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ENGINEERING TOMORROW

Danfoss

Data sheet

SonoMeter 40
Energy Meters

Description

The Danfoss SonoMeter 40 is a range of ultrasonic, compact energy meters intended for measuring energy consumption in heating and cooling applications for billing purposes. The meters are designed for remote meter read-out (AMR).

SonoMeter 40 energy meters consist of an ultrasonic flow sensor, a pair of Pt500 temperature sensors and a calculator with integrated circuits for temperature measurement, flow calculation and energy calculation.

Features

- Available in nominal flow rates q_p 0.6, 1.5, 2.5, 3.5, 6.0, 10.0, 15.0, 25.0, 40.0 and 60 m^3/h
- Triple communication with M-Bus, wMBus onboard + 1 additional communication module slot
- Housings with thread (G3/4 to G2) or flange (DN 20 to DN 100) connections
- MID approval for ultrasonic energy meter with dynamic range of 1:100 (q_i:q_p) in class 2
- Optional MID approved dynamic range of 1:250 in class 2
- Temperature range 0 - 180 °C
- Nominal pressure PN25 bar as standard
- Calculator with IP65 protection class as standard (IP68 on special request)
- Flow sensor with IP68 protection class as standard
- Return or supply pipe installation, for vertical or horizontal mounting
- Battery lifetime for at least 15+1 years
- Low pressure loss, insensitive to dirt
- No calming sections needed before or after the flow sensor (DN 15-DN 50)
- For DN 65 to DN 100 calming sections are needed (5 x DN on inlet and 3 × DN on outlet of flow sensor)
- Remote reading via M-Bus, radio OMS 868 MHz, RS 485 Modbus, BACnet, LoRA-WAN, pulse output or optical interface
- Two pulse inputs or outputs (always included, optionally with pre installed cable)

Technical specifications

Complete energy meter

Application	Heating or Bifunctional (combined heating and cooling)	
Medium	Water quality with pH 7 to 9.5 VDI 2035, VdTÜV TCh 1466	
Measuring cycle	Flow: 1 sec. Energy: 1 sec. Temperature: 10 sec.	
Approved meteorological range	**Openable version**	**Not openable version**
	ΔΘ: 3 - 175K	ΔΘ: 3 - 110K
	Θ: 0 - 180 °C	Θ: 0 - 130 °C
	Θq: 0.1 - 130 °C	Θq: 0.1 - 130 °C
Temp. limits (energy calculation)	ΔΘ: 0.2 - 180K	ΔΘ: 0.2 - 110K
	Θ: 0 - 180 °C	Θ: 0 - 130 °C
Ambient operating temperature	Class C: 5 - 55 °C indoor installation, condensing, humidity max. 93%.	
Ambient storage temperature	temperature: -25 – +35 °C, humidity: max. 60%.	
Mechanical environment	Class M1	
Electromagnetic environment	Class E2	

Calculator

IP [EN60529]	65 (standard - enclosure openable) 68 (on special request - enclosure not openable)	
Battery Supply	Voltage	3.6V DC
	Battery type and size	2x Lithium Battery, AA-size
	Battery life time	15+1 years (including AMR communication)
Mains supply 24 V AC/DC (internal module)	Voltage	12 V - 36 V AC 12 V - 42 V DC Galvanically isolated
	Power consumption	not more than 20 mA
	Alternating current voltage frequency	50/60 Hz
	Backup supply	Internal backup battery: 1x AA-size Service life not less than 15 years (without data reading via a digital or wireless interface) - for powering of the meter, when the external power supply is turned off.
	Mains supply cable	2 wire copper cable with a diameter of 2 × 0.25 mm^2
Mains supply 230 V AC (external transformer)	Voltage	230 VAC +10% -15% to 24VAC transformer for connection to mains power supply 24 AC/DC module.
	Power consumption	not more than 5 mA
	Alternating current voltage frequency	50/60 Hz
	Backup supply	Internal backup battery: 1x AA-size Service life not less than 15 years (without data reading via a digital or wireless interface) - for powering of the meter, when the external power supply is turned off.
	Mains supply cable	2 wire copper cable with a diameter of 2 × 0.25 mm^2
Display	85 x 35 mm LCD display with 8 digits (11.5 mm high main characters) Menu guide and info panel	
Display Units	MWh - kWh - GJ - °C - m^3 - m^3/h	
Display Values	Energy - volume - flow rate - power - temperatures	
Optical interface	Always included	According to EN61107 (IEC1107)
Communication	To be specified when ordering the meter. Both options can be selected.	1. M-Bus according to EN13757-3, supports 300, 2400, 4800, 9600 baud. Delivered with 1,5 m cable. 2. wM-Bus 868 MHz (S1, T1 OMS)
Additional communication	Delivered from factory or later upgrade. One option from the list is possible.	1. Wired M-Bus 2. Modbus RTU 3. BACnet MS/TP 4. LoRaWAN

Technical specifications
(continuous)

Flow sensor

Diameter		DN 15	DN 20	DN 15	DN 20	DN 15	DN 20		DN 20		DN 25	DN 32	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100
Nominal flow q_p	(m^3/h)	0.6		1.0		1.5			2.5		3.5		6		10	15	25	40	60
Max flow q_s	(m^3/h)	1.2		2		3			5		7		12		20	30	50	80	120
Minimum flow (1:100) q_i	(m^3/h)	0.006		0.01		0.015			0.025		0.035		0.06		0.1	0.15	0.35	0.4	0.6
Cut off flow q_c	(m^3/h)	0.003		0.005		0.003	0.005		0.005		0.007		0.012		0.02	0.03	0.05	0.08	0.12
Overflow q_{ss}	(m^3/h)	1.44		2.4		3.6			6		8.4		14.4		24	36	60	96	144
Pressure drop at q_p	(mbar)	70	9	113	25	171	58	72	198	94	90		100		180	120	200	180	180
K_{vs} values		2.27	6.32	2.97	6.32	3.63	6.23	5.59	5.62	8.15	11.67		18.97		23.57	43.3	55.9	94.3	141.4
Connection		G¾B	G1B FL	G¾B	G1B FL	G¾B	G1B FL	G1B	G1B	FL	G1¼B	FL	G1¼B	FL	G2B FL	FL	FL	FL	FL
Overall length	(mm)	110	190	110	190	110 165	190	130	130	190	260		260		300	270	300	300	360
Material of flow sensor		CW617N															CC770S		
Pressure PN	(bar)	25 bar																	
IP [EN60529]		IP68																	
Temperature media	(°C)	Θq: 0.1 - 130 °C																	
Cable length		1.2 m, 2.5 m or 5 m																	
Mounting		Any position; DN 15 - DN 50: No calming sections needed DN 65 - DN 100: calming sections are needed (5 x DN on inlet and 3 x DN on outlet)																	

Temperature sensor

Type	Pt500, 2 wire, according to EN1434, EN60751
Size / IP	DS type: Ø5.2 mm / IP65 PL type: Ø6 mm / IP67
Cable length	1.5 m, 3 m, 5 m or 10 m
Accuracy	Class B (EN60751)
Approved temp. range EN60751	Θ: 0 - 150 °C
Difference temp. EN60751	ΔΘ: 3 - 150 K
Pressure	25 bar
Mounting	without pockets for sizes G3/4 and G1 only

Communication interfaces

Optical interface
Optical interface is integrated into the front panel of the calculator. It is designed for data reading via M-bus protocol and parameterization of the meter using SonoMeter 40 UserConfig software and optical head OG-1-USB.
The optical interface is activated by pressing the control button and shuts automatically off 5 minutes after the last pressing button or after completing data transmission via interface.

Wired M-Bus interface
- M-Bus protocol according to EN13757-3 standard
- 2 wire with polarity reversal protection
- Galvanic insulation
- Current drawn: one M-Bus load (1.52mA)
- Primary or secondary addressing supported
- Primary M-Bus address (M-Bus integrated) last 2 digits of a serial number; if “00” the primary address is 100.
- Primary M-Bus address (Additional M-Bus module) Address “2”.
- Configurable baud rate 300/1200/2400/4800/9600, factory default 2400 baud rate.
- Battery lifetime min 15+1 years (2 x AA cell)
- Battery supply communication is limited on every 15 min at 2400 baud rate or faster, 70 energy meters on bus
- Fastest reading interval at mains supply: no limits
- Default M-Bus telegram includes below information’s:
  - Date and time
  - Date and time of error starting
  - Error code
  - Battery operation time
  - Working time without error
  - Energy for heating
  - (Energy for cooling)
  - (Energy of tariff 1)
  - (Energy of tariff 2)
  - Volume
  - Pulse input 1
  - Pulse input 2
  - Power
  - Flow rate
  - Temperature 1
  - Temperature 2
  - Temperature difference
  - Serial number

Communication interfaces
(continuous)

Wireless M-Bus (OMS) interface, 868.95 MHz

- Wireless M-Bus protocol according to EN13757-4
- OMS (open metering system) compatible, compliant to OMS 4.0.2
- T1 mode (unidirectional)
- sending interval every 90 seconds
  (suitable for 'walk by' readings)
- battery lifetime min 15+1 years (2 x AA cell)
- default wireless M-Bus telegram includes below information's:
  - Energy for heating
  - Time
  - Volume
  - Energy for cooling
  - Pulse in 1
  - Pulse in 2
  - Power
  - Flow

Wireless M-Bus telegram parameter list and sending frequency is configurable!

Modbus RTU, RS485 module

Connectors	90 (noninverting, +) and 91 (inverting, -)
Baud rate	1200, 2400, 4800, 9600 (default), 38400, 56000, 57600, 115200 bps
Data format	8E1 (8 data bits, even parity bit, 1 stop bit) – default 8O1 (8 data bits, odd parity bit, 1 stop bit) 8N2 (8 data bits, no parity bit, 2 stop bits)
Power supply	Polarity independent connection for power supply – connectors 60 and 61 Voltage 12-24 V AC/DC Maximum power consumption 2 W max. Typical supply current 50 mA

BACnet MS/TP, RS485 module

BACnet MS/TP protocol and a serial interface for communication with external devices.

Connectors	90 (noninverting, +) and 91 (inverting, -)
Baud rate	9600, 19200, 38400 (default), 57600, 76800, 115200 bps
Data format	8E1 (8 data bits, even parity bit, 1 stop bit)
Power supply	Polarity independent connection for power supply – connectors 60 and 61 Voltage 12-24 V AC/DC Maximum power consumption 2 W max. Typical supply current 50 mA

LoRaWAN, 868 module

Transmitting scenarios:

- Heating: Energy and volume + 4 historical values.
- Heating and Cooling: Heating Energy, Cooling energy + Volume + 2 Historical values.

Pulse inputs

Number of pulse inputs	2 or no (to be specified when ordering)
indicated units	m^3
pulse value	programmable
input pulse types	IB according to LST EN1434-2
maximum permissible frequency	3 Hz
maximum permissible voltage	3.6 V
condition of maintenance of high level	3.6 V through 3.3 MΩ resistor

For versions with not openable enclosure (IP68), when meter is ordered with the pulse inputs, a permanently connected 1,5 m cable is fitted in the meter for connecting the pulse inputs.

Pulse outputs

Number of pulse outputs	2 or no (to be specified when ordering)
Class	OB in operating mode (OD in test mode)
Type	open collector
Permissible current	up to 20 mA
Voltage	up to 24 V
Pulse duration	125 ms in operating mode (1.2 ms in test mode)

Communication interfaces
(continuous)

Pulse value in the operating mode:
- when the output is configured for energy, the value of its pulses can be selected from the list

Energy measurement units	Possible values for the energy pulse *
„kWh" or „MWh"	0,00001; 0,0001; 0,001; 0,01; 0,1; 1; 10; 100; 1000; 10000 MWh/pulse
„GJ"	0,0001; 0,001; 0,01; 0,1; 1; 10; 100; 1000; 10000 GJ/pulse
„Gcal"	0,0001; 0,001; 0,01; 0,1; 1; 10; 100; 1000 Gcal/pulse

** length of values list depends of permanent flow rate and LCD energy value comma position*

- when the output is configured for water quantity, the value of its pulses can be selected from the list: 0,001; 0,01; 0,1; 1; 10 m^3/pulse

For versions with not openable enclosure (IP68), when meter is ordered with the pulse outputs, a permanently connected 1,5 m cable is fitted in the meter for connecting the pulse outputs.

Data logger

Following hourly, daily and monthly parameter values are recorded in energy meter memory (can be configured by SonoMeter 40 UserConfig software):

1..... Integrated heating energy
2..... Integrated cooling energy
3..... Integrated energy of tariff 1
4..... Integrated energy of tariff 2
5..... Integrated volume of liquid
6..... Integrated pulse value in pulse input 1
7..... Integrated pulse value in pulse input 2
8..... Maximum thermal power value for heating and date
9..... Maximum thermal power value for cooling and date
10..... Maximum flow rate value and date
11..... Maximum value of flow temperature of heat conveying liquid and date
12..... Maximum value of return temperature of heat conveying liquid and date
13..... Minimum value of flow temperature of heat conveying liquid and date
14..... Minimum value of return temperature of heat conveying liquid and date
15..... Minimum value of temperature difference and date
16..... Average value of flow temperature of heat conveying liquid
17..... Average value of return temperature of heat conveying liquid
18..... Operating time without an error of thermal energy calculation
19..... Total error code
20..... Time when the flow rate exceeded 1.2 qs
21..... Time when the flow rate was less than qi

Data logger capacity
- up to 1480 h - for hourly records
- up to 1130 days - for daily records
- up to 36 last months - for monthly records
- Storage time of measured integrated parameters even if device is disconnected from power supply: not less than 15 years

All data from archive can be read by means of the remote reading. In addition, data logger records of monthly parameters can be seen on the display.

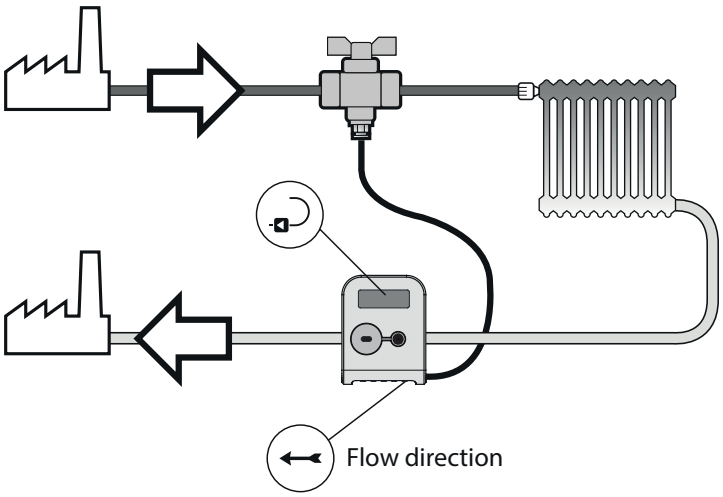
Bifunctional meters

When the cooling energy tariff function is activated, in case of a negative temperature differential, energy will be accumulated in the additional tariff register $Q_{\ddagger}$. In this case, energy values are calculated according to the following formulas:

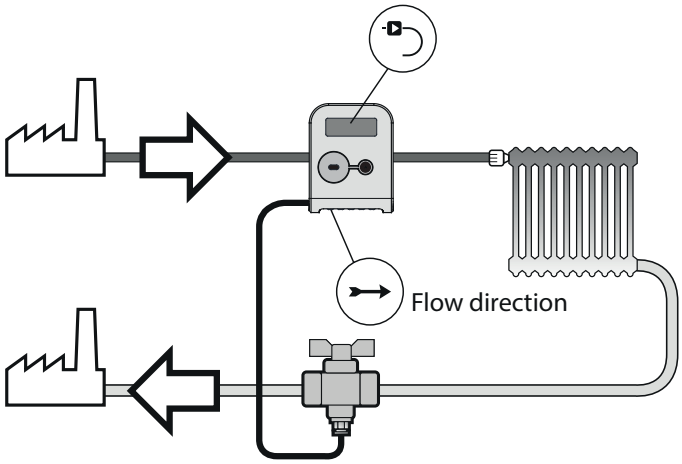
– when the flow sensor is in the supply line
when $\Theta 1 > \Theta 2$: $Q = V \cdot \rho_1 \cdot (h_{T1}-h_{T2})$, $Q_{\ddagger} = 0$
when $\Theta 1 < \Theta 2$: $Q_{\ddagger} = V \cdot \rho_1 \cdot (h_{T2}-h_{T1})$, $Q = 0$

– when the flow sensor is in the return line
when $\Theta 1 > \Theta 2$: $Q = V \cdot \rho_2 \cdot (h_{T1}-h_{T2})$, $Q_{\ddagger} = 0$
when $\Theta 1 < \Theta 2$: $Q_{\ddagger} = V \cdot \rho_2 \cdot (h_{T2}-h_{T1})$, $Q = 0$

Application drawings

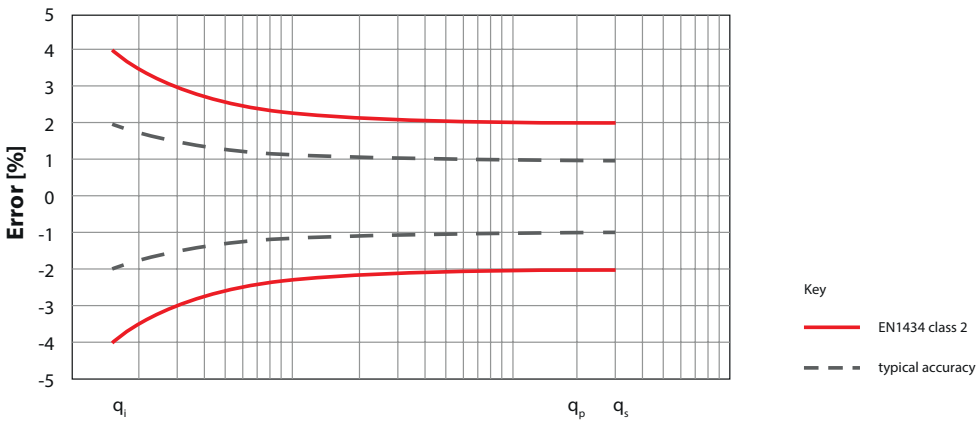


Return pipe installation



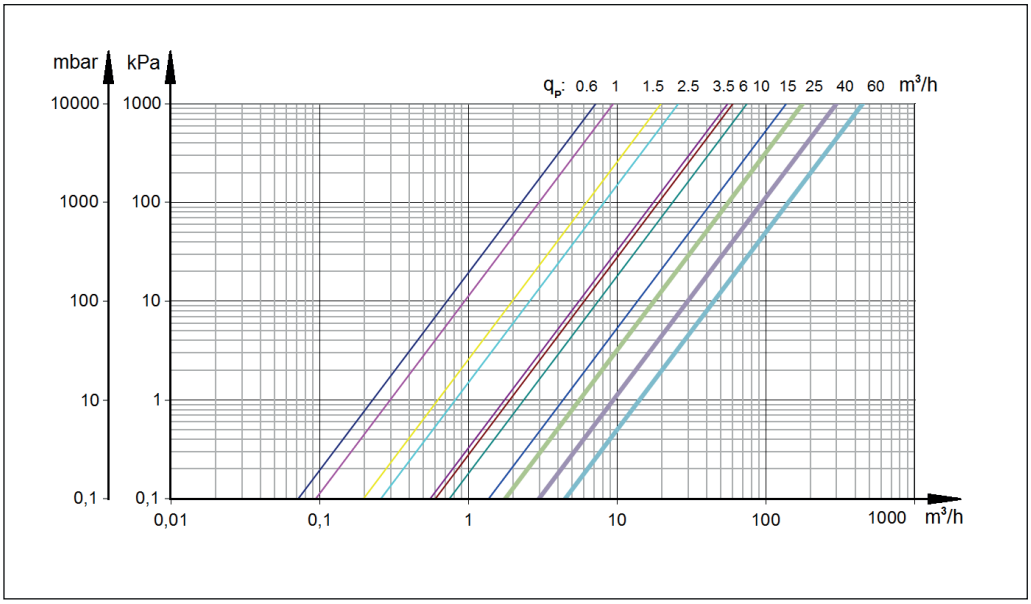
Supply pipe installation

Accuracy

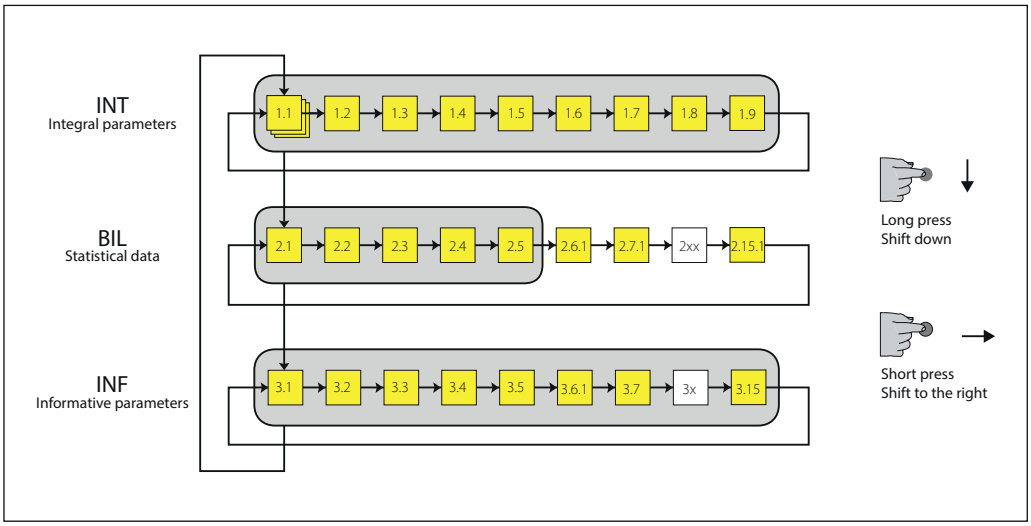


Flow measurment accuracy

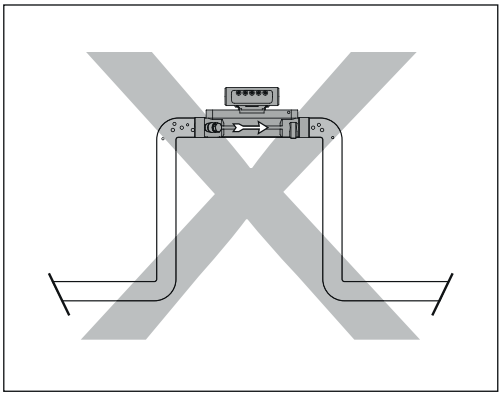
Pressure loss



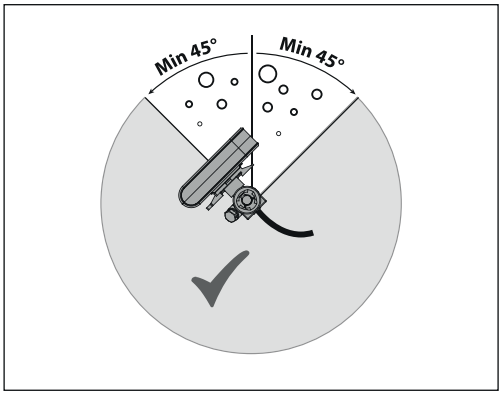
Menu structure



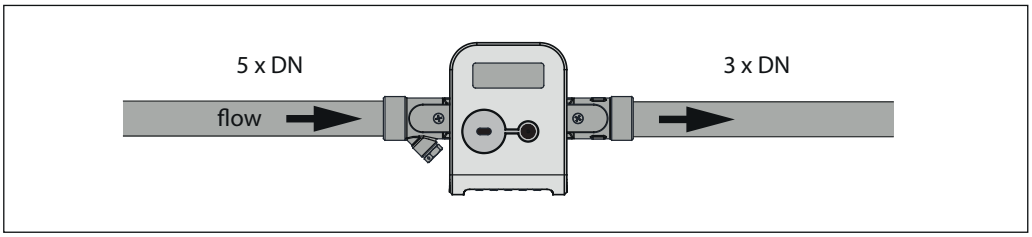
Mounting



Pipe position:
No limitations but avoid positions where air can be collected.



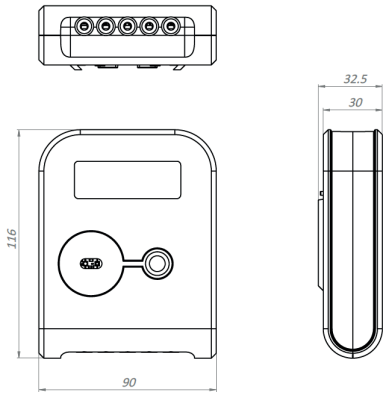
Rotation in pipe axis:
Flow sensor should be angled in 45 to 315° to avoid air collection in flow sensor.



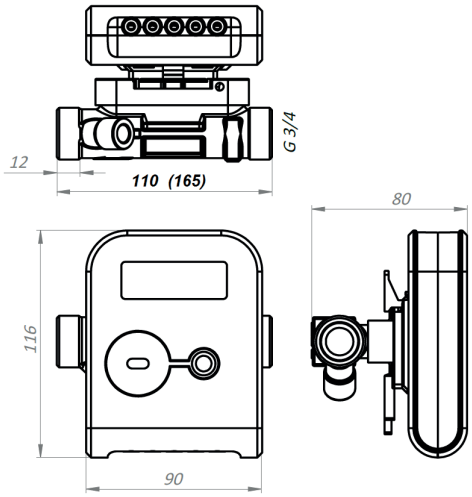
Inlet/outlet conditions (only for DN 65 - DN 100)
In order to maximize accuracy, it is necessary to have straight inlet and outlet flow conditions before and after the flow sensor: 5 × DN on inlet and 3 × DN on outlet of flow sensor.

Dimensions

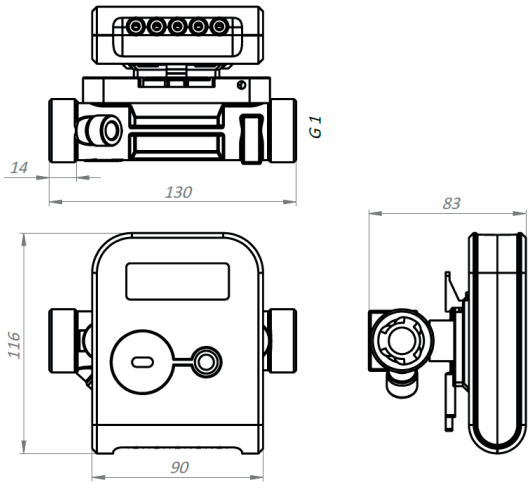
Calculator



Flow sensor qp= 0.6/1.0/1.5 m^3/h
L=110 mm (L=165 mm);
connection type: thread G3/4"



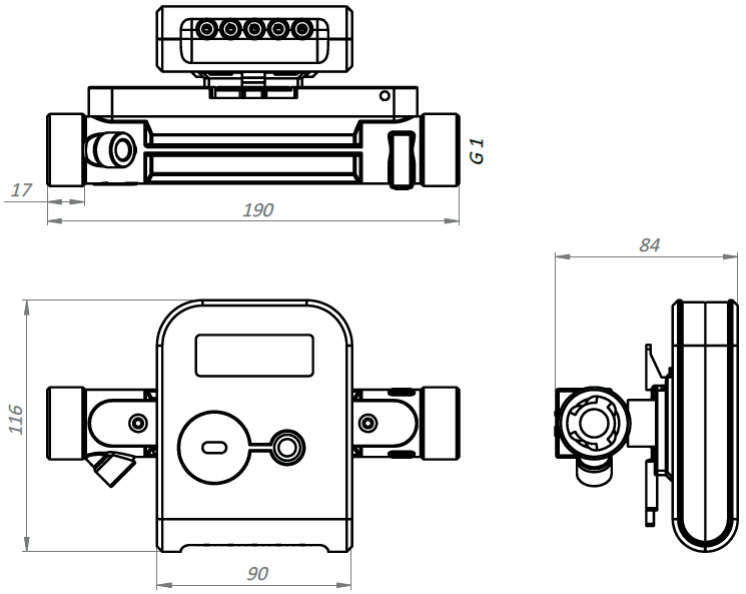
Flow sensor qp= 1.5/2.5 m^3/h
L=130 mm
connection type: thread G1"



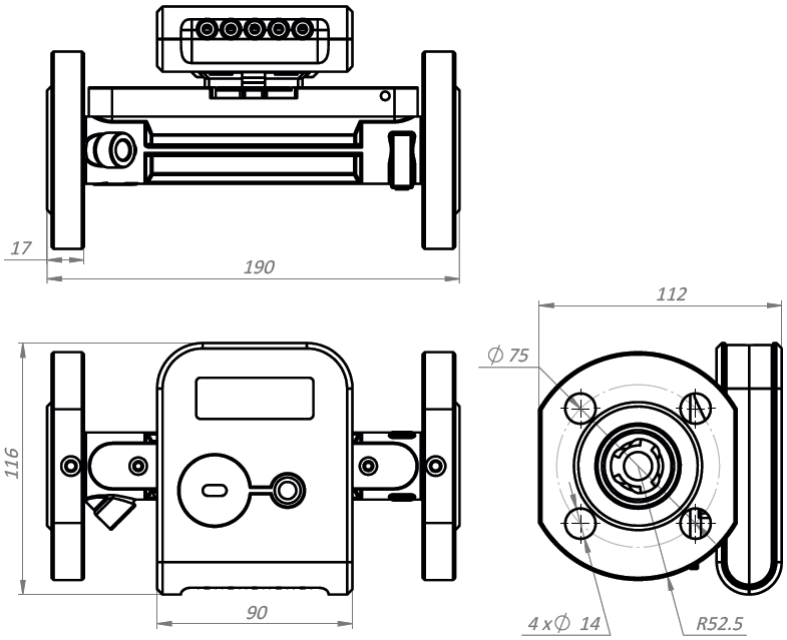
Dimensions
(continuous)

Flow sensor qp= 0.6/1.0/1.5/2.5 m^3/h
L=190 mm
a) connection type: thread G1“
b) connection type: flanges DN20

a)



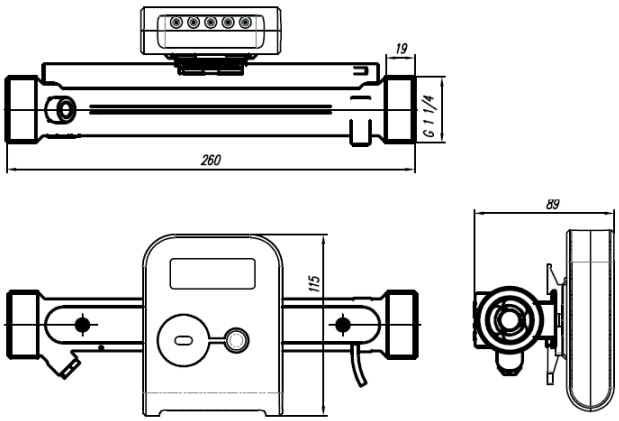
b)



Dimensions
(continuous)

Flow sensor qp= 3.5 m³/h
L=260 mm
a) connection type: thread G1 1/4"
b) connection type: flanges DN25
c) connection type: flanges DN32

a)



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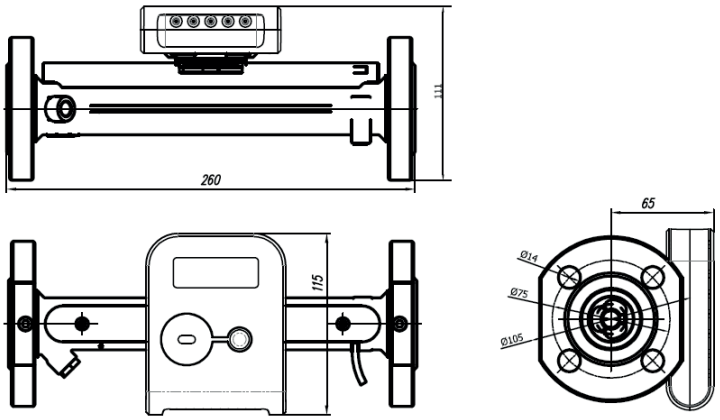
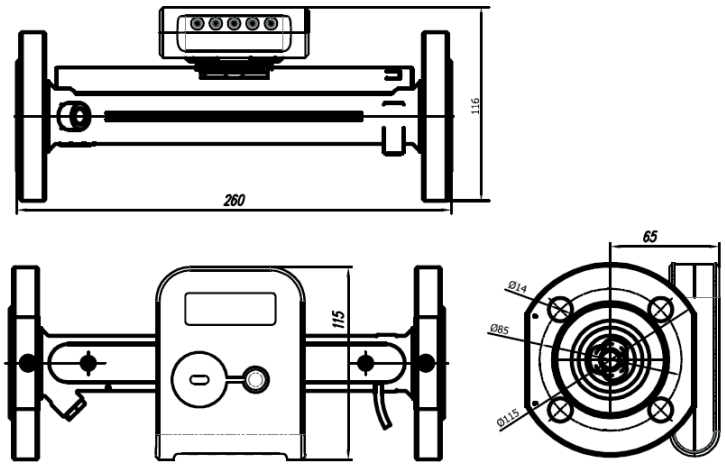


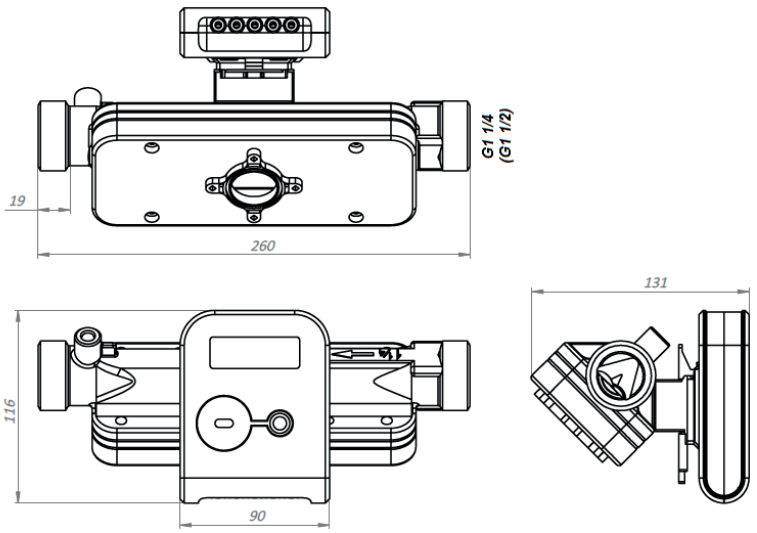
c)



Dimensions
(continuous)

Flow sensor qp= 6 m³/h
L=260 mm.
a) connection type: thread G1 1/4"
b) connection type: flanges DN25
c) connection type: flanges DN32

a)



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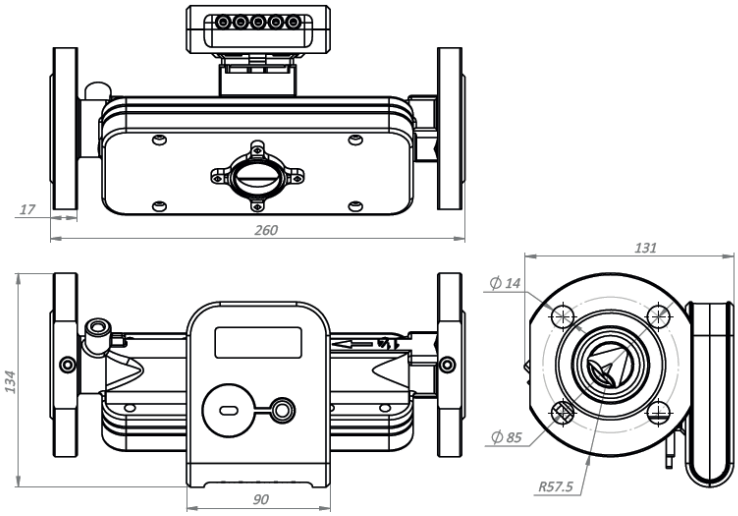

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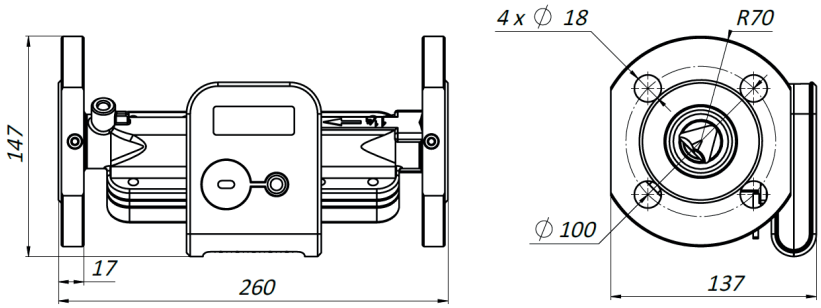
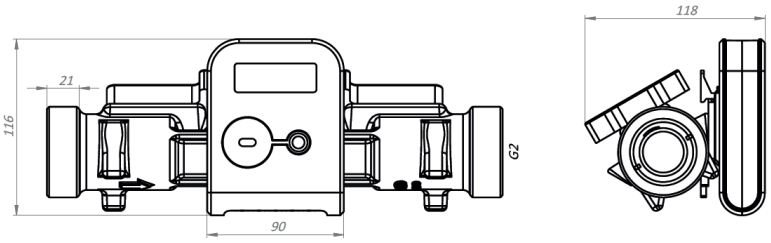


Dimensions
(continuous)

Flow sensor qp= 10.0 m³/h
L=300 mm
a) connection type: thread G2“
b) connection type: flanges DN40

a)



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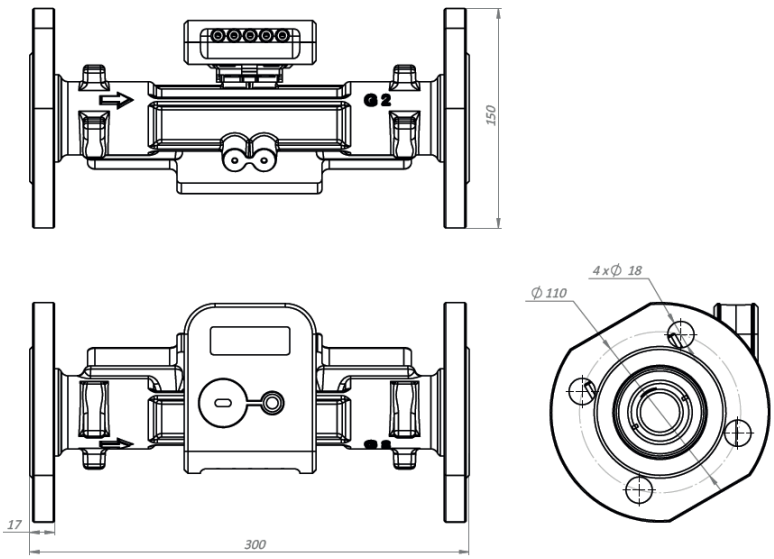
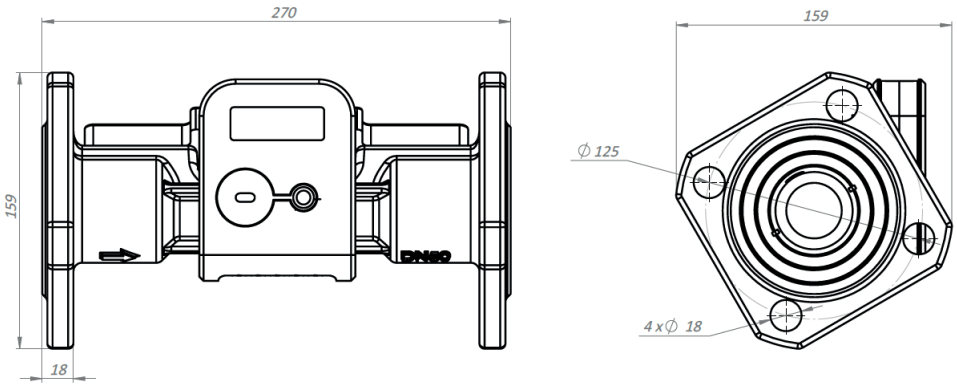
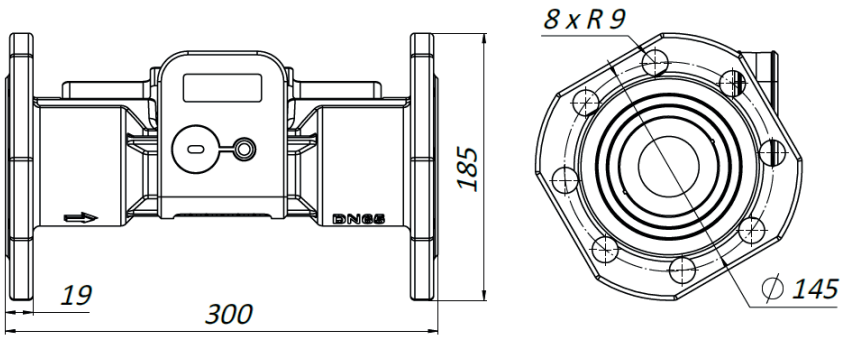


Flow sensor qp= 15 m³/h
L=270 mm
connection type: flanges DN50

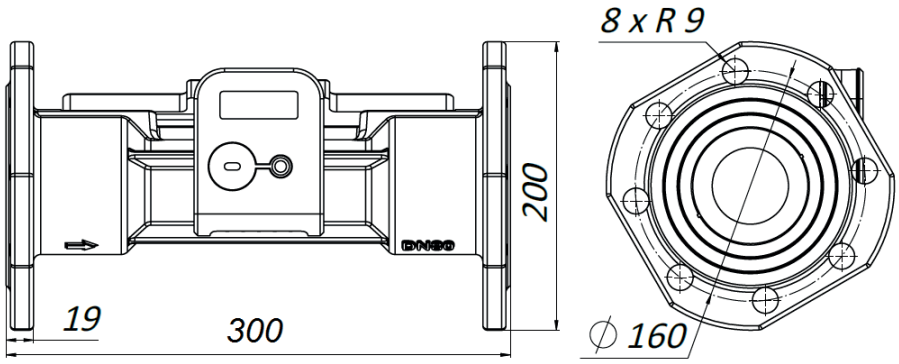


Dimensions
(continuous)

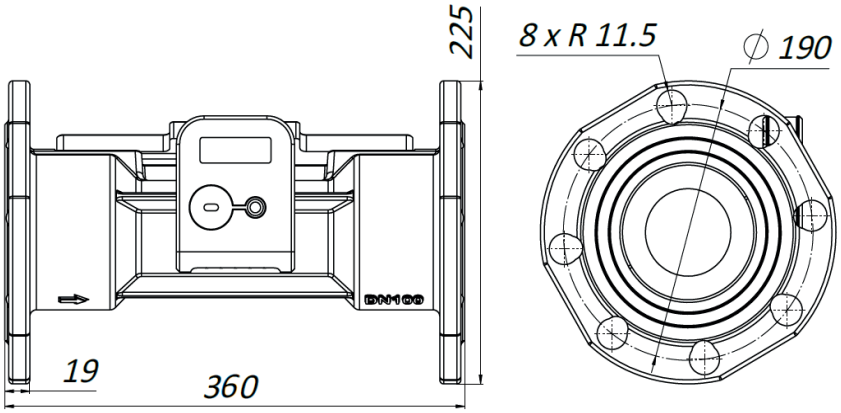
Flow sensor qp= 25 m³/h
L=300 mm
connection type: flanges DN65



Flow sensor qp= 40 m³/h
L=300 mm
connection type: flanges DN80



Flow sensor qp= 60 m³/h
L=360 mm
connection type: flanges DN100



Weight

Connection type (and length) of the flow sensor	Weight of the meter, maximum (kg)
G3/4" (110 mm)	0.7
G3/4" (165 mm)	0.8
G1" (110 mm)	0.7
G1" (130 mm)	0.8
G1" (190 mm)	0.9
DN20 (190 mm)	2.5
G1 ¼"	3.2
DN25	5.6
DN32	6.0
G2"	3.7
DN40	6.8
DN50	8.5
DN65	13
DN80	15
DN100	18

Ordering

SonoMeter 40 - Heating

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN15 qp0.6m³/h 110mm G¾"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2000**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2001**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2026**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2027**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2052**
	Supply	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2053**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2084**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2085**
DN15 qp1.5m³/h 110mm G¾"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2002**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2003**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2028**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2029**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2054**
	Supply	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2055**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	MWh	**187F2078**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2086**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2087**
	Supply	1.2m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2118**
DN20 qp2.5m³/h 130mm G1"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2006**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2007**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2032**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2033**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2058**
	Supply	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2059**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2090**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2091**
	Supply	1.2m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2119**
DN20 qp2.5m³/h 190mm G1"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2008**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2009**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2034**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2035**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2060**
	Supply	1.2m	1.5m	Mains power 230V	MBus	-	kWh	**187F2061**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	MWh	**187F2079**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2092**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2093**

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN25 qp3.5m³/h 260mm G1¼"	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2010**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2011**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2036**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2037**
	Return	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2062**
	Supply	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2063**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	MWh	**187F2080**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2094**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2095**
	Supply	1.2m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2120**
DN25 qp6.0m³/h 260mm G1¼"	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2012**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2013**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2038**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2039**
	Return	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2064**
	Supply	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2065**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	MWh	**187F2081**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2096**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2097**
	Supply	1.2m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2121**
DN40 qp10m³/h 300mm G2"	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2014**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2015**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2040**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2041**
	Return	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2066**
	Supply	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2067**
	Return	2.5m	3m	Mains power 230V	MBus	-	MWh	**187F2082**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2098**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2099**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2122**
DN40 qp10m³/h 300mm threaded flange	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2016**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2017**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2042**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2043**
	Return	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2068**
	Supply	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2069**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2100**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2101**
DN50 qp15m³/h 270mm flange	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2018**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2019**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2044**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	kWh	**187F2045**
	Return	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2070**
	Supply	2.5m	3m	Mains power 230V	MBus	-	kWh	**187F2071**
	Return	2.5m	3m	Mains power 230V	MBus	-	MWh	**187F2083**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2102**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2103**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2110**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2111**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2123**
DN65 qp25m³/h 300mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2020**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2021**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2046**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2047**
	Return	5m	5m	Mains power 230V	MBus	-	MWh	**187F2072**
	Supply	5m	5m	Mains power 230V	MBus	-	MWh	**187F2073**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2104**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2105**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2112**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2113**

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN80 qp40m³/h 300mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2022**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2023**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2048**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2049**
	Return	5m	5m	Mains power 230V	MBus	-	MWh	**187F2074**
	Supply	5m	5m	Mains power 230V	MBus	-	MWh	**187F2075**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2106**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2107**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2114**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2115**
DN100 qp60m³/h 360mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2024**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	**187F2025**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2050**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	MWh	**187F2051**
	Return	5m	5m	Mains power 230V	MBus	-	MWh	**187F2076**
	Supply	5m	5m	Mains power 230V	MBus	-	MWh	**187F2077**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2108**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	**187F2109**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2116**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	**187F2117**

Ordering

SonoMeter 40 - Combined heating and cooling

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN15 qp0.6m³/h 110mm G¾"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2600**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2601**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2626**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	-	**187F2639**
	Return	1.2m	1.5m	Mains power 230V	OMS	-	-	**187F2652**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2665**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2678**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2691**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2704**
DN15 qp1.5m³/h 110mm G¾"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2602**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2603**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2627**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	-	**187F2640**
	Return	1.2m	1.5m	Mains power 230V	OMS	-	-	**187F2653**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2666**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2679**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2692**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2705**
DN20 qp1.5m³/h 130mm G1"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2604**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2605**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2628**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	-	**187F2641**
	Return	1.2m	1.5m	Mains power 230V	OMS	-	-	**187F2654**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2667**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2680**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2693**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2706**
DN20 qp2.5m³/h 130mm G1"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2606**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2607**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2629**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	-	**187F2642**
	Return	1.2m	1.5m	Mains power 230V	OMS	-	-	**187F2655**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2668**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2681**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2694**
		1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2707**

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN20 qp2.5m³/h 190mm G1"	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2608**
	Supply	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2609**
	Return	1.2m	1.5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2630**
	Return	1.2m	1.5m	Mains power 230V	MBus	-	-	**187F2643**
	Return	1.2m	1.5m	Mains power 230V	OMS	-	-	**187F2656**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2669**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2682**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2695**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2708**
DN25 qp3.5m³/h 260mm G1¼"	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2610**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2611**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2631**
	Return	2.5m	3m	Mains power 230V	MBus	-	-	**187F2644**
	Return	2.5m	3m	Mains power 230V	OMS	-	-	**187F2657**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2670**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2683**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2696**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2709**
DN25 qp6.0m³/h 260mm G1¼"	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2612**
	Supply	2.5m	3m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2613**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2632**
	Return	2.5m	3m	Mains power 230V	MBus	-	-	**187F2645**
	Return	2.5m	3m	Mains power 230V	OMS	-	-	**187F2658**
	Return	1.2m	1.5m	Mains power 230V	-	Modbus	-	**187F2671**
	Return	1.2m	1.5m	Mains power 24V AC/DC	-	Modbus	-	**187F2684**
	Supply	1.2m	1.5m	Mains power 230V	-	BACnet	-	**187F2697**
	Supply	1.2m	1.5m	Mains power 24V AC/DC	-	BACnet	-	**187F2710**
DN40 qp10m³/h 300mm G2"	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2614**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2615**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2633**
	Return	2.5m	3m	Mains power 230V	MBus	-	-	**187F2646**
	Return	2.5m	3m	Mains power 230V	OMS	-	-	**187F2659**
	Return	2.5m	3m	Mains power 230V	-	Modbus	-	**187F2672**
	Return	2.5m	3m	Mains power 24V AC/DC	-	Modbus	-	**187F2685**
	Supply	2.5m	3m	Mains power 230V	-	BACnet	-	**187F2698**
	Supply	2.5m	3m	Mains power 24V AC/DC	-	BACnet	-	**187F2711**
DN40 qp10m³/h 300mm threaded flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2616**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2617**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2634**
	Return	2.5m	3m	Mains power 230V	MBus	-	-	**187F2647**
	Return	2.5m	3m	Mains power 230V	OMS	-	-	**187F2660**
	Return	2.5m	3m	Mains power 230V	-	Modbus	-	**187F2673**
	Return	2.5m	3m	Mains power 24V AC/DC	-	Modbus	-	**187F2686**
	Supply	2.5m	3m	Mains power 230V	-	BACnet	-	**187F2699**
	Supply	2.5m	3m	Mains power 24V AC/DC	-	BACnet	-	**187F2712**
DN50 qp15m³/h 270mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2618**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2619**
	Return	2.5m	3m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2635**
	Return	2.5m	3m	Mains power 230V	MBus	-	-	**187F2648**
	Return	2.5m	3m	Mains power 230V	OMS	-	-	**187F2661**
	Return	2.5m	3m	Mains power 230V	-	Modbus	-	**187F2674**
	Return	2.5m	3m	Mains power 24V AC/DC	-	Modbus	-	**187F2687**
	Supply	2.5m	3m	Mains power 230V	-	BACnet	-	**187F2700**
	Supply	2.5m	3m	Mains power 24V AC/DC	-	BACnet	-	**187F2713**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2717**
		5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2718**

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN65 qp25m³/h 300mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2620**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2621**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2636**
	Return	5m	5m	Mains power 230V	MBus	-	-	**187F2649**
	Return	5m	5m	Mains power 230V	OMS	-	-	**187F2662**
	Return	5m	5m	Mains power 230V	-	Modbus	-	**187F2675**
	Return	5m	5m	Mains power 24V AC/DC	-	Modbus	-	**187F2688**
	Supply	5m	5m	Mains power 230V	-	BACnet	-	**187F2701**
	Supply	5m	5m	Mains power 24V AC/DC	-	BACnet	-	**187F2714**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2719**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2720**
DN80 qp40m³/h 300mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2622**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2623**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2637**
	Return	5m	5m	Mains power 230V	MBus	-	-	**187F2650**
	Return	5m	5m	Mains power 230V	OMS	-	-	**187F2663**
	Return	5m	5m	Mains power 230V	-	Modbus	-	**187F2676**
	Return	5m	5m	Mains power 24V AC/DC	-	Modbus	-	**187F2689**
	Supply	5m	5m	Mains power 230V	-	BACnet	-	**187F2702**
	Supply	5m	5m	Mains power 24V AC/DC	-	BACnet	-	**187F2715**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2721**
	Supply	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2722**
DN100 qp60m³/h 360mm flange	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2624**
	Supply	5m	5m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2625**
	Return	5m	5m	Battery 3.6V DC (2 AA-cell)	OMS	-	-	**187F2638**
	Return	5m	5m	Mains power 230V	MBus	-	-	**187F2651**
	Return	5m	5m	Mains power 230V	OMS	-	-	**187F2664**
	Return	5m	5m	Mains power 230V	-	Modbus	-	**187F2677**
	Return	5m	5m	Mains power 24V AC/DC	-	Modbus	-	**187F2690**
	Supply	5m	5m	Mains power 230V	-	BACnet	-	**187F2703**
	Supply	5m	5m	Mains power 24V AC/DC	-	BACnet	-	**187F2716**
	Return	5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2723**
		5m	10m	Battery 3.6V DC (2 AA-cell)	MBus	-	-	**187F2724**

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Ordering
Accessories

Product	Designation	Quantity	Code no.
Optical head	Optical head OG-1-USB	1 pc	**187F3112**
Power supply	Battery 3.6 V DC (AA cell)	1 pc	**187F3113**
	Mains unit 230 V AC (external module)	1 pc	**187F3114**
	Mains unit 24 V AC/DC	1 pc	-
Temperature sensor Ø 5.2 mm	Pt 500 / Ø 5.2 mm / 1.5 m cable, MID	1 pair	**187F3125**
	Pt 500 / Ø 5.2 mm / 3 m cable, MID	1 pair	**187F3127**
	Pt500 / Ø 5.2 mm / 5 m cable, MID	1 pair	**187F3390**
	Pt500 / Ø 5.2 mm / 10 m cable, MID	1 pair	**187F3391**
Temperature sensor Ø 6.0 mm	Pt500 / Ø 6.0 mm / 3 m cable, MID	1 pair	**187F3123**
	Pt500 / Ø 6.0 mm / 5 m cable, MID	1 pair	**187F3124**
	Pt500 / Ø 6.0 mm / 10 m cable, MID	1 pair	**187F3389**
Ball valve for Ø 5.2 mm temperature sensor Single pack	DN15 - 1/2" for direct sensor	1 pc	**187F0593**
	DN20 - 3/4" for direct sensor	1 pc	**187F0592**
	DN25 - 1" for direct sensor	1 pc	**187F0591**
	DN32 - 5/4" for direct sensor	1 pc	**187F3448**
Ball valve for Ø 5.2 mm temperature sensor Multi pack	DN15 - for direct sensor,12pc	12 pcs.	**087H0118**
	DN20 - for direct sensor,12pc	12 pcs.	**087H0119**
	DN25 - for direct sensor,12pc	12 pcs.	**087H0120**
	DN32 - for direct sensor,12pc	12 pcs.	**187F3449**
T-Fitting	DN15: G½", G½", G½" PN25 130 °C	1 pc	**014U1959**
	DN20: G¾", G½", G¾" PN25 130 °C	1 pc	**014U1960**
	DN25: G1", G½", G1" PN25 130 °C	1 pc	**014U1961**
	DN32: G11/4", G½", G11/4" PN25 130 °C	1 pc	**014U1963**
Pockets for Ø 5.2 mm temperature sensors	Ø 5.2 mm, brass, 35 mm length	1 pair	**087G6053**
	Ø 5.2 mm, brass, 52 mm length	1 pair	**087G6054**
	Ø 5.2 mm, brass, 85 mm length	1 pair	**087G6055**
	Ø 5.2 mm, brass,120 mm length	1 pair	**087G6056**
	Ø 5.2 mm, stainless steel, 85 mm length	1 pair	**087G6057**
	Ø 5.2 mm, stainless steel, 120 mm length	1 pair	**087G6058**
	Ø 5.2 mm, stainless steel, 155 mm length	1 pair	**087G6059**
	Ø 5.2 mm, stainless steel, 210 mm length	1 pair	**087G6060**
Pockets for Ø 6.0 mm temperature sensors	Ø 6.0 mm, brass, 40 mm length	1 pair	**087G6061**
	Ø 6.0 mm, brass, 85 mm length	1 pair	**087G6062**
	Ø 6.0 mm, brass, 120 mm length	1 pair	**087G6063**
	Ø 6.0 mm, stainless steel, 85 mm length	1 pair	**087G6064**
	Ø 6.0 mm, stainless steel, 120 mm length	1 pair	**087G6065**
	Ø 6.0 mm, stainless steel, 155 mm length	1 pair	**087G6066**
	Ø 6.0 mm, stainless steel, 210 mm length	1 pair	**087G6067**
Tailpiece connection set	DN15 G3/4"-R1/2" PN25 130 °C	1 pair	**087G6071**
	DN20 G1"-R3/4" PN25 130 °C	1 pair	**087G6072**
	DN25 G1 1/4"-R1" PN25 130 °C	1 pair	**087G6073**
	DN40 G2"-R1 1/2" PN25 130°C	1 pair	**087G6074**
Adapter for Ø 5.2 mm temperature sensor	R½" to M10x1 (1pc) - incl. copper gasket for flat sealing. PN25 130 °C	1 pc.	**087G6075**
	R½" to M10x1 (32pcs.) - incl. copper gasket for flat sealing. PN25 130 °C	32 pcs.	**087G6076**
	R½" to M10x1 (1pc) - conical thread for sealing with hemp. PN25 130 °C	1 pcs.	**014U1941**
	R½" to M10x1 (32pcs.) - conical thread for sealing with hemp. PN25 130 °C	32 pcs.	**014U1935**
Adapter for Ø 5.2 mm temperature sensor	M10x1 plastic installation set	20 pcs.	**087G6077**
	M10x1 brass installation set	20 pcs.	**087G6078**

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