

DESCRIPTION

The UHC100 series has been designed to measure heating and cooling energy. It can be used with heating/cooling water in centrally heated or cooled spaces, such as residential houses or buildings. The meter includes a flow sensor, calculator and two temperature sensors. The meter is delivered in user configuration mode with the ability to configure meter parameters and features, including units, mounting position, pulse outputs, communication ON/OFF and other meter parameters.

- Residential and commercial use
- MID DN15...100
- Canada 1/2...1-1/2 in. NPT

FEATURES

- Static liquid metering using ultrasonic technology
- Heating and cooling
- EN1434:2015 Standard heat meter approval; Accuracy Class 2
- Canada Weights and Measures heat meter approval option, Accuracy Class 2
- No straight sections required for 1/2...1-1/2 in. (DN15...50)
- Temperature of conveying liquid: 41...266° F (5...130° C)
- Fifteen year battery life or external power options
- Optional communication modules
- Mounting in any installation position
- Integral data logger with time/date

BENEFITS

- Low maintenance with no moving parts to wear
- Simple setup using single-button display
- Measure and record energy and flow totals
- View daily and previous month totals

APPLICATIONS

Monitor thermal energy in water based heating and cooling systems:

- Residential apartment or condominium tenant billing
- Commercial building or office tenant billing

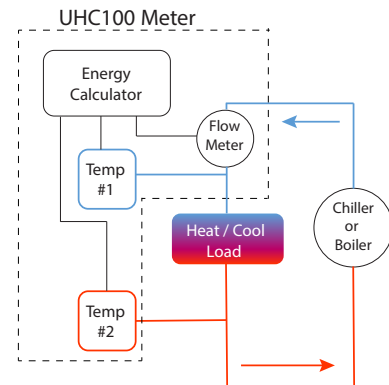
AMR INTERFACES, OPTIONAL

- W-Mbus 868 MHz (where allowed by local codes)
- M-Bus



OPERATION

Each UHC100 meter includes a flow meter, a matched pair of insertion RTDs and calculator electronics. By measuring the flow rate of the heating or chilling water and the temperature drop across a zone, the calculator of the meter determines the thermal energy used.



Flow Rate, Temperature Delta → Energy

CALCULATOR FUNCTIONS

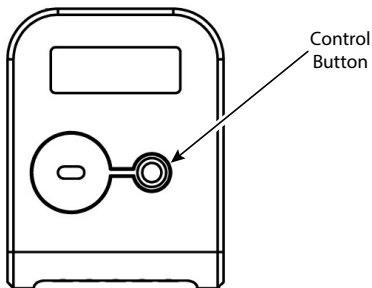
LCD Indicator

The device is equipped with 8-digits LCD (Liquid Crystal Display) with special symbols to display parameters, measurement units and operation modes.

The following information can be displayed:

- Integral and instantaneous measured parameters
- Archive data and set day data
- Device configuration information

Programmable LCD displaying parameters



Optical Interfaces

Integrated into the front panel of the calculator, the display is designed for data reading via M-Bus protocol and parametering of the meter.

Radio Interface

The internal radio provides data reading via W-Mbus telegram:

- Current total energy
- Current flow
- Current date and time
- Accounting date information
- Error date

Data Registration

Hourly, daily and monthly parameter values that can be read only through communication:

- Integrated energy
- Integrated cooling energy
- Integrated energy of tariff
- Integrated volume of liquid
- Integrated pulse value in pulse input 1/2
- Maximum thermal power value for heating/cooling and date
- Maximum value of flow/return temperature of heat conveying liquid and date
- Minimum value of flow/return temperature of heat conveying liquid and date
- Minimum value of temperature difference and date
- Average value of flow/return temperature of heat conveying liquid
- Operating time without an error
- Total error code
- Time when the flow rate exceeded $1.2 Q_s$
- Time when the flow rate was less than $1.2 Q_i$

Data Logger History Values

- Every hour, day and month values of the measured parameters are stored in internal memory
- 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
- Hours for archive records: 1480 h
- Days for archive records: 1130 days
- Months for archive records: 36 months

Time of storage of all measured integral data, also without power supply to the electronic unit: at least 15 years.

Power Supply

Power supply (one of following depending on meter configuration):

- AA battery 3.6 V 2.4 Ah (Li-SOCl₂) battery, operation time at least 15 years \pm 1 year.
- 12...42V DC or 12...36V, 50/60 Hz AC external power supply, used current 10 mA and backup battery AA 3.6 V (Li-SOCl₂).
- 230V (10...30%) 50/60 Hz AC power supply, current consumption is not more than 10 mA.

PROGRAMMING AND VERIFICATION

Pulse Value in the Operating Mode

When the output is configured for energy, the pulse value can be selected from the list below, depending on the rated flow q_p and energy measurement units:

Permanent flow rate, q_p, m³/h	0.6...6	10...60
Energy pulse value, when units are kWh or MWh	0.001; 0.01; 0.1; 1 MWh/pulse	0.01; 0.1; 1 MWh/pulse
Energy pulse value, when units are GJ	0.001; 0.01; 0.1; 1 GJ/pulse	0.01; 0.1; 1 GJ/pulse
Energy pulse value, when units are Gcal	0.001; 0.01; 0.1; 1 Gcal/pulse	0.01; 0.1; 1 Gcal/pulse

When the output is configured for water quantity, the pulse value can be selected from the list below, depending on the permanent flow q_p :

Permanent flow rate, q_p, m³/h	0.6...6	10...60
Water volume pulse value, m³/pulse	0.001; 0.01; 0.1; 1	0.01; 0.1; 1

If the meter is ordered with the *pulse input-output* option, then a permanently connected 5 ft (1.5 m) length cable is fitted in the meter for connecting the outputs.

METER SPECIFICATIONS

Accuracy	Class 2 EN1434:2015 certified heat meter Class 2 Canada Weights and Measures heat meter
Standards	EN1434-1:2015 EN1434-2:2015 EN1434-4:2015 EN1434-5:2015 WELMEC 7.2:2015
Q_p/Q_i Dynamic Range	100
Resolution of Flow Rate Indicators	00000.001 m ³

Flow Ranges for Metric Pipe with DN Flange and G Thread

Permanent flow rate q_p , m ³ /h	Upper flow rate q_r , m ³ /h	Lower flow rate q_r , m ³ /h	Threshold value of flow rate, m ³ /h	Length of the flow sensor L, mm	Pressure losses at q_p , kPa	Joining to the pipeline (Thread - G, flange - DN)
0.6 ¹	1.2	0.006	0.003	110	7	G3/4 in.
0.6 ¹	1.2	0.006	0.003	190	0.9	G1 in. or DN20
1 ¹	2	0.01	0.005	110	11.3	G3/4 in.
1 ¹	2	0.01	0.005	190	2.5	G1 in. or DN20
1.5	3	0.006	0.003	110; 165	17.1	G3/4 in.
1.5 ¹	3	0.006	0.003	190	5.8	G1 in. or DN20
2.5	5	0.01	0.005	130	19.8	G1 in.
2.5 ¹	5	0.01	0.005	190	9.4	G1 in. or DN20
3.5	7	0.035	0.017	260	4	G1-1/4 in., G1-1/2 in., DN25 or DN32
6	12	0.024	0.012	260	10	G1-1/4 in., G1-1/2 in., DN25 or DN32
10	20	0.1	0.02	300	18	G2 in. or DN40
15	30	0.15	0.03	270	12	DN50
25	50	0.25	0.05	300	20	DN65
40	80	0.4	0.08	300	18	DN80
60	120	0.6	0.12	360	18	DN100

¹ Special Order

Flow Ranges for U.S./Canada ASME/ANSI Pipe with NPT Thread

Permanent flow rate q_p , gpm (m ³ /h)	Upper flow rate q_u , gpm (m ³ /h)	Lower flow rate q_l , gpm (m ³ /h)	Threshold value of flow rate, gpm (m ³ /h)	Length of the flow sensor & coupling, in. (mm)	Pressure losses at q_p , psi (kPa)	Joining to the pipeline (Thread, Meter Body)
6.6 (1.5)	13.2 (3)	0.3 (0.006)	0.01 (0.003)	6.7 (170)	2.5 (17.1)	1/2 in. NPT (DN15)
11 (2.5)	22 (5)	0.04 (0.01)	0.02 (0.005)	7.6 (193)	2.9 (19.8)	3/4 in. NPT (DN20)
15.4 (3.5)	30.8 (7)	0.2 (0.035)	0.07 (0.017)	12.8 (325)	0.6 (4)	1 in. NPT (DN25)
26.4 (6)	52.8 (12)	0.3 (0.06)	0.05 (0.012)	12.8 (325)	1.5 (10)	1 in. NPT (DN25)
44 (10)	88 (20)	0.4 (0.1)	0.1 (0.02)	14.6 (371)	2.6 (18)	1-1/2 in. NPT (DN40)

MECHANICAL SPECIFICATIONS

Protection Class [IP]	IP67
Ambient Class	Class M1
Medium Temperature	41...266° F (5...130° C)
Medium	Water
Installation Position	All installation positions (vertical, horizontal, rising pipe, down pipe)
Straight Pipe Lengths	DN50 body and smaller, none DN65 and larger, 5 pipe diameters upstream, 3 downstream
Nominal Pressure	PN16 (232 psi, 16 bar)
Flow Sensor Cable Length	3.9 ft (1.2 m); Special order: 8.2 ft or 16.4 ft (2.5 m or 5 m)

MATERIAL SPECIFICATIONS

Part	Material
Flow Sensor	Brass (CW602N)
UT Transducer Body	Thermoplast
Reflectors	Stainless steel
Calculator	Thermoplast PC
Cables	Temperature Sensor: Silicon

CALCULATOR SPECIFICATIONS

LCD Display	8-digit
Protection Class [IP]	IP67
Ambient Class	Electromagnetic Class E2; Mechanical Class M1
Ambient Temperature	41...131° F (5...55° C) condensing humidity, indoor
Units	user-selectable when installing; kWh; MWh; GJ; Gcal; m ³
Resolution of Energy Indicators	user-selectable when installing 0000000.1 kWh, 00000001 kWh, 00000.001 MWh (Gcal or GJ) 000000.01 MWh (Gcal or GJ)
Battery Life	15 years ± 1 year
Temperature Sensor	Pt 500, EN1434-2, two wire connection, cable length up to 16.40 ft (5 m)
Temperature Measurement Range	32...266° F (0...130° C)
Calculator Mounting	Mounting on standard DIN-rail or on the wall
Number of Configurable Pulse Inputs/Outputs	2 or none (to be specified when ordering), OB=in the operating mode; OD=in the test mode

DIMENSIONS

Electronic Unit

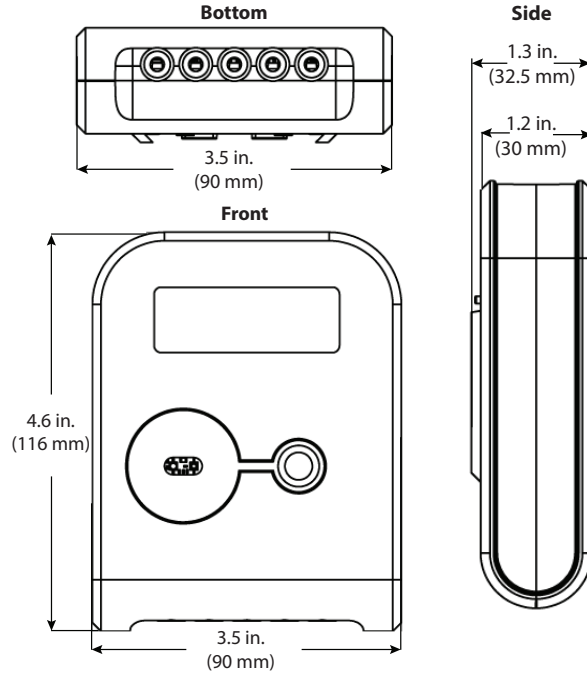


Figure 1: The overall dimensions of calculator of Dynasonics® UHC100 heat meter

IMPORTANT

The marking embossed on the meter is the end connection size, not the meter size.

Example: Flow sensor $Q_p = 1.6/2.5 \text{ m}^3/\text{h}$, threaded end connections G3/4 in., mounting length L = 110 mm

Meter Body	DN15	DN20		DN25		DN32	DN40		DN50	DN65	DN80	DN100
	in. (mm)	in. (mm)		in. (mm)		in. (mm)	in. (mm)		in. (mm)	in. (mm)	in. (mm)	in. (mm)
G - Thread DN - Flange	G3/4 in.	G1	DN20	G1-1/4 G1-1/2	DN25	DN32	G2	DN40	DN50	DN65	DN80	DN100
H	3.1 (80)	3.3 (84)	4.4 (112)	5.2 (131)	5.3 (134)	5.8 (147)	4.6 (118)	5.9 (150)	6.3 (159)	7.3 (185)	7.9 (200)	8.9 (225)
L	4.3 or 6.5 (110 or 165)	4.3 or 5.1 (130 or 190)		10.2 (260)		11.8 (300)		10.6 (270)	11.8 (300)	11.8 (300)	14.2 (360)	

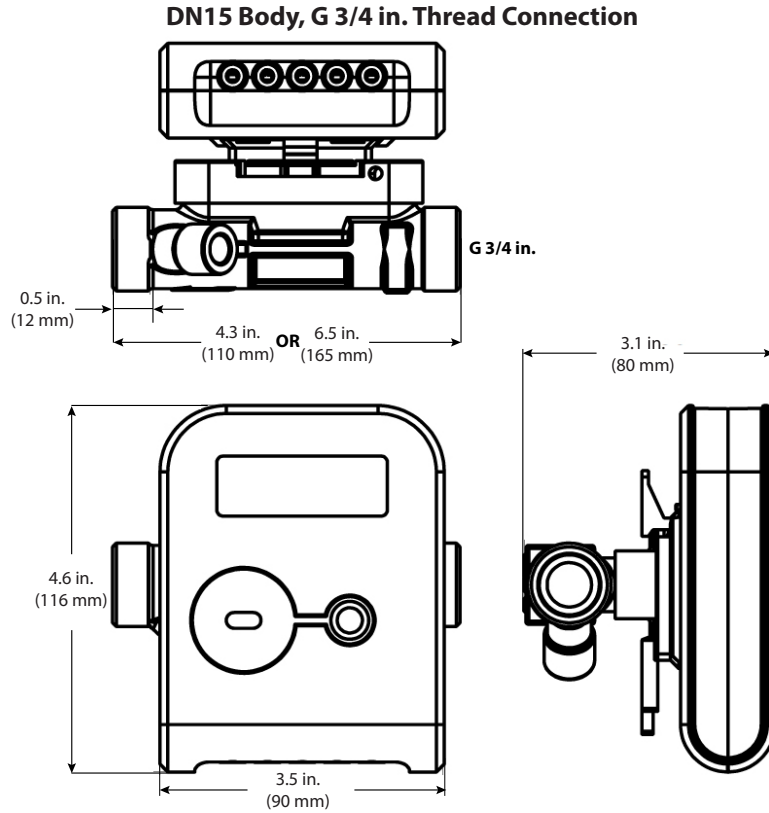


Figure 2: Flow sensor $q_p = 0.6/1.0/1.5 \text{ m}^3/\text{h}$, Length $L=110 \text{ mm}$ ($L=165 \text{ mm}$); connection type: thread G3/4 in.

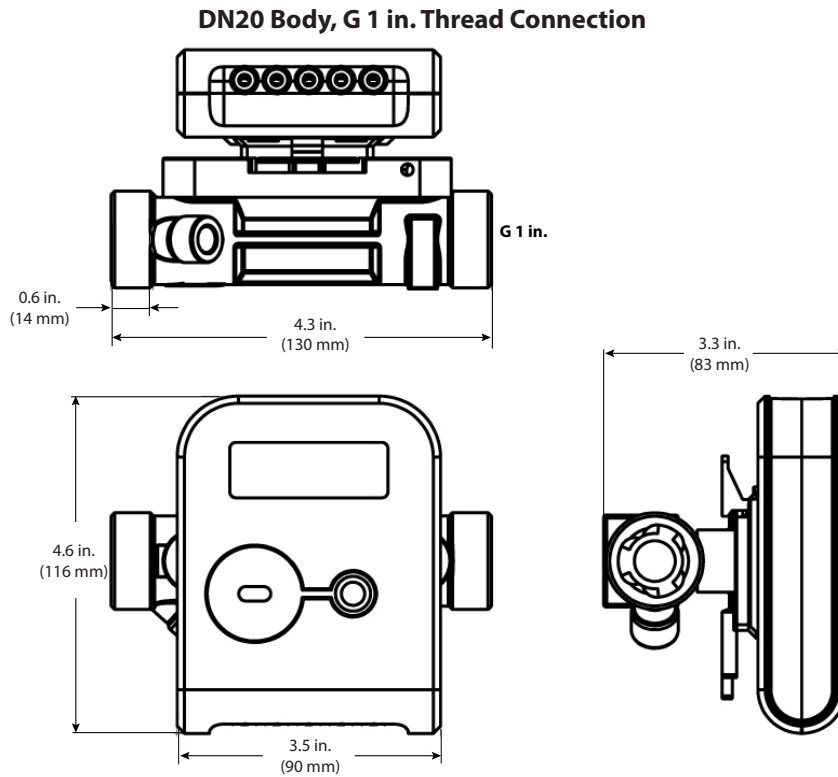


Figure 3: Flow sensor $q_p = 2.5/1.5 \text{ m}^3/\text{h}$, Length $L=130 \text{ mm}$; connection type: thread G1 in.

DN20 Body, G 1 in. Thread Connection

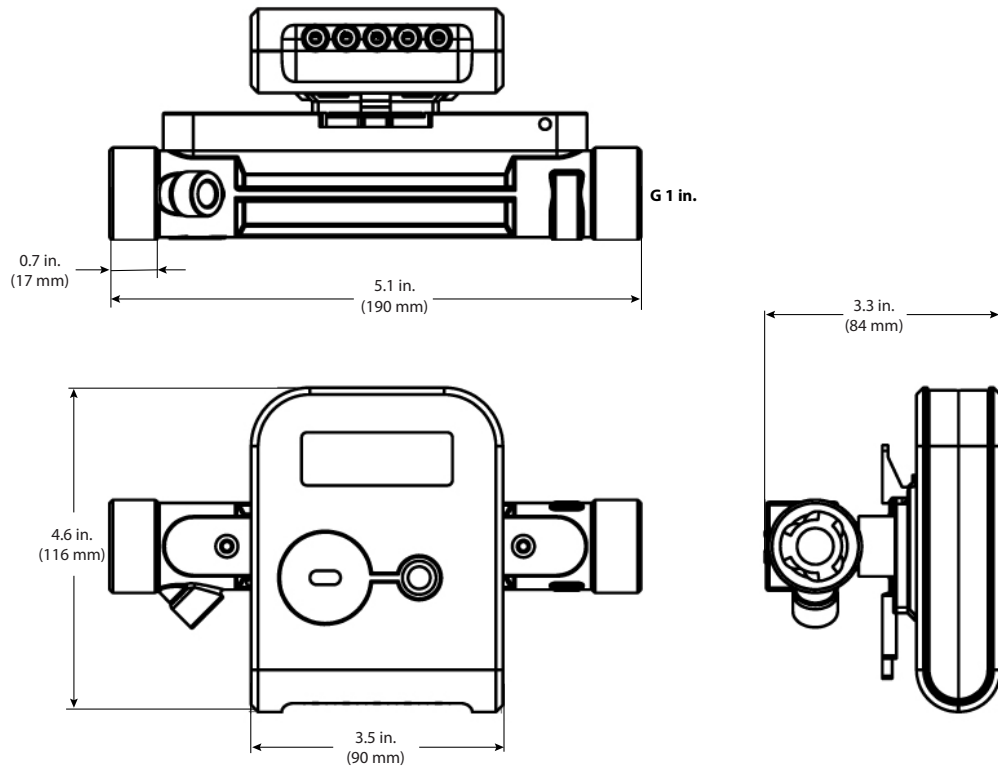


Figure 4: Flow sensor $q_p = 0.6/1.0/1.5/2.5 \text{ m}^3/\text{h}$; $L=190 \text{ mm}$; connection type: thread G1 in.

DN20 Body, D20 Flange Connection

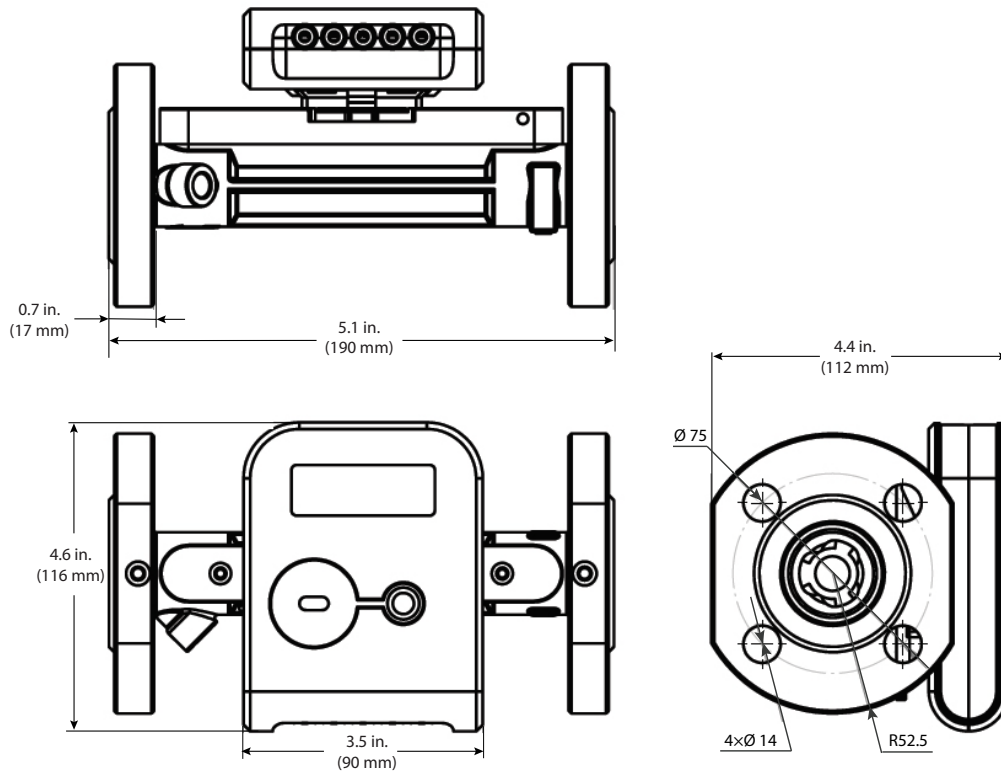


Figure 5: Flow sensor $q_p = 0.6/1.0/1.5/2.5 \text{ m}^3/\text{h}$; $L=190 \text{ mm}$; connection type: flanges D20

DN25 Body, G 1-1/4 in. or G 1-1/2 in. Thread Connection

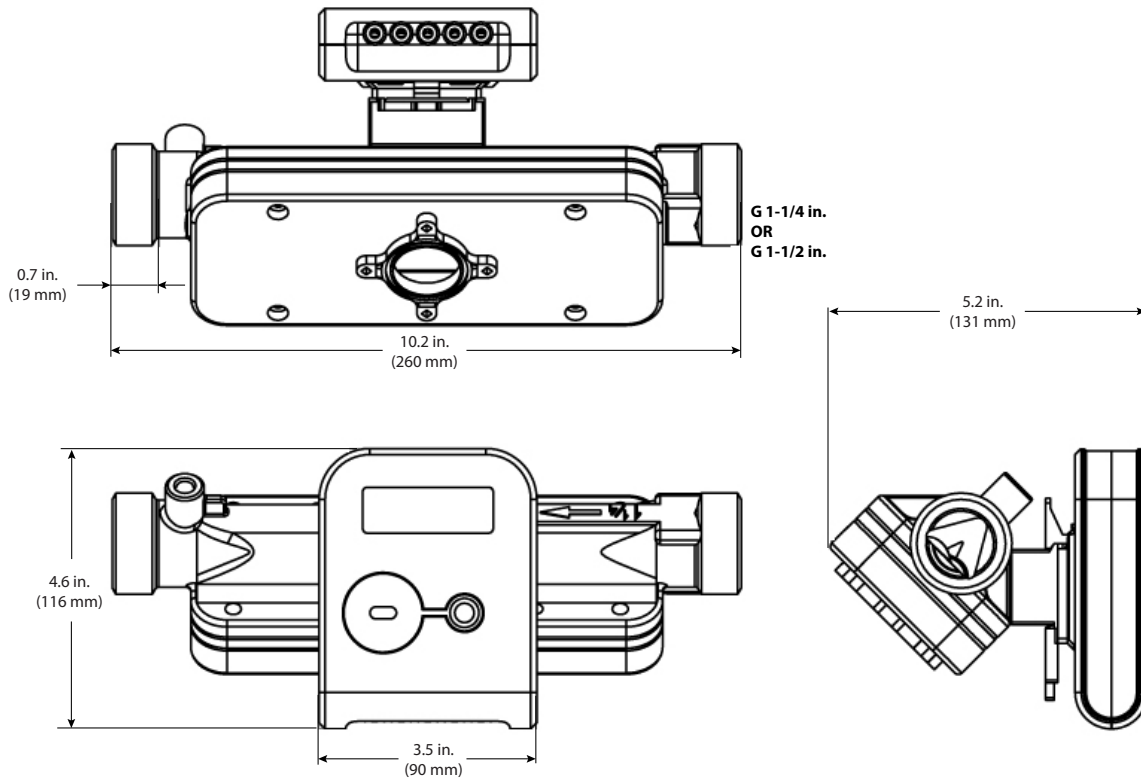


Figure 6: Flow sensor $q_p = 3.5/6.0 \text{ m}^3/\text{h}$; $L=260 \text{ mm}$; connection type: thread G1-1/4 in. or G1-1/2 in.

DN25 Body, DN25 Flange Connection

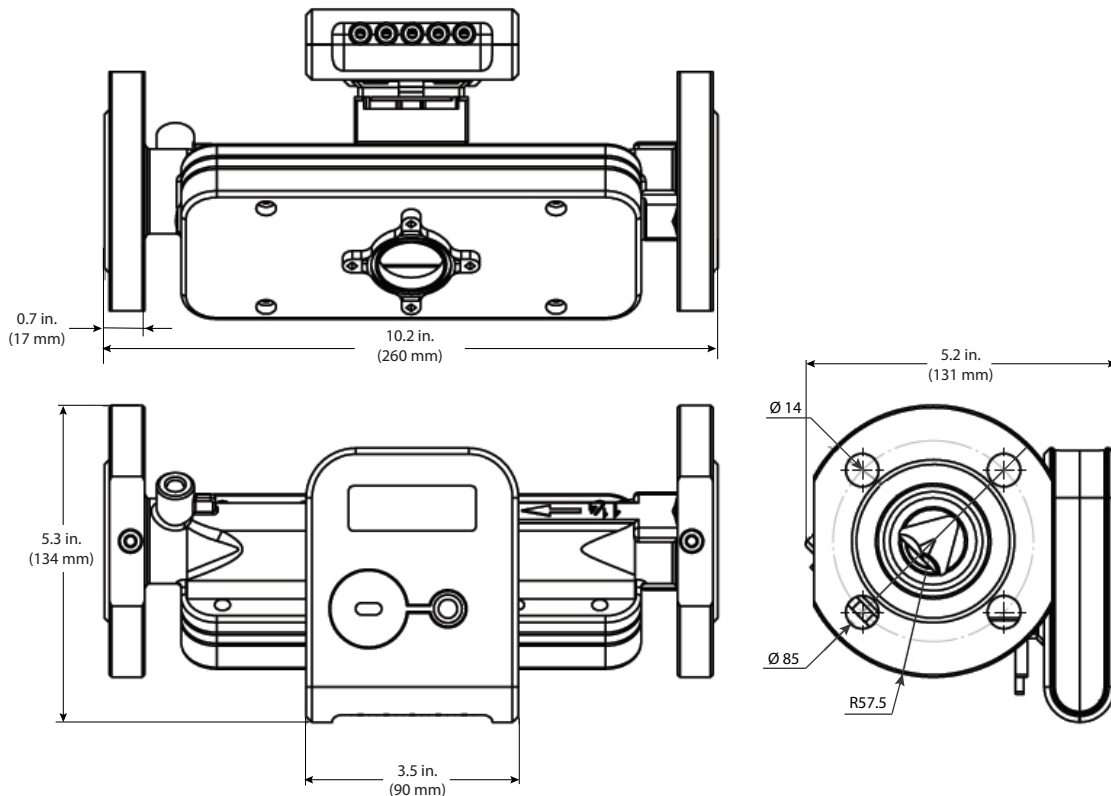


Figure 7: Flow sensor $q_p = 3.5/6.0 \text{ m}^3/\text{h}$; $L=260 \text{ mm}$; connection type: flanges DN25

DN32 Body, DN32 Flange Connection

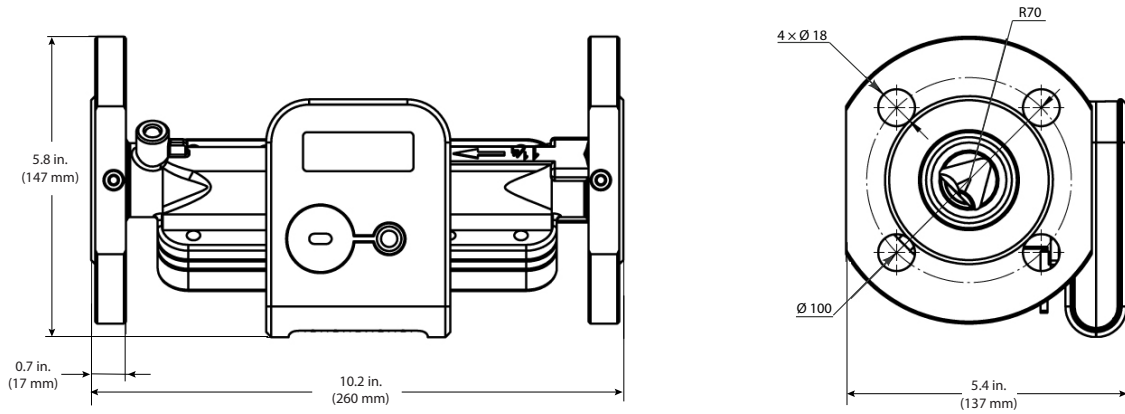


Figure 8: Flow sensor $q_p = 3.5/6.0 \text{ m}^3/\text{h}$; $L=260 \text{ mm}$; connection type: flanges DN32

DN40 Body, G 2 in. Thread Connection

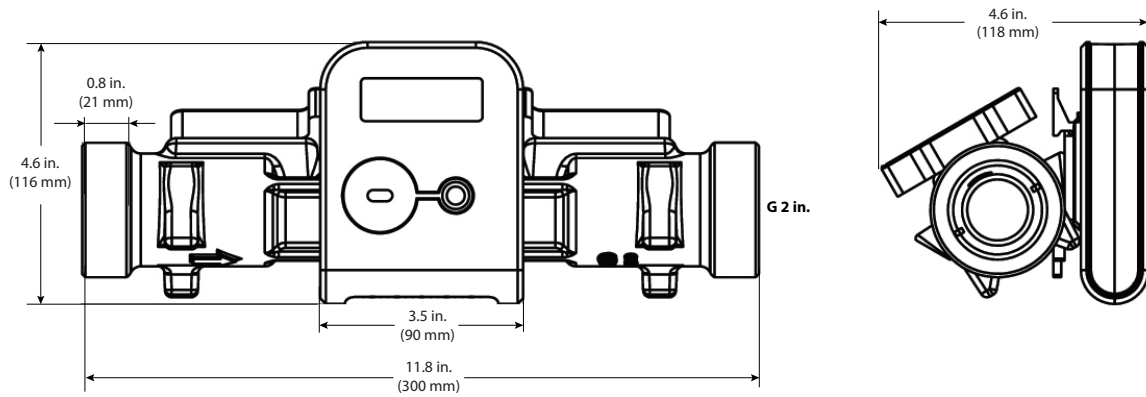


Figure 9: Flow sensor $q_p = 10.0 \text{ m}^3/\text{h}$; $L=300 \text{ mm}$; connection type: thread G2 in.

DN40 Body, DN40 Flange Connection

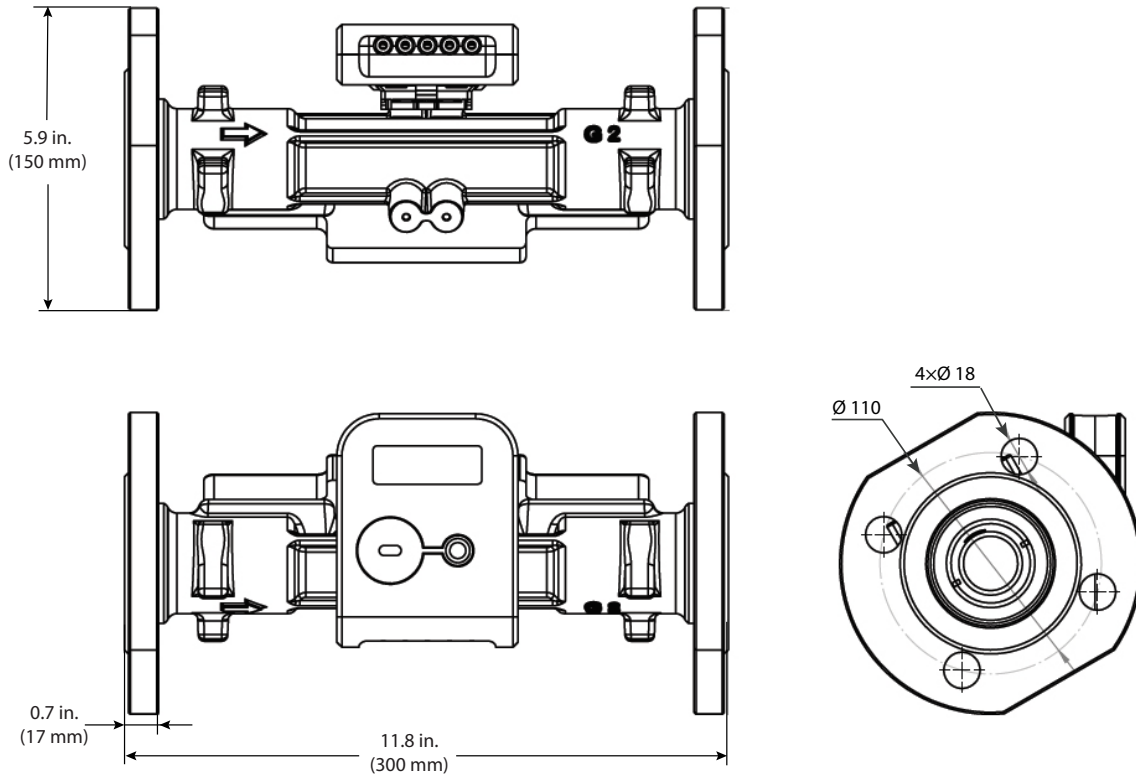


Figure 10: Flow sensor $q_p = 10.0 \text{ m}^3/\text{h}$; $L=300 \text{ mm}$; connection type: flanges DN40

DN50 Body, DN50 Flange Connection

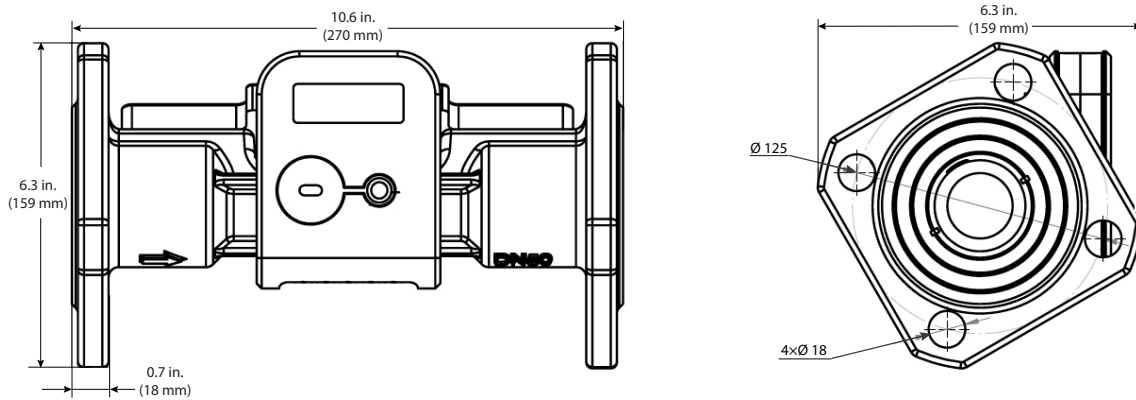


Figure 11: Flow sensor $q_p = 15 \text{ m}^3/\text{h}$; $L=270 \text{ mm}$; connection type: flanges DN50

DN65 Body, DN65 Flange Connection

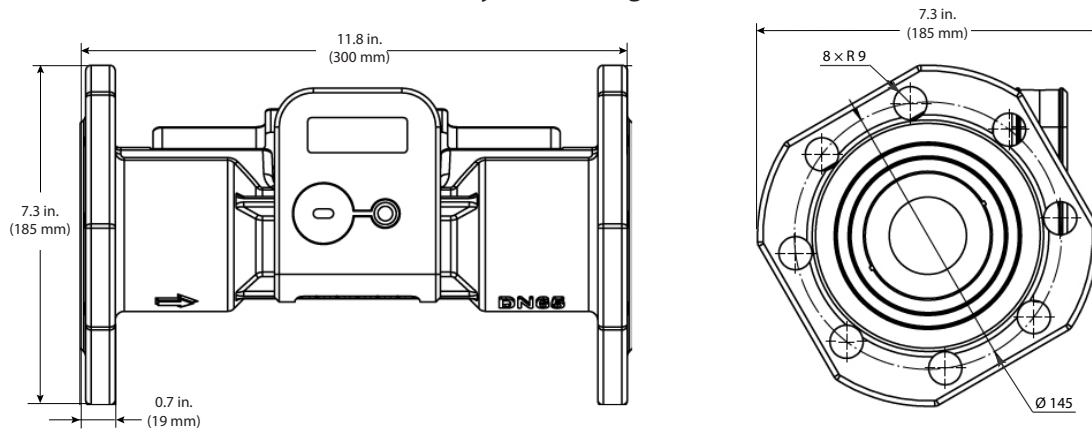


Figure 12: Flow sensor $q_p = 25 \text{ m}^3/\text{h}$; $L=300 \text{ mm}$; connection type: flanges DN65

DN80 Body, DN80 Flange Connection

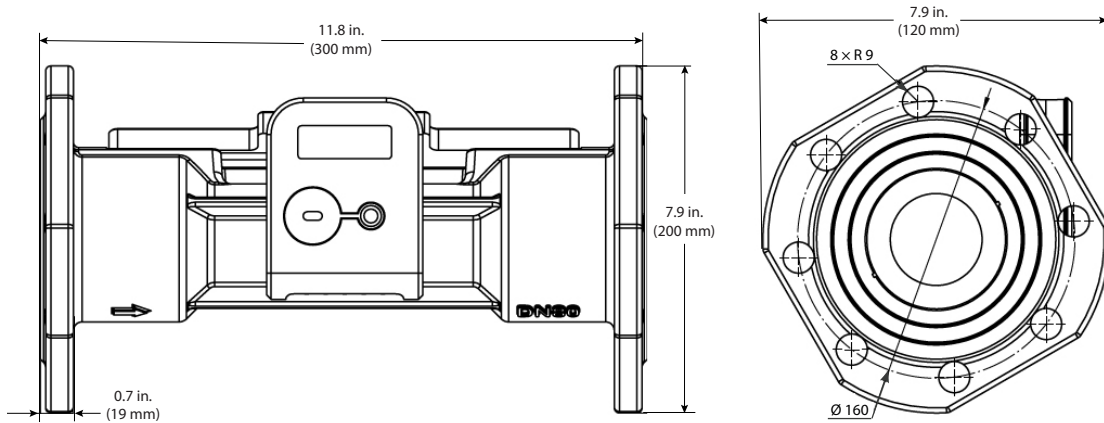


Figure 13: Flow sensor $q_p = 40 \text{ m}^3/\text{h}$; $L=300 \text{ mm}$; connection type: flanges DN80

DN100 Body, DN100 Flange Connection

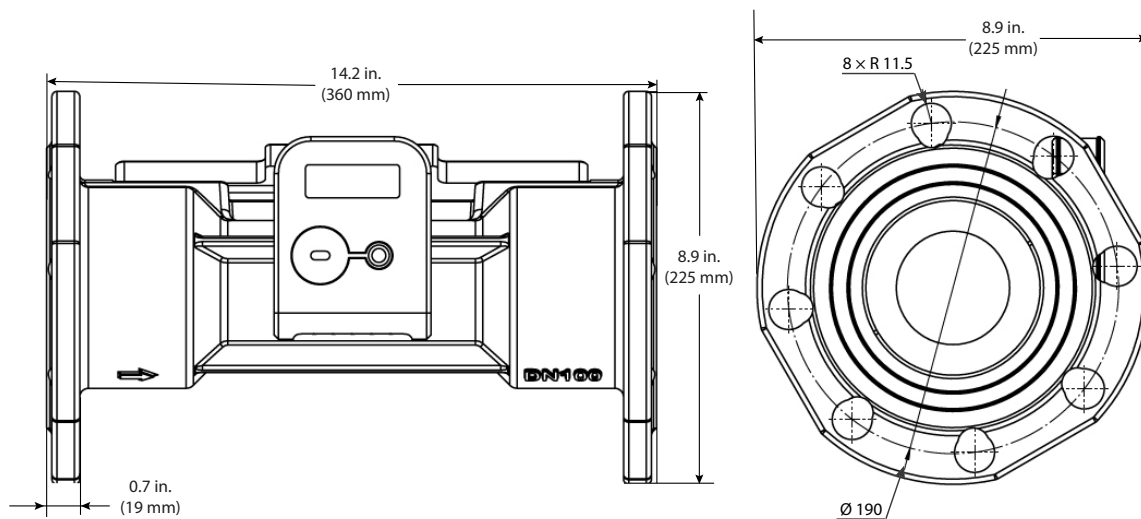


Figure 14: Flow sensor $q_p = 60 \text{ m}^3/\text{h}$; $L=360 \text{ mm}$; connection type: flanges DN100

Coupling

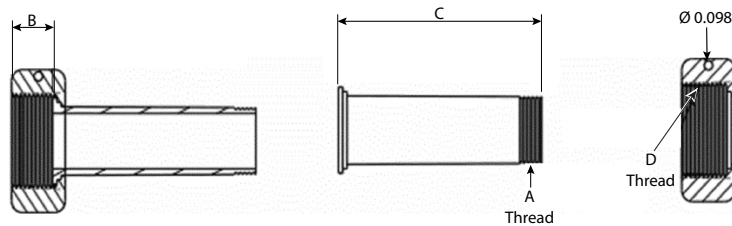


Figure 15: Coupler dimensions

Part Number	Description	B	C	BSPP Thread	NPT Thread
				D	A
69234-004	1-1/2 in. NPT Meter Coupling (to G1-1/2)	0.81 ± 0.04 in.	2.81 ± 0.03 in.	G 2 in.	1-1/2 11-1/2 NPT
69234-003	1 in. NPT Meter Coupling (to G1-1/4)	0.5 ± 0.04 in.	2.62 ± 0.02 in.	G 1-1/4 in.	1-11 1/2 NPT
69234-002	3/4 in. NPT Meter Coupling (to G1)	0.47 ± 0.04 in.	2.50 ± 0.02 in.	G 1 in.	3/4-14 NPT
69234-001	1/2 in. NPT Meter Coupling (to G3/4)	0.51 ± 0.04 in.	2.38 ± 0.02 in.	G 3/4 in.	1/2-14 NPT

ORDERING DETAILS

UHC100 Meters

Meters have European G threads (BSPP) which are not compatible with NPT threads commonly used in U.S. and Canada and are sized differently. Couplers are required for to convert the thread types. See *Kits for ASME/ANSI Pipes*.

UHC100 Meters with G threads, Wireless M-Bus, Battery

Part Number	Description
E3-4-3-13-3-4-1-0-2-4-1-07-4-1-1-0-0	UHC100 Meter Return, 1.5 m ³ /h nominal, G 3/4, 4.9 ft (1.5 m) temp. sensor cables
E3-4-3-22-3-4-1-0-2-4-1-07-4-1-1-0-0	UHC100 Meter Return, 2.5 m ³ /h nominal, G1, 4.9 ft (1.5 m) temp. sensor cables
E3-4-3-41-3-4-1-0-2-4-1-07-4-1-1-0-0	UHC100 Meter Return, 3.5 m ³ /h nominal, G 1-1/4, 4.9 ft (1.5 m) temp. sensor cables
E3-4-3-45-3-4-1-0-2-4-1-07-4-1-1-0-0	UHC100 Meter Return, 6 m ³ /h nominal, G 1-1/4, 4.9 ft (1.5 m) temp. sensor cables
E3-4-3-51-3-4-1-0-2-4-4-07-4-1-2-0-0	UHC100 Meter Return, 10 m ³ /h nominal, G 2, 9.8 ft (3.0 m) temp. sensor cables

Additional sizes and options available upon request.

UHC100 Kits for ASME/ANSI Pipes (Meter & Couplings)

UHC100 With Pulse Outputs, 24V AC/DC, Canada Weights and Measures Heat Meter Approval

ASME/ANSI Connection	Part Number	Description
1/2 in. NPT	DHC-E3-4313-0210-241-0741-100	UHC100 Meter Return, 6.6 gpm (1.5 m ³ /h) nominal, 1/2 in. NPT, 4.9 ft (1.5 m) temp. sensor cables
3/4 in. NPT	DHC-E3-4322-0210-241-0741-100	UHC100 Meter Return, 11 gpm (2.5 m ³ /h) nominal, 3/4 in. NPT, 4.9 ft (1.5 m) temp. sensor cables
1 in. NPT	DHC-E3-4341-0210-241-0741-100	UHC100 Meter Return, 15.4 gpm (3.5 m ³ /h) nominal, 1 in. NPT, 4.9 ft (1.5 m) temp. sensor cables
1 in. NPT	DHC-E3-4345-0210-241-0741-100	UHC100 Meter Return, 26.4 gpm (6 m ³ /h) nominal, 1 in. NPT, 4.9 ft (1.5 m) temp. sensor cables
1-1/2 in. NPT	DHC-E3-4351-0210-244-0741-200	UHC100 Meter Return, 44 gpm (10 m ³ /h), 1-1/2 in. NPT, 9.8 ft (3.0 m) temp. sensor cables

Additional cable options available upon request.

Control. Manage. Optimize.

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