub>i</sub>	horizontal	25:1 <sup>(*)</sup>	50:1	50:1 <sup>(*)</sup>	50:1 <sup>(*)</sup>
	vertical	25:1	50:1	50:1	50:1
Ratio q <sub>s</sub> /q <sub>p</sub>		2:1			
Start-up		3-4 l/h	4-5 l/h	4-5 l/h	6-7 l/h
Max. permissible operating pressure		1.6 MPa (16 bar)			
Min. system pressure to avoid cavitation		0.1 MPa (1 bar)			
Temperature range		10 ... 90 °C			

(\*) Versions with a higher dynamic range are also available as options.

## Flow sensor 2" capsule meter (IST)

<b>Connection sizes</b>		0.6 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h
Installation length of the EAT		110 mm	110 mm	130 mm
Pipe connection		G 3/4"		G 1"
		Solder 15 mm or solder 18 mm		Solder 22 mm
Weight	compact	605 g	605 g	607 g
	detachable	757 g	757 g	759 g
Installation position		horizontal/vertical		
Meter thread at the EAT		G 2 B	G 2 B	G 2 B
<b>Nominal flow q<sub>p</sub></b>		0.6 m <sup>3</sup> /h	1.5 m <sup>3</sup> /h	2.5 m <sup>3</sup> /h
Minimum flow q <sub>i</sub>	horizontal	30 l/h	30 l/h	50 l/h
	vertical	30 l/h	30 l/h	50 l/h
Ratio q <sub>p</sub> /q <sub>i</sub>	horizontal	20:1(*)	50:1(*)	50:1(*)
	vertical	20:1	50:1	50:1
Ratio q <sub>s</sub> /q <sub>p</sub>		2:1		
Start-up		3-4 l/h	4-5 l/h	6-7 l/h
Max. permissible operating pressure		1.6 MPa (16 bar)		
Min. system pressure to avoid cavitation		0.1 MPa (1 bar)		
Temperature range		10 ... 90 °C		

(\*) Versions with a higher dynamic range are also available as options.

## Flow sensor M77 x 1.5 capsule meter (AMS)

<b>Connection sizes</b>		1.5 m <sup>3</sup> /h	
Installation length of the EAT		110 mm	130 mm
Pipe connection		G 3/4"	G 1"
Ground		650 g	650 g
Installation position		horizontal/vertical	
Meter thread at the EAT (A1)		M77 x 1.5	M77 x 1.5
<b>Nominal flow q<sub>p</sub></b>		1.5 m <sup>3</sup> /h	
Minimum flow q <sub>i</sub>	horizontal	30 l/h	
	vertical	60 l/h	
Ratio q <sub>p</sub> /q <sub>i</sub>	horizontal	50:1	
	vertical	25:1	
Ratio q <sub>s</sub> /q <sub>p</sub>		2:1	
Max. permissible operating pressure		1.6 MPa (16 bar)	
Min. system pressure to avoid cavitation		0.1 MPa (1 bar)	
Temperature range		20 ... 90 °C	

## Devices with integrated communication interface

Technical data for integrated communication		
Connection cable	„OUT“	“IN”
Function	M-Bus	Impulse inputs
Length	3 m	1 m
Supply	Included in scope of supply	Included in scope of supply of order option
Protection class	IP65	
Wire ends	Wire-end ferrules	
Cable sheathing	PVC	

Colour assignment connection cable			
Impulse input	Imp1	orange (ground)	brown
	Imp2	red (ground)	black
M-Bus	M-Bus	orange (not occupied)	brown (not occupied)
	M-Bus	red	black

Impulse input device	
Classification	in accordance with EN 1434-2, Class IB Restriction: Switching threshold at low level max. 0.25 V
Impulse length	≥ 100 ms
Impulse frequency	≤ 5 Hz (2.5 Hz with filter setting “on”)
Source current	≤ 0.1 mA
Number of impulse inputs	2

Impulse inputs	
Solenoid switch	Reed contact
Integrated circuit	Open collector
Namur circuit	Not possible

## Available solar mixtures

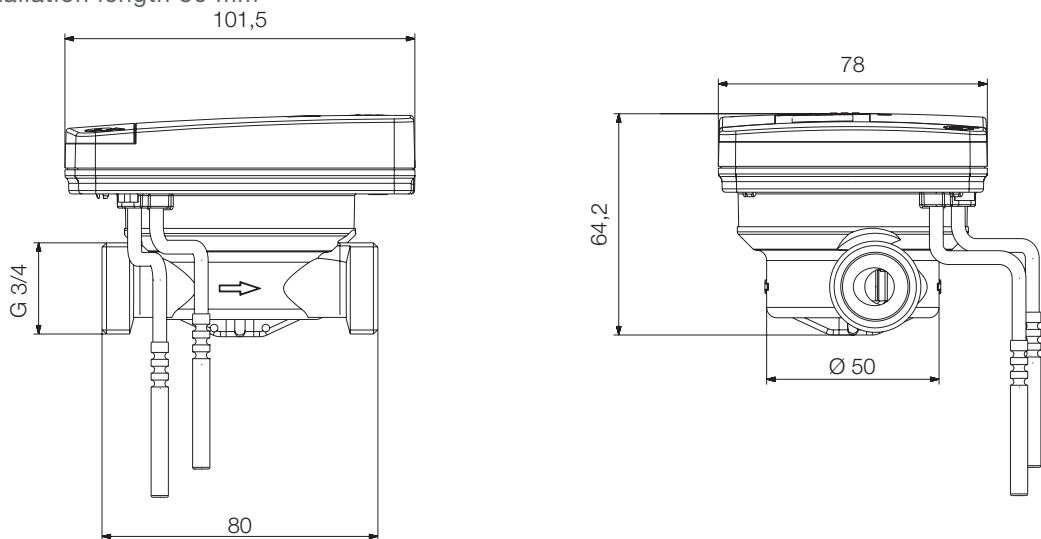
The following solar mixtures are available for devices with solar adaptation<sup>(\*)</sup>.  
(please specify when ordering)

Water + Glythermin P44	Water + Tyfocor N	Water + Antifrogen N	Water + Gelbin DC 924
Water + Tyfocor L	Water + Antifrogen L	Water + Dowcal 20	Water + Tyfocor LS

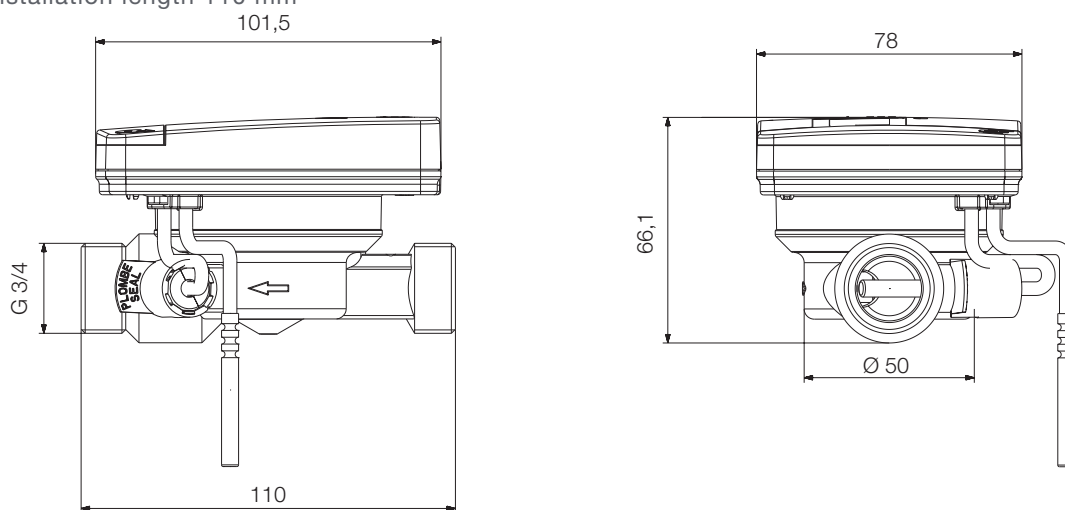
<sup>(\*)</sup> Outside the Measuring Instruments Directive. Is not available for AMS.

## Dimensional drawings - screw-type meter

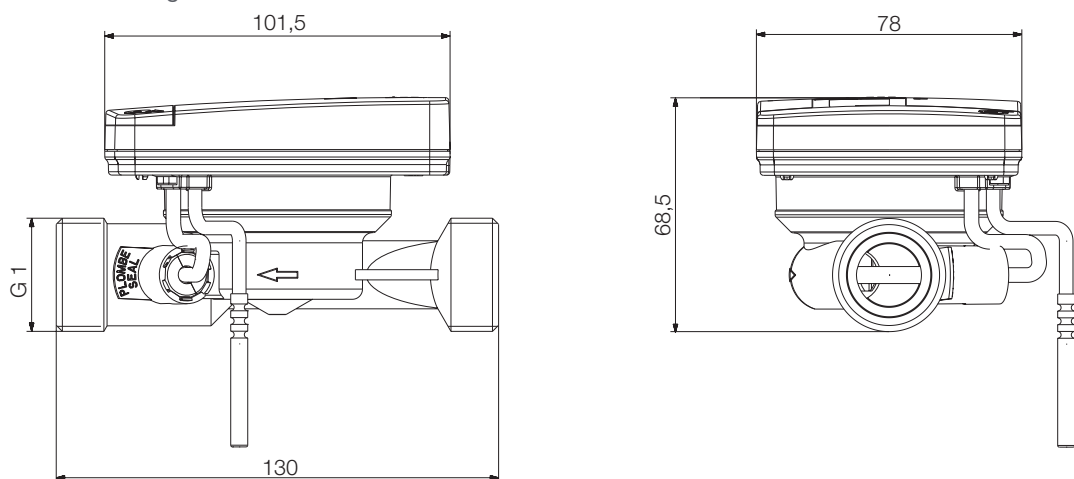
Installation length 80 mm



Installation length 110 mm

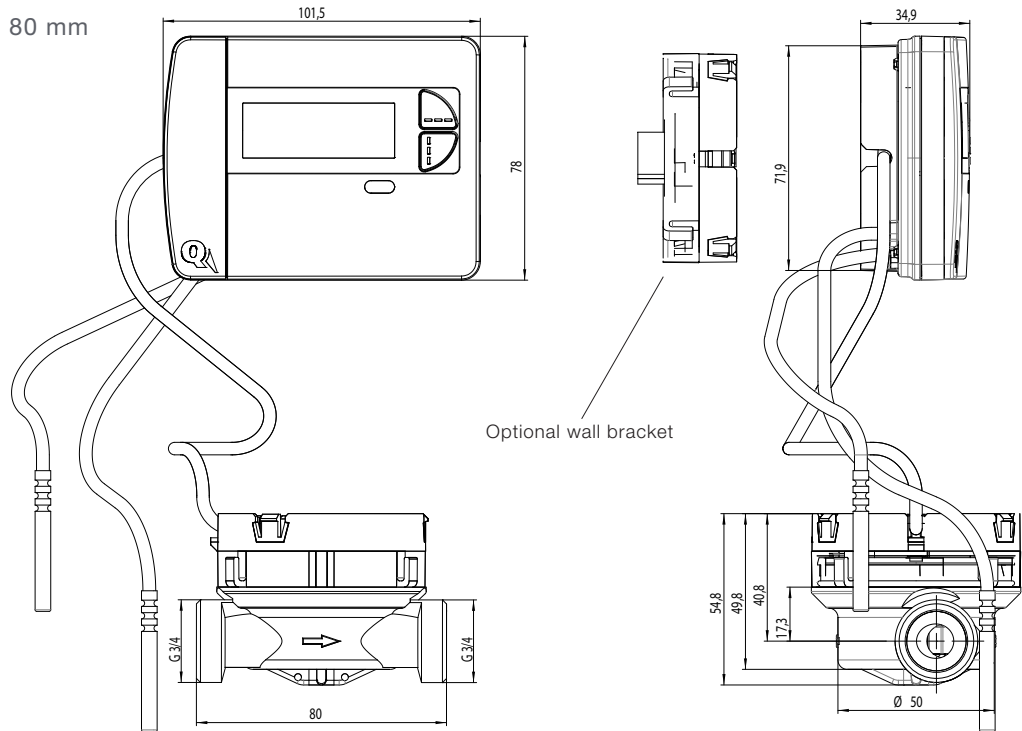


Installation length 130 mm

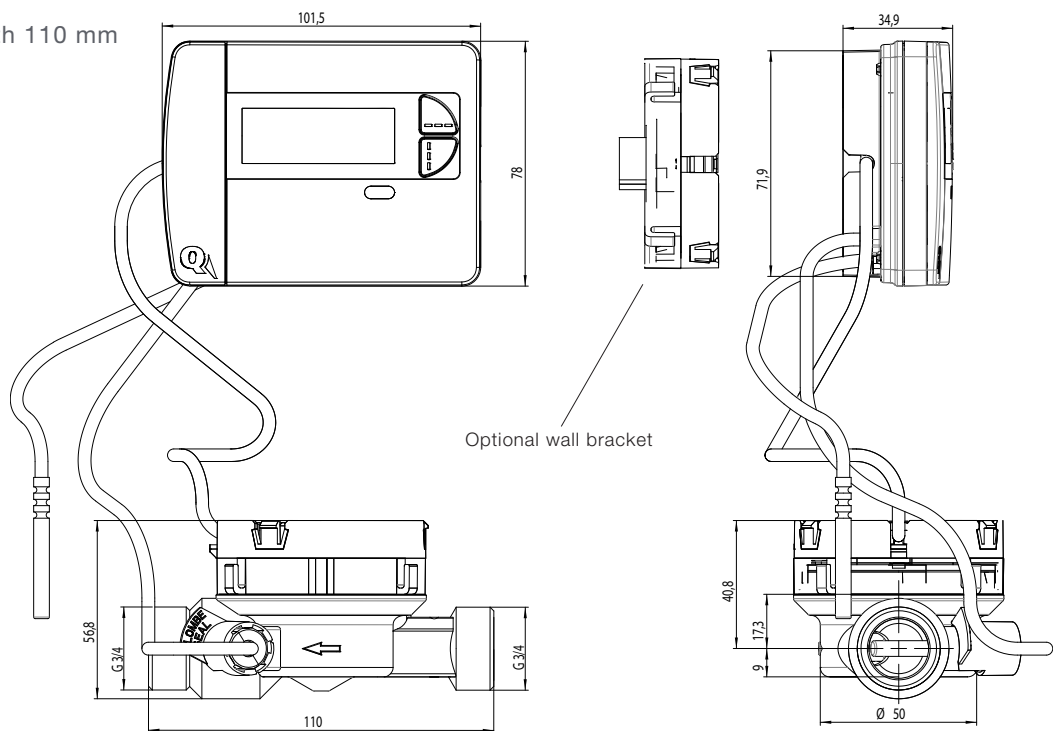


Dimensional drawings - remote screw-type meter

Installation length 80 mm



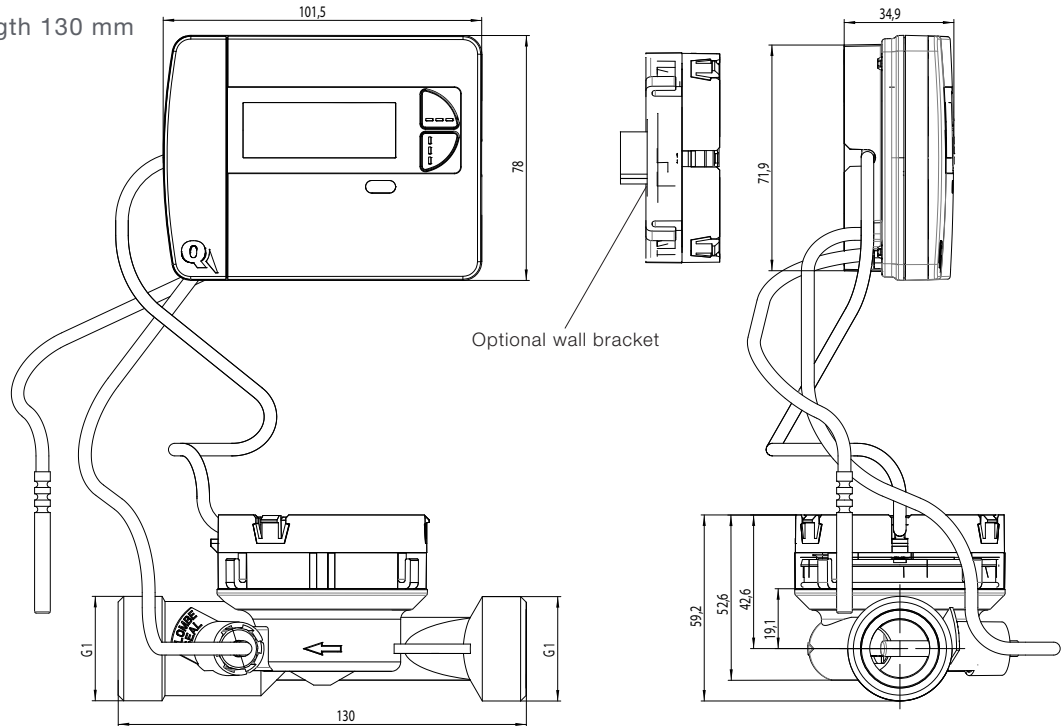
Installation length 110 mm





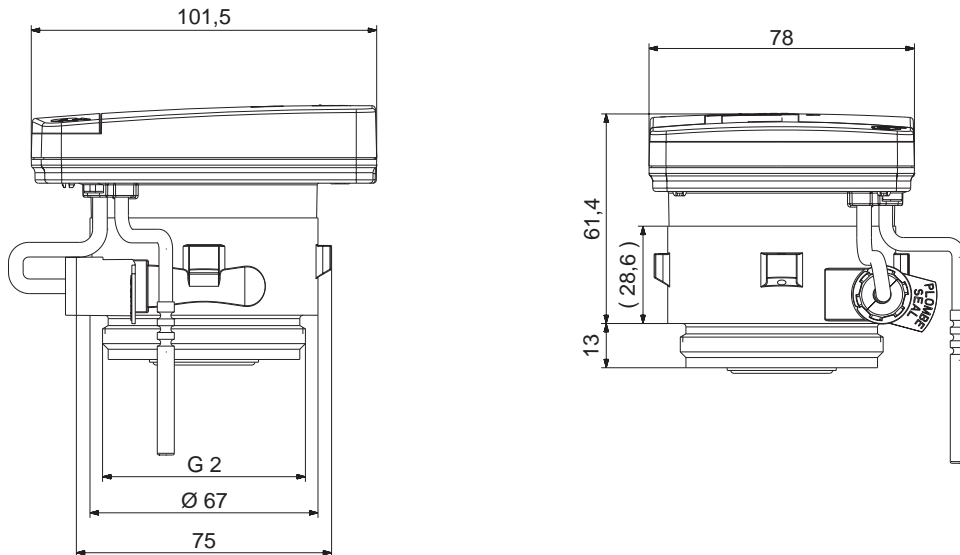
## Dimensional drawings - remote screw-type meter

Installation length 130 mm

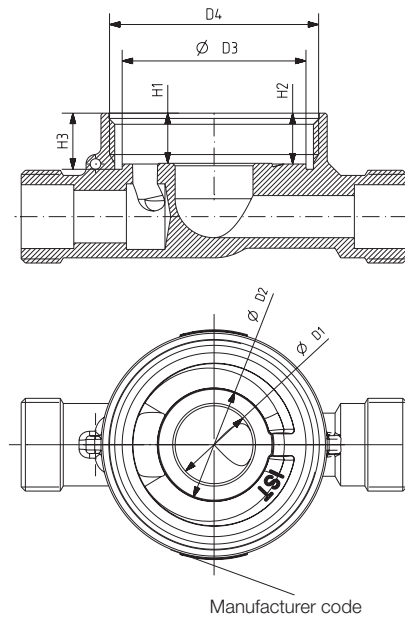


## Dimensional drawings - capsule meter (IST)

2" capsule meter



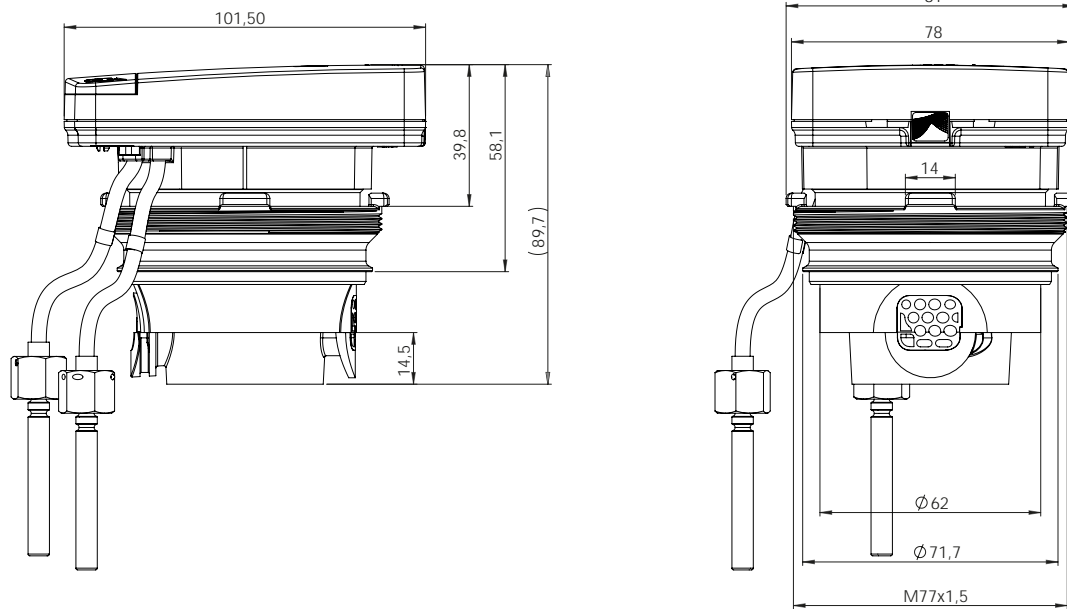
Single-pipe connection piece (EAT)



Ø D1 (mm)	Ø D2 (mm)	Ø D3 (mm)	D4	H1 (mm)	H2 (mm)	H3 (mm)
22.2 ± 0.2	32.2 ± 0.2	52.4 ± 0.2	G 2-B	14.3 + 0.2	14.5 + 0.2	16 + 0.2

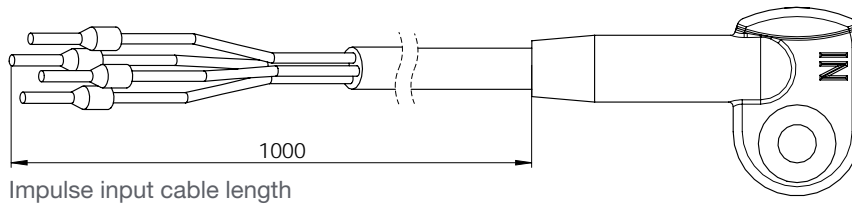
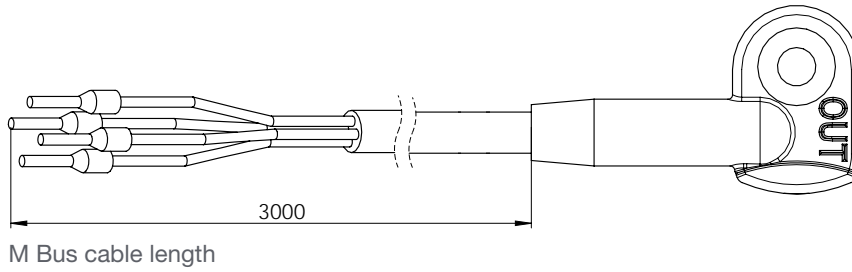
## Dimensional drawings - capsule meter (AMS)

M77 x 1.5 (A1) capsule meter

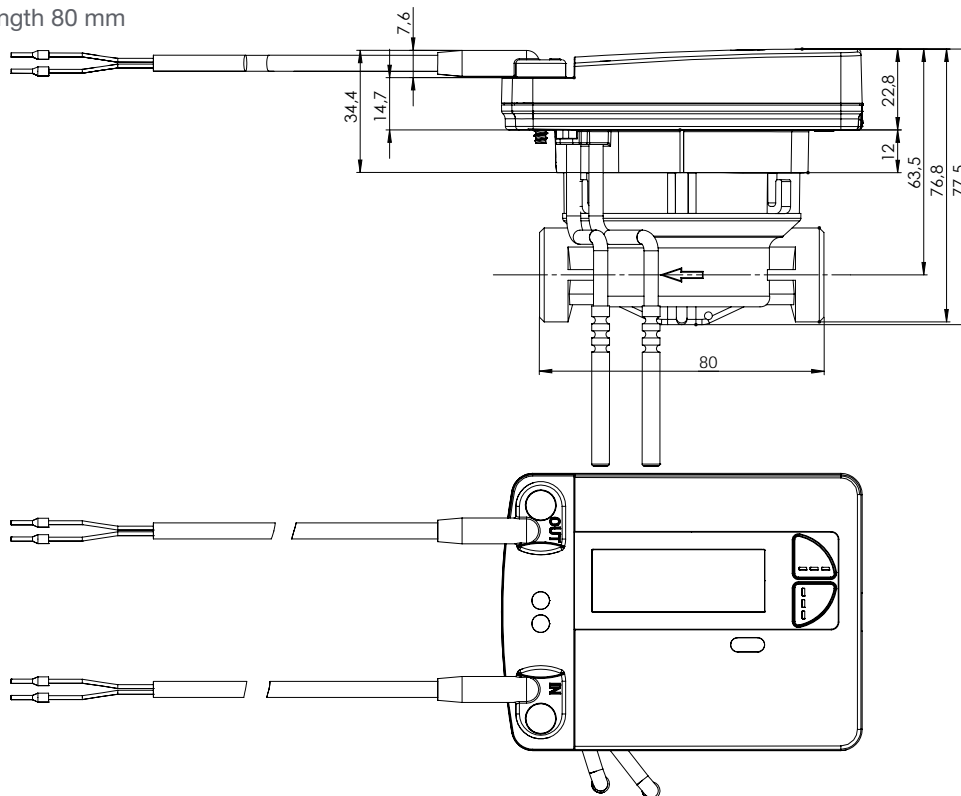


## Dimensional drawings - with integrated communication interface

### Connection cable

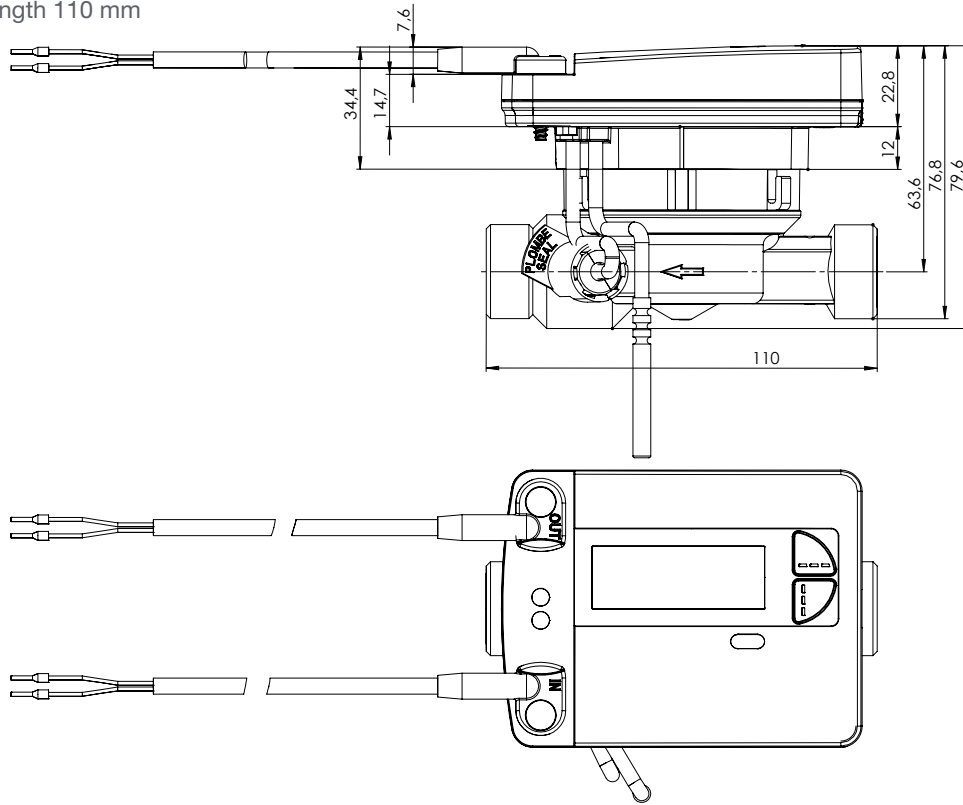


### Installation length 80 mm

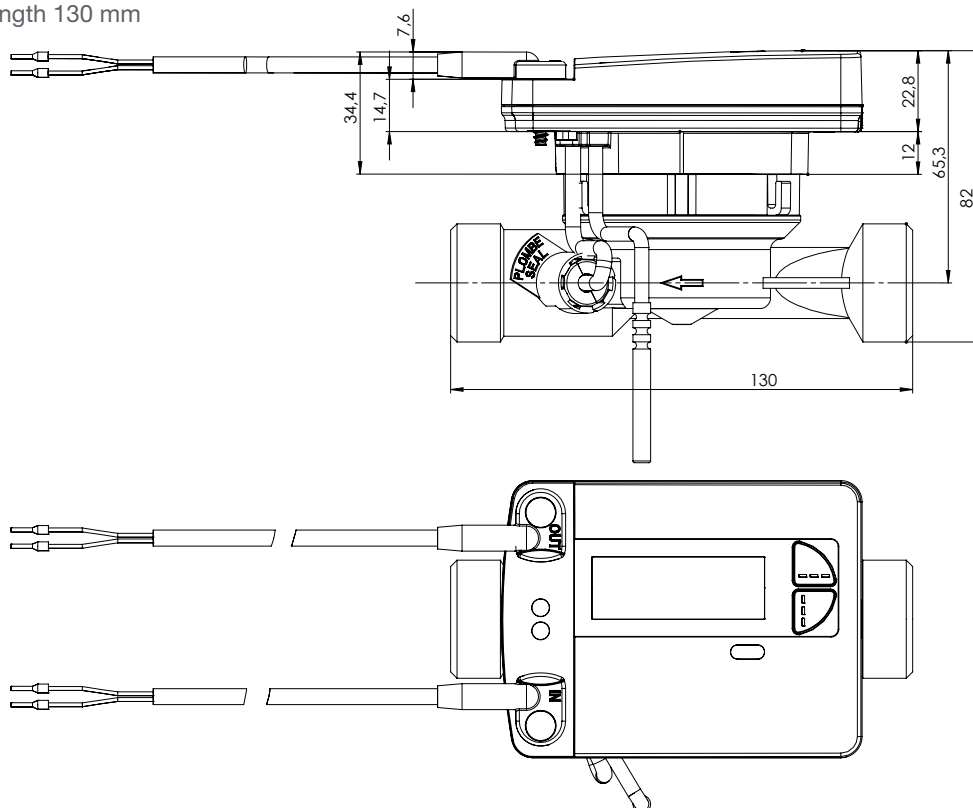


## Dimensional drawings - with integrated communication interface

Installation length 110 mm



Installation length 130 mm



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