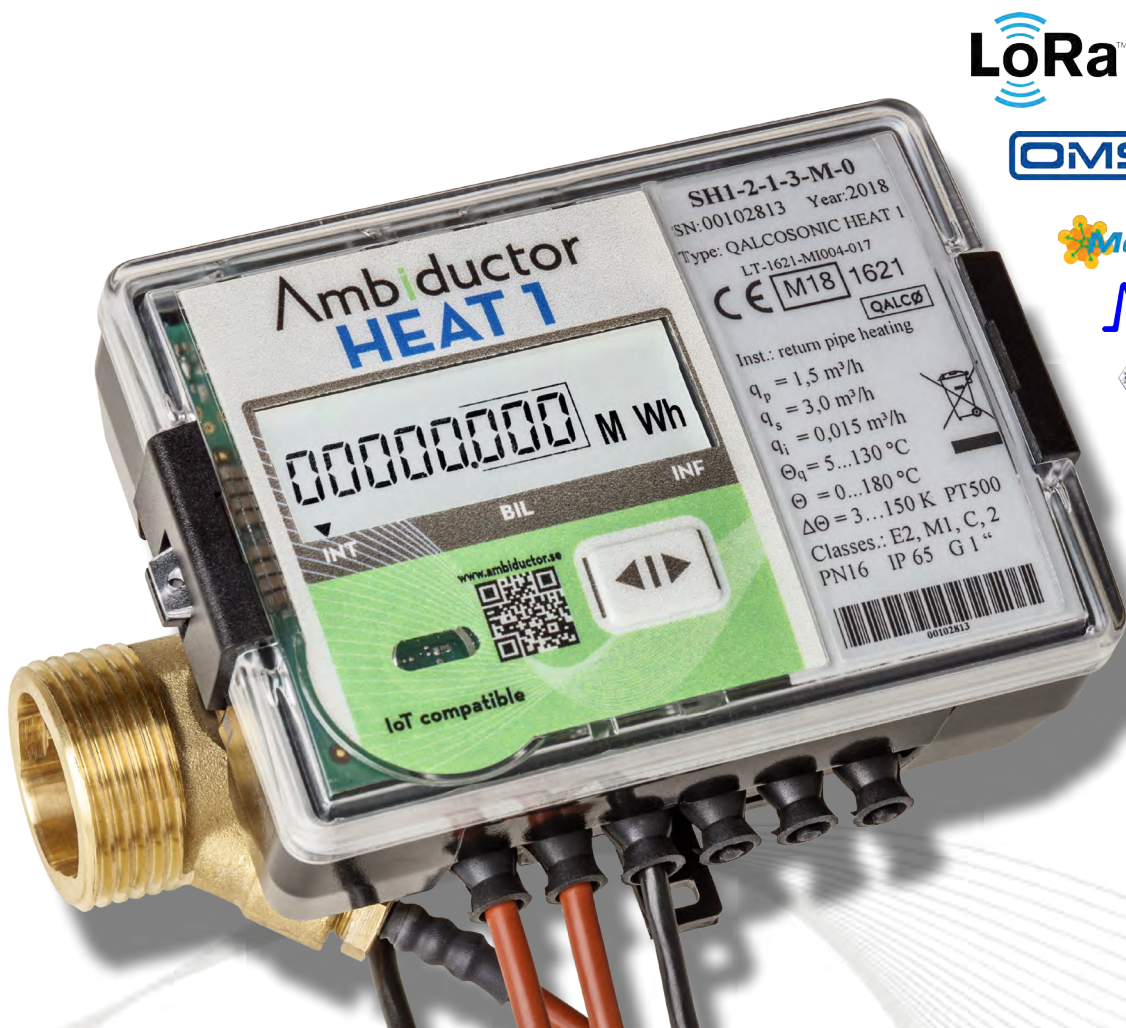


Ambiductor HEAT 1

■ Compact energy meter for most applications

Applications

Heat or cooling metering on both primary and secondary thermal energy systems. The meter is certified according to MID for billing. Available in all sizes up to DN100.



Characteristics

- Compact ultrasonic meter for heating and cooling
- Certified accuracy class 2 acc. EN1434
- Environmental class C for industrial use
- M-bus communication and 2 pulse inputs / outputs as standard
- Modbus, wireless M-bus, BACnet and LoRa as option
- Log data for the past 15 years, 36 months, 1116 days and 1480 hours
- Battery 11 years, 24V or 230V supply
- Dynamic measuring range 1: 100 (alternatively 1: 250)
- Measurement of glycol mixtures as an option

Strengths

- Static measurement without moving parts - insensitive to particles
- Accurate heat measurement in both cooling and heating systems
- Cost-effective remote reading of 2 pulsed water meters via M-bus
- Versatile data storage
- All mounting directions possible
- High IP class
- Advanced alarm management

Intended use

Ambiductor HEAT 1 is a compact ultrasonic meter for measuring thermal energy in water. It fits most applications where you need to measure heat or cold, approved in accordance with the Measuring Instruments Directive (MID) 2014/32/EU.

Meters for billing must be validated within a time period specified by local legislation.

DN15-50 does not need straight pipe lines. DN65-100 needs 5xDN upstream and 3xDN downstream. Straight pipes are always preferable.

Function and measurement principle

The meter consists of:

- One ultrasonic flow sensor that measures flow
- Two paired temperature sensors Pt500 for measuring flow and return temperature
- One calculator that calculates thermal energy. It can be mounted on the flow meter or on the DIN rail on the wall

$$\text{Power} = \text{Flow rate} \times (T_{\text{hot side}} - T_{\text{cold side}}) \times k$$

(where k is the specific heat factor, adjusted by temperature and medium)

Ambiductor HEAT 1 is equipped with optical reading head with EN 1434 M-bus protocol.

Communication

Ambiductor HEAT 1 has as standard M-bus and 2 puls in / outputs. See Options below for other options.

M-bus communication is set up via free software that can be obtained from Ambiductor.

Options

The following options are available today.

Communication

Instead of M-bus you can get Modbus, LON, BACnet, CI, Mini-bus, Wireless M-bus S1, Wireless M-bus T1 and LoRa.

Software options

The following changes in the meter can be obtained.

Technical data

Available sizes *

	Nominal flow qp (m³/h)	Nominal diameter (mm)	Connection	Length (mm)	Nom. pressure PN	Max flow qs (m³/h)	Min flow qi (m³/h)	Measurement range**	Pressure drop at qp (kPa)	Weight (kg)
DN15 qp 0.6	0.6	DN15	G20 / G¾"	110	16	1.2	0.006	R100	23	0.7
DN15 qp 1.0	1.0	DN15	G20 / G¾"	110	16	3.0	0.01/0.005	R100/R250	11.3	0.7
DN15 qp 1.5	1.5	DN15	G20 / G¾"	110	16	3.0	0.006/0.015	R100/R250	17.1	0.7
DN20 qp 1.5	1.5	DN20	G25 / G1"	130/190	16	3.0	0.006/0.015	R100/R250	19.8	1.0
DN20 qp 2.5	2.5	DN20	G25 / G1"	190	16	5.0	0.01/0.025	R100/R250	19.8	1.0
DN25 qp 3.5	3.5	DN25	G32 / G1¼"	260	16	7.0	0.035	R100	4.0	3.2
DN25 qp 6.0	6.0	DN25	G32 / G1¼"	260	16	12	0.024/0.06	R100/R250	10	3.2
DN40 qp 10	10	DN40	G50 / G2"	300	16	20	0.04/0.100	R100/R250	18	3.7
DN50 qp 15	15	DN50	Flange	270	16	30	0.06/0.15	R100/R250	12	6.4
DN65 qp 25	25	DN65	Flange	300	16	50	0.1/0.25	R100/R250	20	10
DN80 qp 40	40	DN80	Flange	300	16	80	0.16/0.40	R100/R250	18	13
DN100 qp 60	60	DN100	Flange	360	16	120	0.24/0.60	R100/R250	18	15

*) This is just a selection of the most common sizes.

**) R100 is standard. R250 can be ordered as an option.

BDE (bi directional energy)

The meter measures both cooling and heat (different registers) and switches between these when Δt switches. IP67 included.

GLY (glycol)

The meter is prepared for glycol mixed water. IP67 included. The glycol mixtures include:

- Norcorsin 10, 20, 30, 40, 50, 60
- Antifrogen L (propylene glycol) 16, 25, 38, 47
- Anti-hydrogen N (ethylene glycol) 20, 34, 44, 52
- PKL 90, 300

Customer-specific programming

Hardware options

As an accessory to the standard version, it is possible to:

- IP67 (included in some software options)
- PN25 (in flanged version)
- 24V supply module (both AC and DC)
- 230V supply unit (requires 24V module)
- Customer-specific labeling

In addition to the above mentioned options, other temperature sensors can also be ordered.

External accessories

- Optical eye for IR reading
- Software for programming

Alarm management and status

The meter shows the operating status including all alarms for temperature sensors, flow sensors and the calculator.

Presented both in display and by bus.

Data logger

The flow meter has a built-in data logger that saves:

- 1480 hourly values
- 1116 daily values
- 36 monthly values
- 15 annual values

The archive is saved for 360 months. Measurement values remain even if the voltage is broken for 15 years.

Classification

Specification	Data
Metrological class	2014/32/EU class 2 acc. EN 1434
Mechanical class	M1 acc. 2014/32/EU
Electric class	E2 acc. 2014/32/EU
Environmental class	C (industry)
Protection class	IP 65 (IP 67)

Energy calculator

Specification	Data
Power supply	11 years battery Li-SOCl ₂ or external power supply
Communication	M-bus (optional Modbus, CL, radio etc.)
Pulse input/output	2 programmable in/out
Energy units	kWh, MWh, GJ, Gcal
Maximum power	2.63 MW
Cable length between flow sensor and calculator	1.2m
Display	8-digit LCD with symbols
Decimals/units, volume	Volume: 00000.001 m ³
Decimals/units, energy	<6 m ³ /h: 00000001 kWh ≥6 m ³ /h: 00000.001 MWh optional 00000.001 Gcal optional 00000.001 GJ

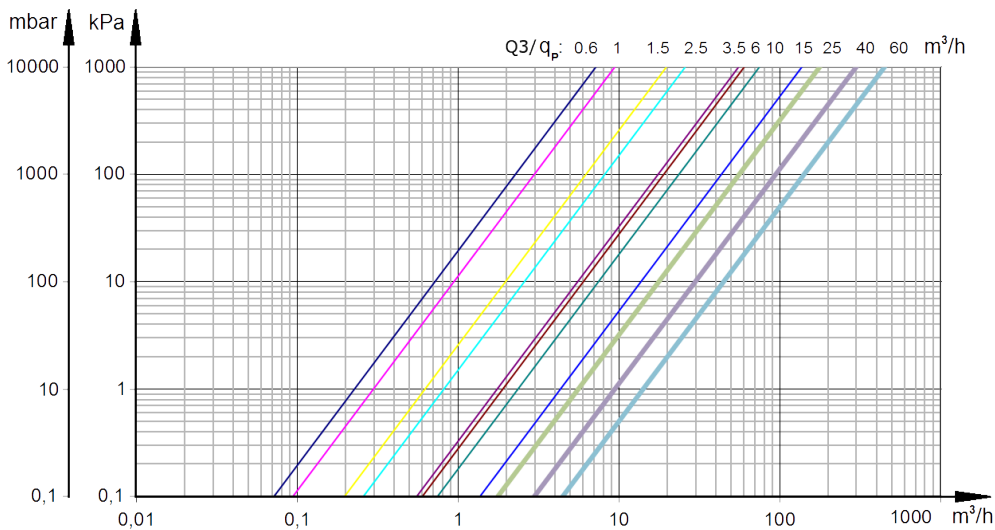
Temperatures

Specification	Data
Ambient temperature	Calculator: +5...55 °C (condensation free) Flow sensor: -30...55 °C Relative humidity: max 93%
Medium temperature	qp ≤2.5 m ³ /h -> +5...130 °C qp ≥3.5 m ³ /h -> +10...130 °C
Mounted calculator on flow sensor	Up to 90 °C (otherwise 130 °C)
Temperature range, calculator	0...180 °C
Temperature difference	2...150 K
Temperature sensors	Pt500 according to EN60751

Pulse in/outputs

Specification	Data
Number of in/outputs	2
Unit, pulse input	m ³
Pulse value, pulse input	Programmable
Pulse input type	IB by LST EN1434-2
Max frequency pulse input	3 Hz
Max voltage pulse input	3.6 V
Type, pulse output	Open collector
Voltage/current, pulse output	Up to 20mA and 50V
Pulse length, pulse output	100 ms at normal mode (1.6 ms at test mode)
Pulse value, output #1	1 kWh/p
Pulse value, output #2	qp 0.6...6.0: 1 l/p qp 10...60: 10 l/p

Pressure drop



Ordering details

E1 - 2 1 3 - 5 1 - 1 1 - 1 4

Temperature sensors		Code		Code	
None	0	PL-6, Pt500 (pocket mounted), 3.0m*	4		
T:45, Pt500 (direct mounted), 1.5m*	1	PL-6, Pt500 (pocket mounted), 5.0m	5		
T:45, Pt500 (direct mounted), 3.0m	D	PL-6, Pt500 (pocket mounted), 10m	6		
T:45, Pt500 (direct mounted), 5.0m	E				

Cable between flow sensor and calculator		Code		Code	
1.2 m*	1	5.0 m	5		
2.5 m	2				

Power supply		Code		Code	
Battery 3.6V*	1	24VAC/DC with battery and 230V-unit	3		

Nominal pressure (PN)		Code		Code	
PN 16*	1	PN 25	2		

Communications module		Code		Code	
Without	0	Minibus	7		
M-bus*	1	Wireless M-bus T1 OMS activated	8		
CI	2	Wireless M-bus T1 OMS inactivated	9		
Wireless M-bus S1 868MHz	4	BACnet	I		
Modbus RTU	5	LoRaWAN	L		
LON	6	GPRS (external)	Y		

Flow qp m³/h	Length, mm	Connec-tion	Code		Code	
0.6	110	G¾"	1	0.6	190	DN20 flange G
1.0	110	G¾"	2	1.0	190	DN20 flange H
1.5	110	G¾"	3	1.5	190	DN20 flange K
1.5	130	G1"	M	2.5	190	DN20 flange L
2.5	130	G1"	4	3.5	260	DN25 flange A
0.6	190	G1"	C	6.0	260	DN25 flange B
1.0	190	G1"	D	10	300	DN40 flange 8
1.5	190	G1"	E	15	270	DN50 flange 9
2.5	190	G1"	F	25	300	DN65 flange R
3.5	260	G1¼"	5	40	300	DN80 flange S
6.0	260	G1¼"	6	60	360	DN100 flange T
10	300	G2"	7			

Measurement range (qp/qi)	Temperature range Δt	Code		Code	
100	2...150 K	1	100*	3...150 K	3
250**	2...150 K	2	250**	3...150 K	4

Application	Code		Code	
Heat meter (only heat) IP65*	1	Cooling meter (both heating and cooling) IP67	2	

Installation side	Code		Code	
In the supply	1	In the return (cold side for heat)*	2	

Notes!

*) Standard at meters from stock. DN 15...20: T:45, DN 25...100: PL-6.

**) Only for the following sizes: qp 1.5 m³/h; 2.5 m³/h; 6.0 m³/h; 10 m³/h; 15 m³/h.

About Ambiductor

Ambiductor focus in the following areas:

- Energy meters
- Water meters
- Internet-of-Things through LoRa
- Oil meters and meters for industrial liquids
- Smart metering / data collection

Ambiductor is an engineering company with many years of experience in metering technology, automation and remote reading. Our customers experience a high level of service and wide range of application solving.

See instructional videos and assembly guides on www.ambiductor.se/support

Disclaimer!

If there is any inconsistency between this version and the original document, the original document will prevail.

Ambiductor

Flow & Energy Analysis Systems

Armévågen 61-63 +46 (0)8 501 676 76
S-187 64 TÄBY Sweden
info@ambiductor.se www.ambiductor.se

