

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 m³/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 x 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	$\Delta\theta$: 3 - 175K
	θ : 0 - 180 °C
	θ_q : 0.1 - 130 °C
Temp. limits (energy calculation)	$\Delta\theta$: 0.2 - 180K
	θ : 0 - 180 °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 (68 on special request)	
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 $2 \times 0.25 \text{ mm}^2$
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 $2 \times 0.25 \text{ mm}^2$
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 - Gcal - °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 25	DN 40	DN 50	DN 65	DN 80	DN 100			
Nominal flow q_p (m³/h)	0.6		1.0		1.5		2.5	3.5	6	10	15	25	40	60			
Max flow q_s (m³/h)	1.2		2		3		5	7	12	20	30	50	80	120			
Minimum flow (1:100) q_i (m³/h)	0.006		0.01		0.015		0.025	0.035	0.06	0.1	0.15	0.25	0.4	0.6			
Cut off flow q_c (m³/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} (m³/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	94	198	90	100	180	120	200			
K_{vs} values	2.27	6.32	2.97	6.32	3.63	6.23	5.59	8.15	5.62	11.67	18.97	23.57	43.3	55.9			
Connection	G¾B	G1B	FL	G¾B	G1B	FL	G¾B	G1B	FL	G1B	G1¼B	G1¼B	G2B	FL			
Overall length (mm)	110	190	110	190	110	165	190	130	190	130	260	260	300	270			
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	Ø5.2 mm / IP65 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)

Data sheet

SonoMeter 40

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 m³/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 q_s
- 21..... Time when the flow rate was less than q_i

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

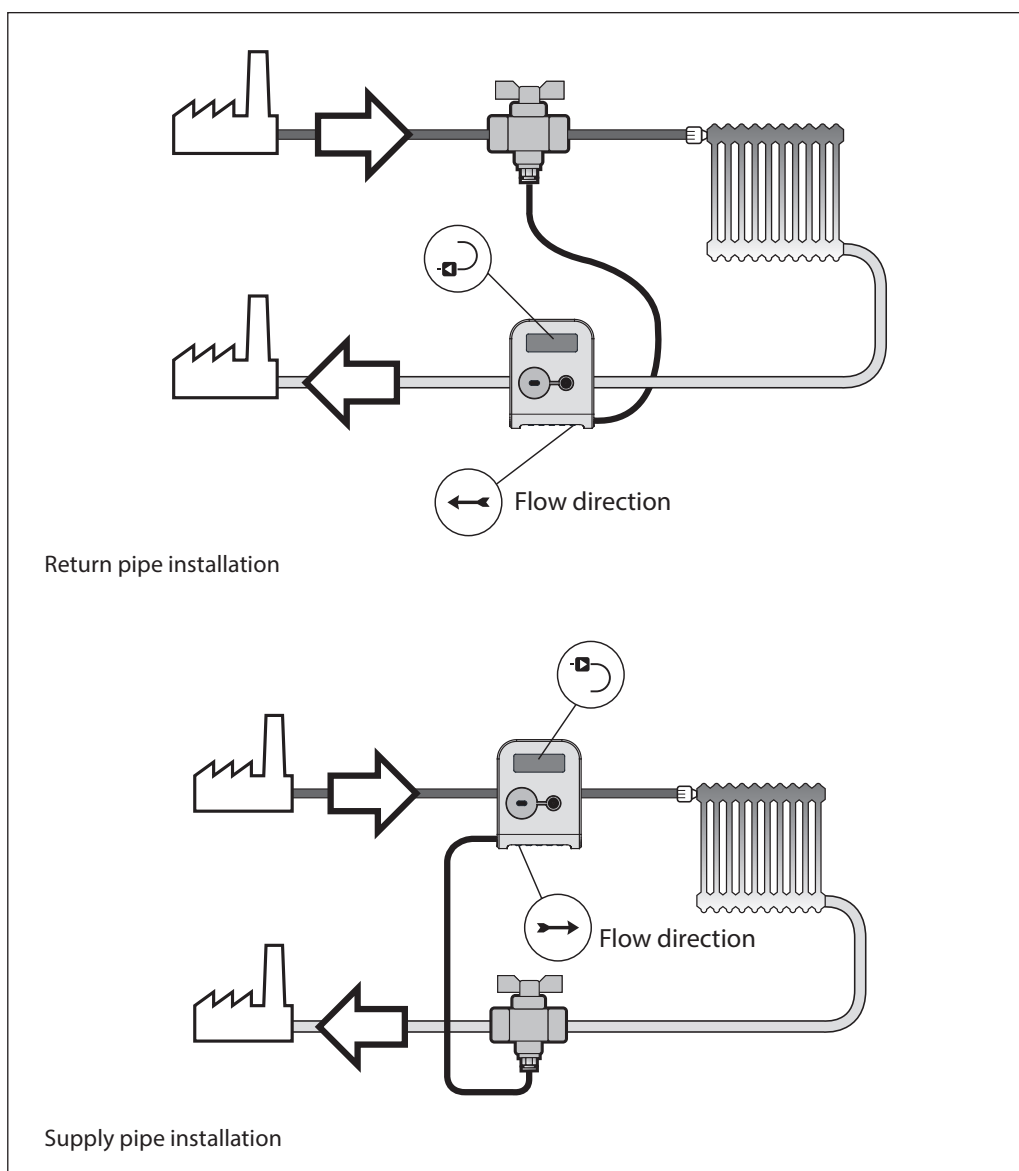
All data from archive can be read by means of the remote reading. In addition, data logger records of monthly parameters can be seen on the display.

Bifunctional meters

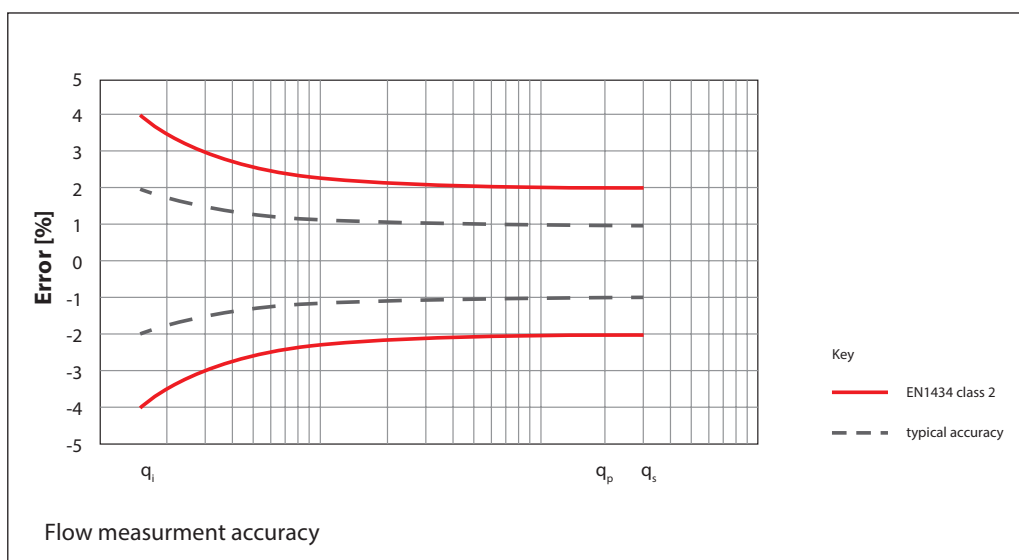
When the cooling energy tariff function is activated, in case of a negative temperature differential, energy will be accumulated in the additional tariff register Q*. In this case, energy values are calculated according to the following formulas:

- when the flow sensor is in the supply line
when $\Theta_1 > \Theta_2$: $Q = V \cdot \rho_1 \cdot (h_{T1} - h_{T2})$, $Q^* = 0$
when $\Theta_1 < \Theta_2$: $Q^* = V \cdot \rho_1 \cdot (h_{T2} - h_{T1})$, $Q = 0$
- when the flow sensor is in the return line
when $\Theta_1 > \Theta_2$: $Q = V \cdot \rho_2 \cdot (h_{T1} - h_{T2})$, $Q^* = 0$
when $\Theta_1 < \Theta_2$: $Q^* = V \cdot \rho_2 \cdot (h_{T2} - h_{T1})$, $Q = 0$

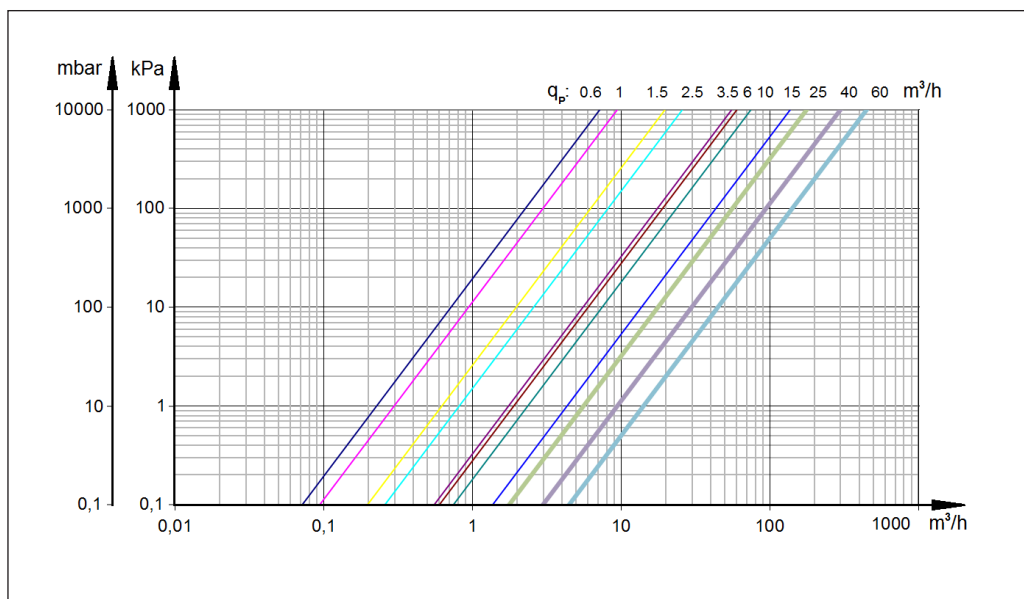
Application drawings



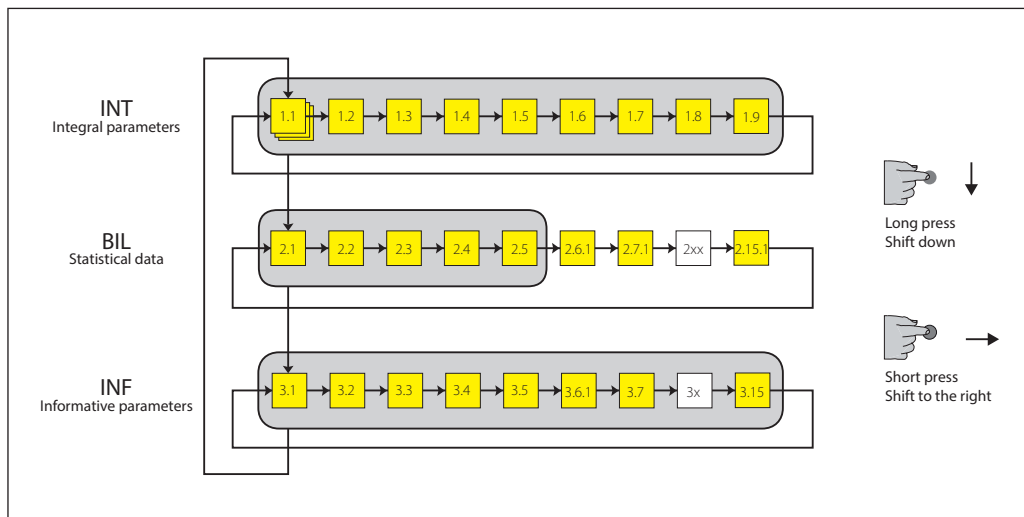
Accuracy



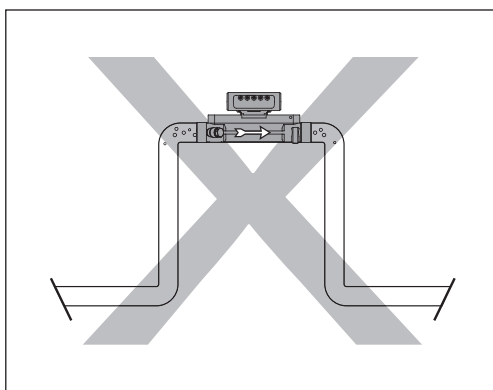
Pressure loss



Menu structure

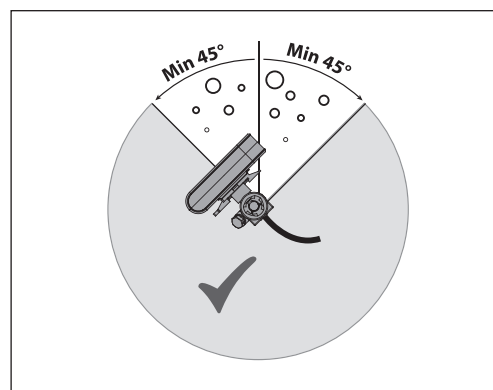


Mounting



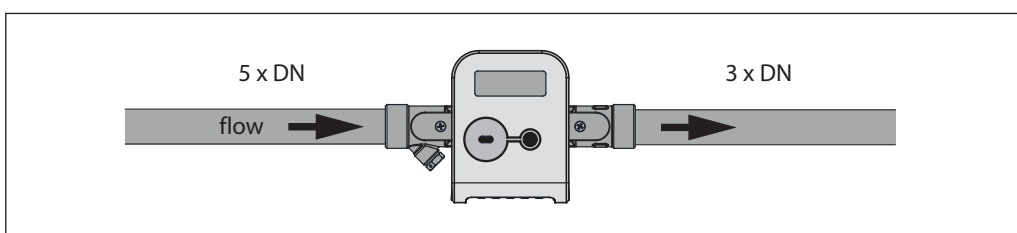
Pipe position:

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.

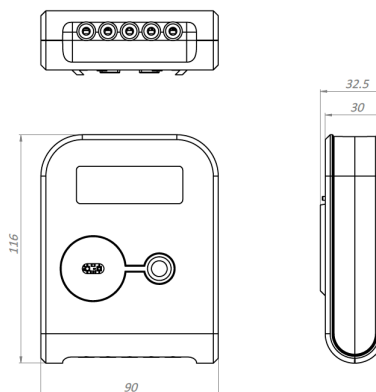


Inlet/outlet conditions (only for DN 65 - DN 100)

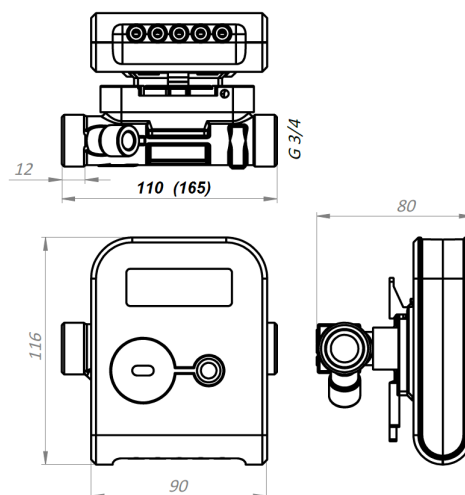
In order to maximize accuracy, it is necessary to have straight inlet and outlet flow conditions before and after the flow sensor: 5 x DN on inlet and 3 x DN on outlet of flow sensor.

Dimensions

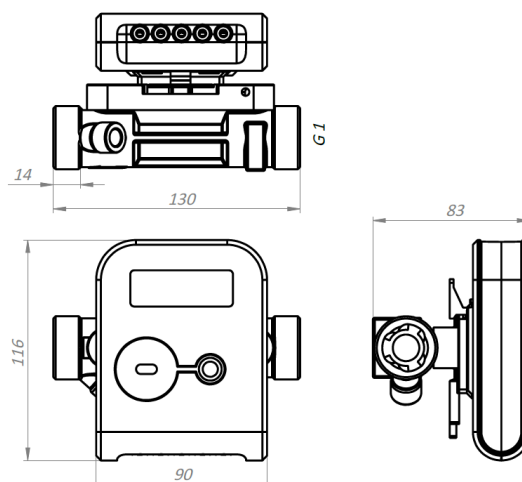
Calculator



Flow sensor qp= 0.6/1.0/1.5 m³/h
L=110 mm (L=165 mm);
connection type: thread G3/4"



Flow sensor qp= 1.5/2.5 m³/h
L=130 mm
connection type: thread G1"



Dimensions
(continuous)

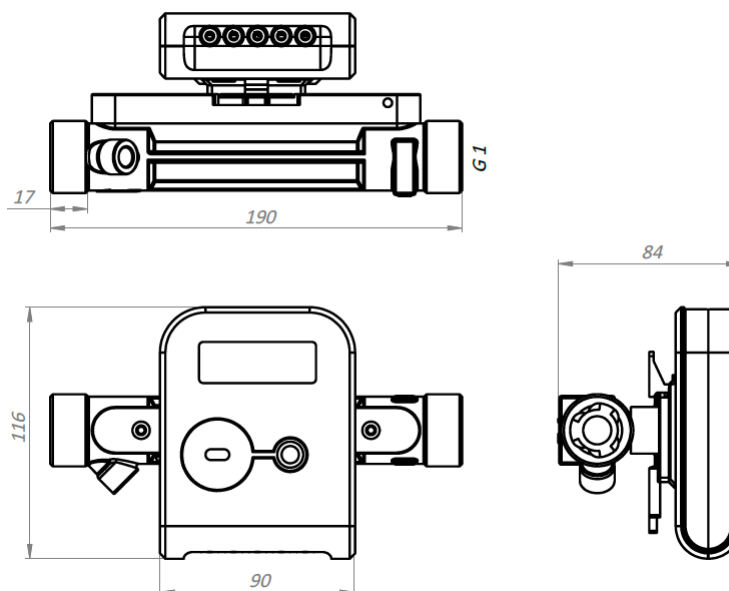
Flow sensor qp= 0.6/1.0/1.5/2.5 m³/h

L=190 mm

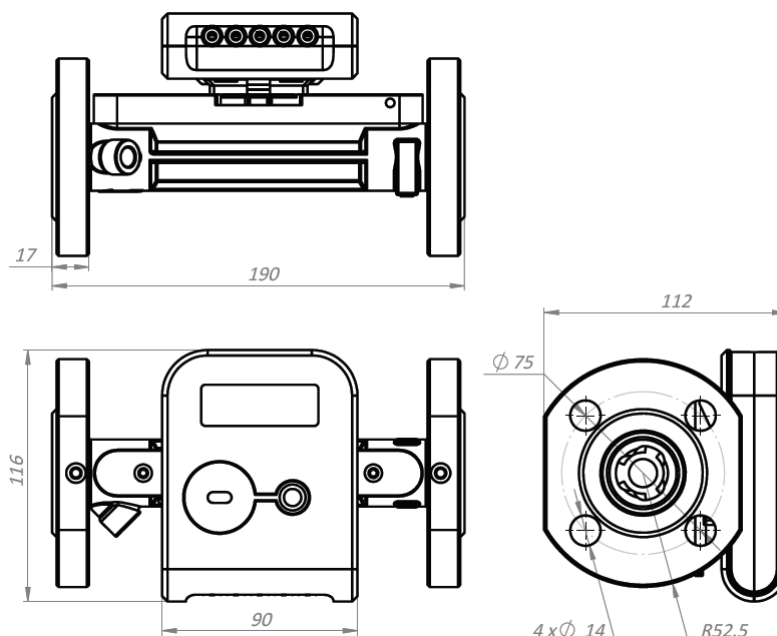
a) connection type: thread G1"

b) connection type: flanges DN20

a)



b)



Dimensions
(continuous)

Flow sensor qp= 3.5 m³/h

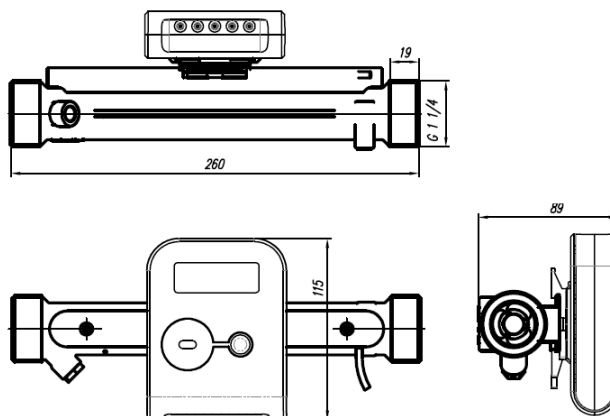
L=260 mm

a) connection type: thread G1 1/4"

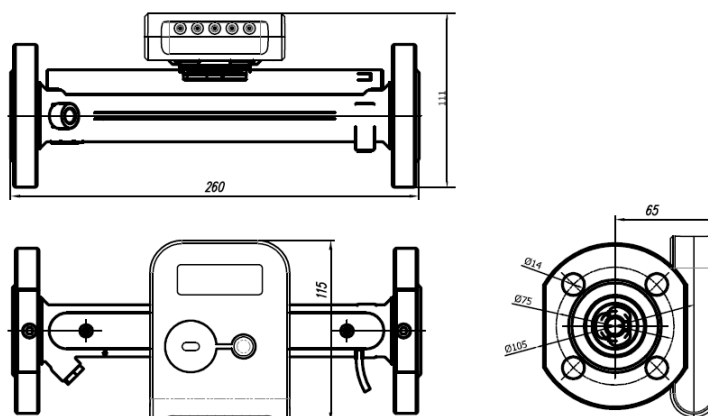
b) connection type: flanges DN25

c) connection type: flanges DN32

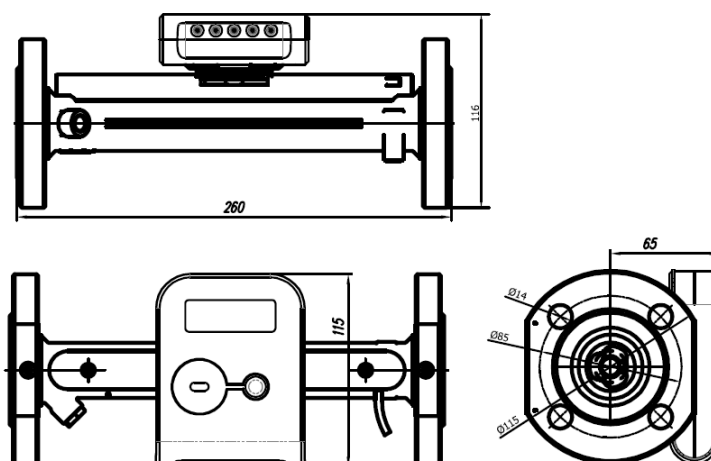
a)



b)



c)



Dimensions
(continuous)

Flow sensor qp= 6 m³/h

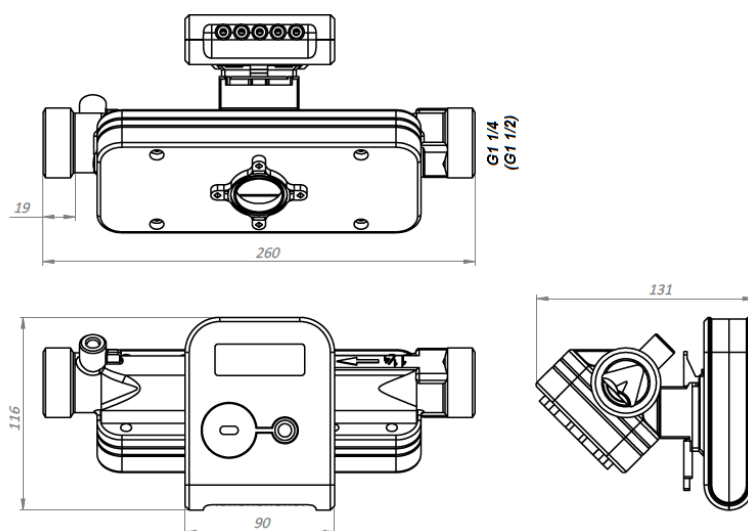
L=260 mm.

a) connection type: thread G1 1/4"

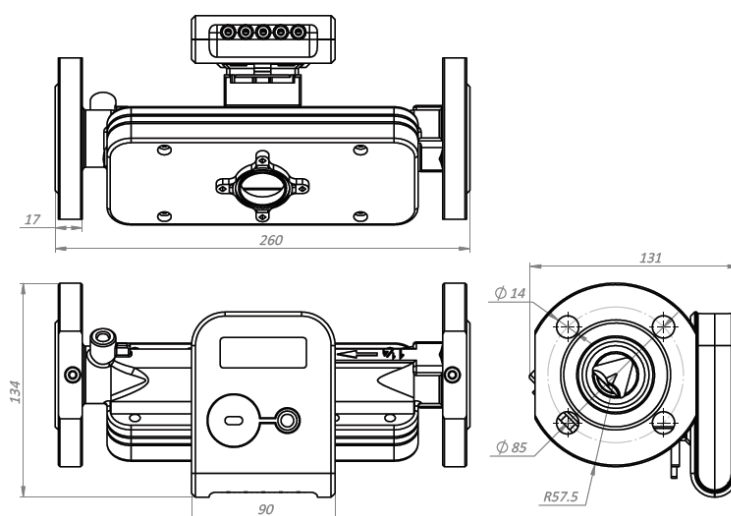
b) connection type: flanges DN25

c) connection type: flanges DN32

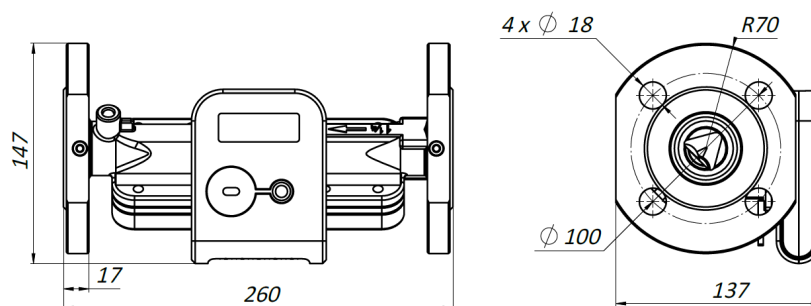
a)



b)



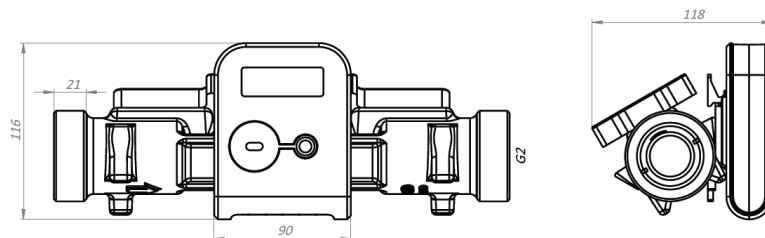
c)



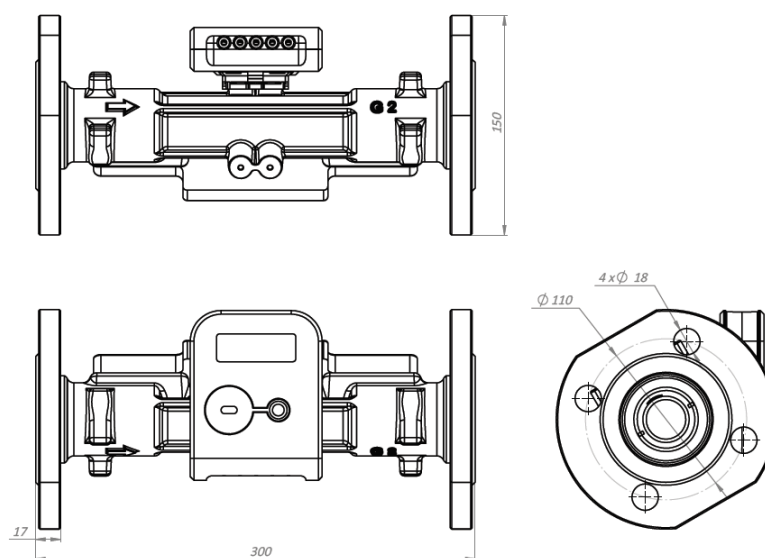
Dimensions
(continuous)

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

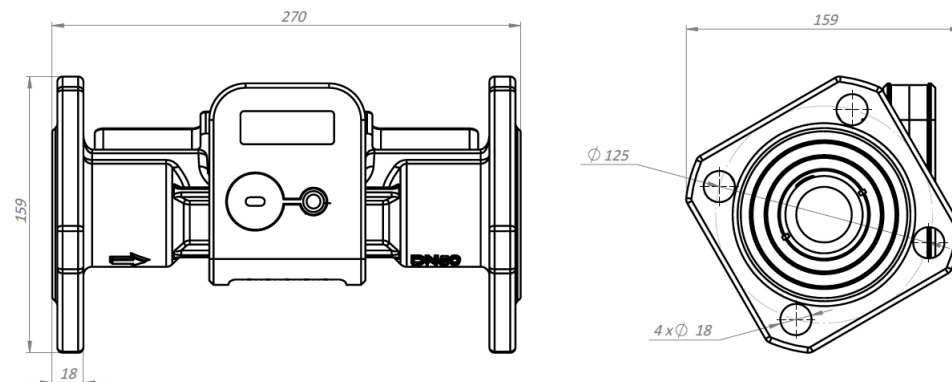
a)



b)

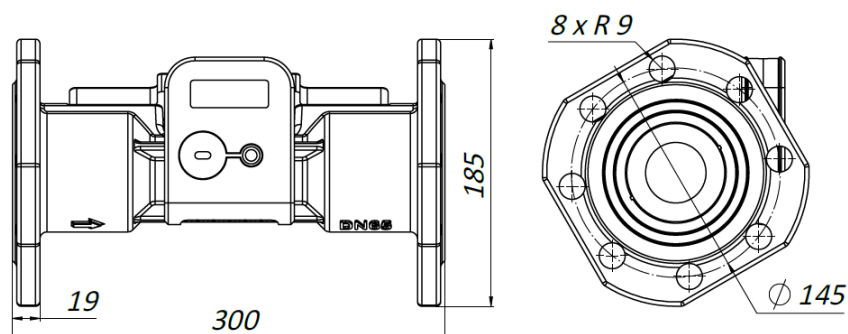


Flow sensor qp= 15 m³/h
L=270 mm
connection type: flanges DN50

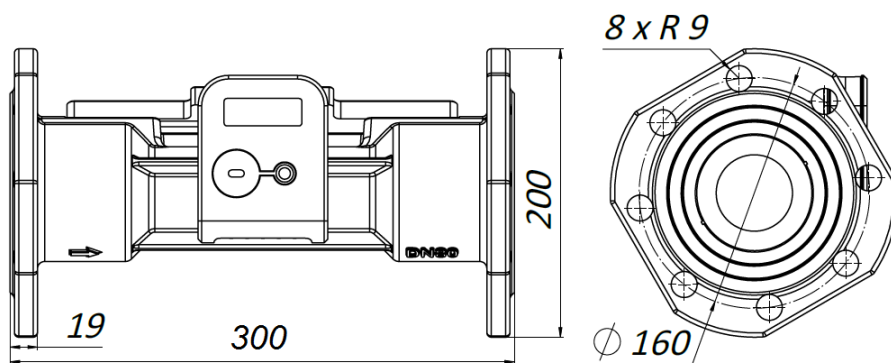


Dimensions
(continuous)

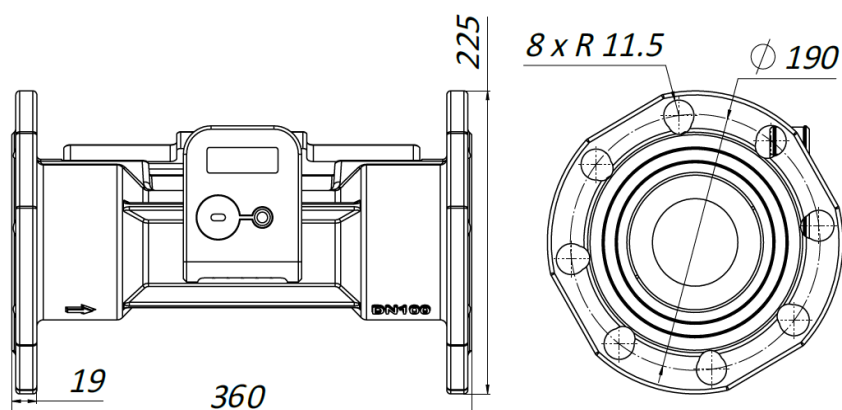
Flow sensor qp= 25 m³/h
L=300 mm
connection type: flanges DN65



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



Data sheet

SonoMeter 40

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 G¾ 110mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2000
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2001
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2026
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2027
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2052
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2053
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2084
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2085
DN15 qp1.5m³/h G¾ 110mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2002
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2003
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2028
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2029
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2054
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2055
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2078
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2086
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2087
	Supply	1.2m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2118
DN20 qp1.5m³/h G1 130mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2004
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2005
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2030
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2031
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2056
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2057
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2088
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2089
DN20 qp2.5m³/h G1 130mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2006
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2007
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2032
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2033
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2058
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2059
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2090
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2091
	Supply	1.2m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2119

Data sheet

SonoMeter 40

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 G1 190mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2008
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2009
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2034
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2035
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2060
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2061
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2079
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2092
DN25 qp3.5m³/h G1¼ 260mm	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2093
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2010
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2011
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2036
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2037
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2062
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2063
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2080
DN25 qp6.0m³/h G1¼ 260mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2094
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2095
	Supply	1.2m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2120
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2012
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2013
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2038
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2039
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2064
DN25 qp6.0m³/h threaded flange 260mm	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2065
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2081
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2096
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2097
	Supply	1.2m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2121
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2162
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2014
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2015
DN40 qp10m³/h G2 300mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2040
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2041
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2066
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2067
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2082
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2098
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2099
	Supply	2.5m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2122
DN40 qp10m³/h threaded flange 300mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2016
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2017
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2042
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2043
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2068
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2069
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2100
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2101
DN50 qp15m³/h flange 270mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2018
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2019
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2044
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2045
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2070
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2071
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2083
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2102
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2103
	Return	5m	5m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2110
	Supply	5m	5m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2111
	Supply	2.5m	3m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2123

Data sheet

SonoMeter 40

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 flange 300mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2020
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2021
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2046
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2047
	Return	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2072
	Supply	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2073
	Return	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2104
	Supply	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2105
	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2112
DN80 qp40m³/h flange 300mm	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2113
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2022
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2023
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2048
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2049
	Return	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2074
	Supply	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2075
	Return	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2106
	Supply	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2107
DN100 qp60m³/h flange 360mm	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2114
	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2115
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2024
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2025
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2050
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2051
	Return	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2076
	Supply	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2077
	Return	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2108
DN15 qp0.6m³/h G¾ 110mm	Supply	5m	10m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	GJ	187F2109
	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2116
	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2117
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2600
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2601
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2626
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2639
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2652
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2665
DN15 qp1.5m³/h G¾ 110mm	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2678
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2691
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2704
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2725
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2738
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2751
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2602
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2603
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2627
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2640
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2653
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2666
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2679
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2692
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2705
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2726
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2739
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2752

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 G¾ 110mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2600
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2601
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2626
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2639
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2652
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2665
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2678
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2691
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2704
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2725
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2738
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2751
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2602
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2603
DN15 qp1.5m³/h G¾ 110mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2627
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2640
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2653
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2666
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2679
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2692
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2705
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2726
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2739
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2752

Data sheet

SonoMeter 40

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 qp15m ³ /h G1 130mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2604
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2605
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2628
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2641
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2654
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2667
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2680
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2693
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2706
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2727
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2740
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2753
DN20 qp2.5m ³ /h G1 130mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2606
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2607
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2629
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2642
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2655
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2668
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2681
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2694
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2707
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2728
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2741
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2754
DN20 qp2.5m ³ /h G1 190mm	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2608
	Supply	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2609
	Return	1.2m	1.5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2630
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2643
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2656
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2669
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2682
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2695
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2708
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2729
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2742
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2755
DN25 qp3.5m ³ /h G1¼ 260mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2610
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2611
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2631
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2644
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2657
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2670
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2683
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2696
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2709
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2730
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2743
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2756
DN25 qp6.0m ³ /h G1¼ 260mm	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2612
	Supply	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2613
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2632
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2645
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2658
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2671
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2684
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2697
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2710
	Supply	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2731
	Return	1.2m	1.5m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2744
	Return	1.2m	1.5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2757

Data sheet

SonoMeter 40

Nominal flow, size and connection type	Installation	Cable length transducer cable	Cable length temperature sensor	Power supply	Communication integrated	Modules	Energy unit	Code no.
DN40 qp10m ³ /h G2 300mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2614
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2615
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2633
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2646
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2659
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2672
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2685
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2698
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2711
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2732
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2745
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2758
DN40 qp10m ³ /h threaded flange 300mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2616
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2617
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2634
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2647
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2660
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2673
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2686
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2699
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2712
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2733
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2746
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2759
DN50 qp15m ³ /h flange 270mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2618
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2619
	Return	2.5m	3m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	kWh	187F2635
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus	-	kWh	187F2648
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	MBus+OMS	-	kWh	187F2661
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	Modbus	kWh	187F2674
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2687
	Supply	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2700
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2713
	Return	5m	5m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2717
	Supply	5m	5m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2718
	Supply	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	kWh	187F2734
	Return	2.5m	3m / Ø5.2mm	Mains power 230V	-	BACnet	kWh	187F2747
	Return	2.5m	3m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	kWh	187F2760
DN65 qp25m ³ /h flange 300mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2620
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus	-	MWh	187F2621
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	MBus+OMS	-	MWh	187F2636
	Return	5m	5m / Ø5.2mm	Mains power 230V	MBus	-	MWh	187F2649
	Return	5m	5m / Ø5.2mm	Mains power 230V	MBus+OMS	-	MWh	187F2662
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	Modbus	MWh	187F2675
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2688
	Supply	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2701
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2714
	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2719
	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	MBus	-	kWh	187F2720
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2735
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2748
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2761

Data sheet

SonoMeter 40

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 qp40m ³ /h flange 300mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	MWh	187F2622
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	MWh	187F2623
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus+OMS	-	MWh	187F2637
	Return	5m	5m / Ø5.2mm	Mains power 230V	Mbus	-	MWh	187F2650
	Return	5m	5m / Ø5.2mm	Mains power 230V	Mbus+OMS	-	MWh	187F2663
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	Modbus	MWh	187F2676
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2689
	Supply	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2702
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2715
	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	kWh	187F2721
	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	kWh	187F2722
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2736
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2749
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2762
DN100 qp60m ³ /h flange 360mm	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	MWh	187F2624
	Supply	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	MWh	187F2625
	Return	5m	5m / Ø5.2mm	Battery 3.6V DC (2 AA-cell)	Mbus+OMS	-	MWh	187F2638
	Return	5m	5m / Ø5.2mm	Mains power 230V	Mbus	-	MWh	187F2651
	Return	5m	5m / Ø5.2mm	Mains power 230V	Mbus+OMS	-	MWh	187F2664
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	Modbus	MWh	187F2677
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2690
	Supply	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2703
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2716
	Return	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	kWh	187F2723
	Supply	5m	10m / Ø6mm	Battery 3.6V DC (2 AA-cell)	Mbus	-	kWh	187F2724
	Supply	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	Modbus	MWh	187F2737
	Return	5m	5m / Ø5.2mm	Mains power 230V	-	BACnet	MWh	187F2750
	Return	5m	5m / Ø5.2mm	Mains power 24V AC/DC	-	BACnet	MWh	187F2763

**Ordering
Accessories**

Product	Designation	Quantity	Code no.
Optical head	Optical head OG-1-USB	1 pc	187F3112
Power supply	Sono40 Battery 3.6V DC A-cell	1 pc	187F2970
	Sono40 Mains unit 24V AC/DC + 230V AC	1 pc	187F2971
Communication modules	Sono40 M-Bus module	1 pc	187F2972
	Sono40 Modbus RTU module	1 pc	187F2973
	Sono40 BACnet MSTP module	1 pc	187F2974
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: G1/2", G1/2", G1/2" PN25 130 °C	1 pc	014U1959
	DN20: G3/4", G1/2", G3/4" PN25 130 °C	1 pc	014U1960
	DN25: G1", G1/2", G1" PN25 130 °C	1 pc	014U1961
	DN32: G1 1/4", G1/2", G1 1/4" PN25 130 °C	1 pc	014U1943
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
Pockets for Ø 6.0 mm temperature sensors	Ø 5.2 mm, stainless steel, 210 mm length	1 pair	087G6060
	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
Tailpiece connection set	Ø 6.0 mm, stainless steel, 210 mm length	1 pair	087G6067
	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
Adapter for Ø 5.2 mm temperature sensor	DN40 G2"-R1 1/2" PN25 130°C	1 pair	087G6074
	R1/2" to M10x1 (1pc) - incl. copper gasket for flat sealing. PN25 130 °C	1 pc.	087G6075
	R1/2" to M10x1 (32pcs.) - incl. copper gasket for flat sealing. PN25 130 °C	32 pcs.	087G6076
	R1/2" to M10x1 (1pc) - conical thread for sealing with hemp. PN25 130 °C	1 pcs.	014U1941
Adapter for Ø 5.2 mm temperature sensor	R1/2" to M10x1 (32pcs.) - conical thread for sealing with hemp. PN25 130 °C	32 pcs.	014U1935
	M10x1 plastic installation set	20 pcs.	087G6077
	M10x1 brass installation set	20 pcs.	087G6078



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