Dynasonics®
Ultrasonic Flow Meters

UHC-120

Ultrasonic Heat Meter / Cooling Energy Meter

DESCRIPTION

The UHC-120 ultrasonic thermal energy meters measure consumed heating and/or cooling energy in multi-family residences or commercial buildings. The sealed meter is delivered in user configuration mode with the ability to modify meter parameters and features, including units, mounting position, communication and other meter parameters. After the meter is operational, the settings cannot be changed to prevent unauthorized changes that may affect the meter output.

- Residential and commercial use
- MID DN15…DN40
- Canada 1/2…1-1/2 in. NPT

FEATURES

- Static liquid metering using ultrasonic technology
- EN1434 heat and cool approval for Accuracy Class 2
- Measurement Canada heat and cool meter approval, Accuracy Class 2
- Ten-year battery life or external power options
- Modular communication options
- 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 semi-monthly totals

APPLICATIONS

Monitor thermal energy in water based heating and cooling systems:

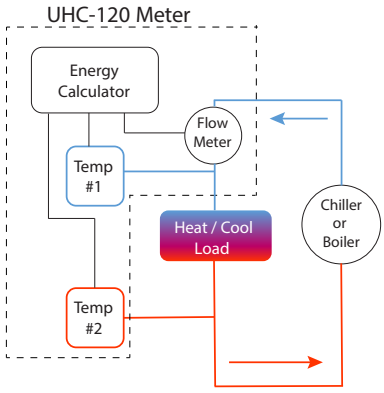
- Residential apartment or condominium tenant billing
- Commercial building or office tenant billing

COMMUNICATION/OUTPUT OPTIONS

- Wired M-Bus
- Pulse output
- Modbus RTU

OPERATION

Each UHC-120 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

Badger Meter

HYB-DS-04253-EN-04 (March 2024)

Product Data Sheet

METER SPECIFICATIONS

Accuracy	Class 2 EN1434:2015 certified heating meter Class 2 EN1434:2015 certified cooling meter Class 2 Canada Weights and Measures heating/cooling meter, wired M-Bus or Pulse output
Thermal Energy Meter Directives and Standards	Measuring Instruments Directive 2014/32/EU EN1434 (2015) PTB-Tichtlinie K7.1, K7.2 (2006) OIML R75: (2002/2006) IS0 4064 (2014)
Additional Directives and Standards	EMC Directive 2014/30/EU RoHS Directive 2011/65/EU

Flow Ranges for Metric Pipe with DN Flange and G Thread

Permanent flow rate q_p, m^3/h	Upper flow rate q_s, m^3/h	Lower flow rate q_i, m^3/h	Dynamic range	Length of the flow sensor L, mm	Pressure losses at q_p, bar	Joining to the pipeline (Thread - G, flange - DN)
1.5	3	0.012	1:125	110	0 .21	G3/4B
1.5	3	0.012	1:125	130; 190 [1]	0.04	G1B
2.5	5	0.025	1:100	130; 190 [1]	0.12	G1B
3.5	7	0.028	1:125	130; 190 [1]	0.21	G1B
3.5	7	0.028	1:125	150 [1]; 260	0.21	G1 1/4B
6	12	0.06	1:100	150 [1]; 260	0.20	G1 1/4B
10	20	0.1	1:100	200 [1]; 300	0.11	G2B

[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_s, gpm (m^3/h)	Lower flow rate q_i, gpm (m^3/h)	Dynamic Range gpm (m^3/h)	Length of the flow sensor & coupling, in. (mm)	Pressure losses at q_p, psi (bar)	Joining to the pipeline (Thread, Meter Body)
6.6 (1.5)	13.2 (3)	0.053 (0.012)	1:125	6.7 (170)	3.0 (0.21)	1/2 in. NPT (DN15)
6.6 (1.5)	13.2 (3)	0.053 (0.012)	1:125	7.6 (193)	0.6 (0.04)	3/4 in. NPT (DN20)
11 (2.5)	22 (5)	0.110 (0.025)	1:100	7.6 (193)	1.7 (0.12)	3/4 in. NPT (DN20)
15.4 (3.5)	30.8 (7)	0.123 (0.028)	1:125	9.0 (229)	3.0 (0.21)	1 in. NPT (DN25)
26.4 (6)	52.8 (12)	0.264 (0.060)	1:100	9.0 (229)	2.9 (0.20)	1 in. NPT (DN25)
44 (10)	88 (20)	0.440 (0.100)	1:100	10.7 (273)	1.6 (0.11)	1-1/2 in. NPT (DN40)

MECHANICAL SPECIFICATIONS

Protection Class	IP68
Mechanical Class	M2
Electromagnetic Class	E2
Environmental Class	C
Medium Temperature	Cooling 41…122° F (5…50° C); Heating/Cooling 41…194° F (5…90° C)
Medium	Water
Installation Position	All installation positions (vertical, horizontal, rising pipe, down pipe)
Straight Pipe Lengths	DN40 body and smaller
Nominal Pressure	PN16 (232 psi, 16 bar)
Flow Sensor Cable Length	2.7 ft (0.85 m)

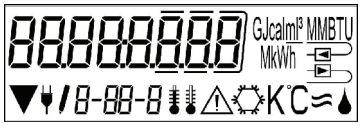
CALCULATOR FUNCTIONS

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:

- Total heat and/or cooling since start of operation
- Total flow flow volume
- Power and flow rate
- Inlet and outlet temperatures, temperature difference
- Semimonthly values
- Maximum power, flow and temperatures



Optical Interface

Integrated into the front panel of the calculator, the optical interface is designed for reading data and parameters of the meter.

Data Logger History Values

Semimonthly values of the measured parameters are stored in internal memory for up to 15 months

- Heating energy
- Cooling energy
- Volume
- Tariff register

Maximum power, flow rate, inlet temperature, outlet temperature, and temperature difference

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

CALCULATOR SPECIFICATIONS

LCD Display	8-digit plus special characters; Heat energy up to 3 decimal places
Protection Class	IP65
Ambient Temperature in the Field	41…131° F (5…55° C) at 95 % relative humidity
Transport Temperature	-13…158° F (-25…70° C) for maximal 168 h
Storage Temperature	-13…131° F (-25…55° C)
Units	0.001 kW, 0.001 m³ user selectable unit of energy (1 kWh, 0.001 MWh, 0.001 GJ, 0.001 Gcal) Energy unit can be set as long as the amount of energy is ≤ 10 kWh
Power	Battery 10 years, except pulse output 6 years + 1 year storage; 24V AC power supply module, or 230V AC power supply
Temperature Sensor	Pt 1000, direct insert short (DS), M10 screw, 26 mm insertion depth; cable length 4.9 ft, 9.8 ft, 19 ft (1.5 m, 3 m, 6 m)
Minimum Temperature Difference ΔΘ	3 K
Measurement Cycle Temperature; Dynamic	2 / 60 seconds; with mains operation permanently 2 seconds
Flow Measurement Cycle	2 seconds
Calculator Mounting	Meter mounted, DIN-rail or wall
Data Storage	15 monthly and semi-monthly values via display or radio (compact mode); 24 monthly and semi-monthly values via optical interface or M-Bus 2 tariff registers individually adjustable; save energy or time Storage of the maximum values for flow, power and temperatures (VL, RL, ΔΘ), as well as the respective maximum values of the last 15 months

Communication/Output Options

NOTE: Only **ONE** option is supplied with the meter.

- Wired M-Bus
- Modbus RTU EIA-485, baud rate 1200, 2400, 4800, 9600, 1440, 19200, 38400, 56000, 57600, 115200; powered separately with supplied voltage 12…24V DC ± 10 % (SELV power supply only), maximum power consumption 500 mW; not available with Measurement Canada approval
- Pulse 1 open collector outputs: 30 V DC; width 100 ms

Pulse Output for Energy

	Display in kWh / MWh	Display in Gcal	Display in GJ	Display in MMBTU
qp 1,5 m³/h	1 kWh/Imp	1 Mcal/Imp	10 MJ/Imp	10 MMBTU/Imp
qp 2,5 m³/h	1 kWh/Imp	1 Mcal/Imp	10 MJ/Imp	10 MMBTU/Imp
qp 3,5 m³/h	10 kWh/Imp	10 Mcal/Imp	10 MJ/Imp	10 MMBTU/Imp
qp 6 m³/h	10 kWh/Imp	10 Mcal/Imp	10 MJ/Imp	10 MMBTU/Imp
qp 10 m³/h	10 kWh/Imp	10 Mcal/Imp	10 MJ/Imp	10 MMBTU/Imp

Pulse Output for Volume

The pulse value for the volume always applies: Display in m^3 -> pulse value: 100 l/pulse (0.1 m^3/pulse).

DIMENSIONS

Meter

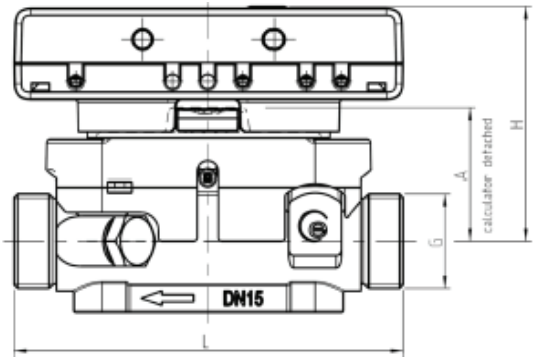


Figure 1: Overall calculator dimensions of UHC-120 heat meter

Qp (m^3/h)	Nominal Size	G (“)	L (mm)	H (mm)	A (mm)	Weight Standard Version kg
1,5	DN 15	G3/4B	110	65	38,5	0,600
1,5	DN 20	G1B	130	66	39,5	0,680
2,5	DN 20	G1B	130	66	39,5	0,680
3,5	DN 25	G1 1/4B	260	66	39,5	1,080
6,0	DN 25	G1 1/4B	260	68,5	42	1,080
10,0	DN 40	G2B	300	73	46,5	1,970

Calculator Dimensions

H × W × D
3.0 × 4.4 × 1.4 in. (75 × 110 × 35 mm)

ORDERING DETAILS

UHC-120 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*.

UHC-120 Cooling Meters with G threads, Wired M-Bus, Battery

Part Number	Description
DHM-S3-DAASXX-M1XX15-KR	UHC-120 Meter Return, 1.5 m^3/h nominal, G 3/4, 4.9 ft (1.5 m) temp. sensor cables
DHM-S3-DBASXX-M1XX15-KR	UHC-120 Meter Return, 1.5 m3/h nominal, G1, 4.9 ft (1.5 m) temp. sensor cables
DHM-S3-DBBSXX-M1XX15-KR	UHC-120 Meter Return, 2.5 m^3/h nominal, G1, 4.9 ft (1.5 m) temp. sensor cables
DHM-S3-DCCSXX-M1XX15-KR	UHC-120 Meter Return, 3.5 m^3/h nominal, G 1-1/4, 4.9 ft (1.5 m) temp. sensor cables
DHM-S3-DCDSXX-M1XX15-KR	UHC-120 Meter Return, 6 m^3/h nominal, G 1-1/4, 4.9 ft (1.5 m) temp. sensor cables
DHM-S3-DDESXX-M1XX15-KR	UHC-120 Meter Return, 10 m^3/h nominal, G 2, 4.9 ft (1.5 m) temp. sensor cables

Temperature sensor mounting hardware included. Additional options available upon request.

UHC-120 Kits for ASME/ANSI Pipes (Meter & Couplings)

UHC-120 Heating/Cooling Meter with Wired M-Bus, Battery, Measurements Canada Approval

ASME/ANSI Connection	Part Number	Description
1/2 in. NPT	DHM-S3-CNASXX-M1XX15-KR	UHC-120 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	DHM-S3-CPASXX-M1XX15-KR	UHC-120 Meter Return, 6.6 gpm (1.5 m3/h) nominal, 3/4 in. NPT, 4.9 ft (1.5 m) temp. sensor cables
3/4 in. NPT	DHM-S3-CPBSXX-M1XX15-KR	UHC-120 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	DHM-S3-CRCSXX-M1XX15-KR	UHC-120 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	DHM-S3-CRDSXX-M1XX15-KR	UHC-120 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	DHM-S3-CSESXX-M2XX15-KR	UHC-120 Meter Return, 44 gpm (10 m^3/h), 1-1/2 in. NPT, 4.9 ft (1.5 m) temp. sensor cables

Temperature sensor mounting hardware included. Additional options available upon request.

NPT Couplers

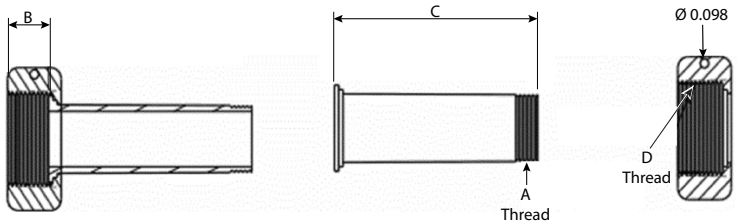


Figure 2: Coupler dimensions

				BSPP Thread	NPT Thread
Part Number	Description	B	C	D	A
69234-004	1-1/2 in. NPT Coupling to Meter DN40 G2, Qty 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 Coupling to Meter DN25 G1-1/4, Qty 2	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 Coupling to Meter DN20 G1, Qty 2	0.47 ± 0.04 in.	2.50 ± 0.02 in.	G 1 in.	3/4-14 NPT
69234-001	1/2 in. NPT Coupling to Meter DN15 G3/4, Qty 2	0.51 ± 0.04 in.	2.38 ± 0.02 in.	G 3/4 in.	1/2-14 NPT

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