Heat Meter With Ultrasonic Flow Meter

Features

- "Long-life" ultrasonic heat meter
- Pulse output for energy
- Pulse or M-Bus output options

Specification

Display type	7 digit LCD, 7mm high
Non. Flow rate (Qn)	0.6m³/h to 15m³/h
Supply voltage	3.6V ±5%
Battery	3.6Vdc, D-cell lithium
Battery life:	
Wall mounted <30°C	12 Years
Meter mounted <40°C	10 Years
Mains supply:	
230Vac +15/-30%	
24Vac/dc ±30%	
Power consumption	<1W
Temperature sensors	Matched pair PT500b (EN60751)
Sensor lead length	1.5m
Temperature:	
Flow temp.	15 to 130°C
Storage	25 to 60°C
Ambient	0 to 55°C
Pressure step:	
Threaded	PN16
Flanged	PN25
Meter material:	
Housing	Brass
Gaskets	EPDM
Transducer	AISI 316
Reflectors	AISI 304
Protection	IP54
EMC	EN1434 class A, MID-204/22/EC
Country of origin	Denmark

Product Codes

MW-HM-401-66-W Heat meter integrator

Output modules

-O No module
-P M-bus - secondary addressing
-Q Pulse output

Power supply options

-2 Battery
-7 230Vac supply mod
-8 24Vac supply

PT500 Temp. sensors

-A Pocket sensors 1.5m
-B Pocket sensors 3m

Flow meter

-1	qp 0.6m³/h, ½" Meter
-4	qp 1.5m³/h, ½" Meter, 110mm*
-5	qp 1.5m³/h, ½" Meter, 165mm*
-7	qp 1.5m³/h, ¾" Meter, 130mm*
-9	qp 1.5m³/h, ¾" Meter, 190mm*
-A	qp 3.0m³/h, ¾" Meter, 130mm*
-B	qp 3.0m³/h, ¾" Meter, 190mm*
-D	qp 3.5m³/h, 1" Meter
-F	qp 6.0m³/h, 1" Meter
-G	qp 6.0m³/h, DN25 Meter
-H	qp 10.0m³/h, 1 ½" Meter
-J	qp 10.0m³/h, DN40 Meter
-K	qp 15.0m³/h, DN50 Meter

* Length of flow meter

Technical Overview

The MW-HM401 is a static, ultrasonic thermal heat meter, designed for measuring energy in all types of heating installations where water is used as the heat-conveying medium.
Ultrasonic measuring and microprocessor technology are the foundation of the energy meter. All circuits for calculating, measuring temperature and flow are combined in a single board construction, which not only gives a compact and rational design but also ensures an optimal measuring quality and a high degree of reliability.

Mounting Of Temperature Sensors

Temperature sensors for measuring forward and return temperatures make out a matched pairs of sensors which must never be separated.
Usually MW-HM401 is supplied with mounted temperature sensors. The cable length must neither be shortened nor lengthened.
The sensor marked with a red sign must be mounted in the forward pipe. The other sensor, which is marked with a blue sign, must be mounted in the return pipe.

Information codes

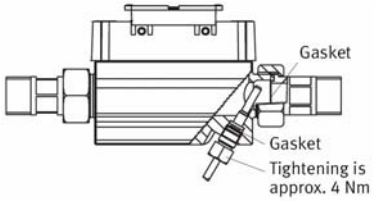
The MW-HM401 constantly monitors a series of important functions. If a serious error occurs in the measuring system or in the installation, an "E" appears in the left side of the display and an info-code can be read by activating the front key, until the measuring unit in the right side of the display shows "info".

Infocode	Description
000	No irregularities
002	Flow sensor error
008	Temperature sensor T1 outside measuring range
004	Temperature sensor T2 outside measuring range
016	Air in flow sensor
128	Battery replacement 12 years

Short-period errors only release an "E" in the display, while the error exists.
If the error is still present after one hour, the info-code becomes permanent - however, not "info = 16".

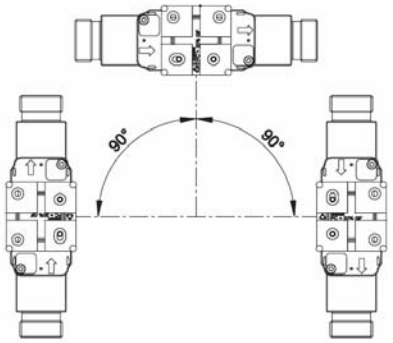
Mounting Of Meter

Before mounting the meter, flush the system thoroughly and remove protection plugs/plastic membranes from the flow sensor.
Correct flow sensor position (forward or return pipe) appears from the front label of MW-HM401 .
The flow direction is indicated by an arrow on the side of the flow sensor.

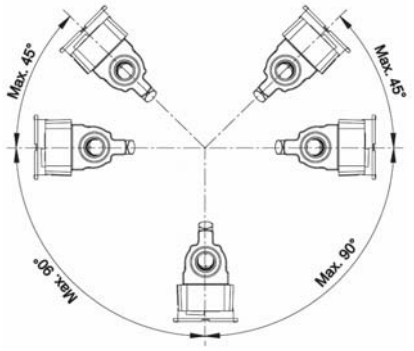


Glands and gaskets are to be mounted as shown in the above drawing. Flow parts up to 3 m3/h do not require straight inlet, whereas flow parts ≥ 3,5 m3/h must be installed with straight inlet of 3…5 x DN.
When the flow part has been mounted the water flow can be turned on. Open the valve on the inlet side of the meter first. The flow part must not be exposed to pressures below ambient pressure (vacuum).

The flow part can be mounted vertically, horizontally or at an angle.

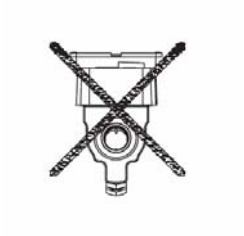


The flow part may be turned up to max. 45° and downwards for max. 90° in relation to the pipe axis.

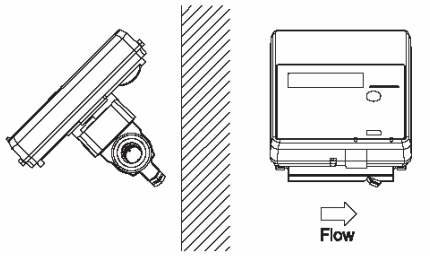


Mounting Of Meter (continued)

The flow part must not be mounted with the plastic box facing upwards.

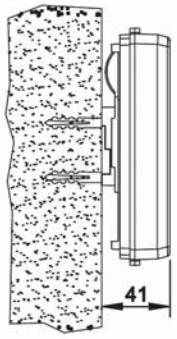


The MW-HM401 can be mounted on both sides of the flow part.



Mounting of the calculator

The MW-HM401 can be mounted directly on the flow part or directly on a plane wall.
Use the wall bracket as a template to mark/and drill two holes of 6 mm diameter on the wall. After mounting the calculator must be sealed with seal and wire.



Power supply

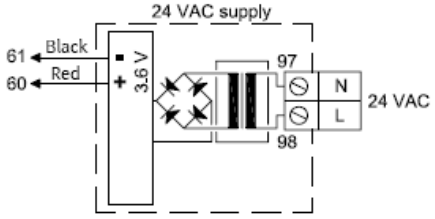
The **MW-HM401** can be power supplied by a built-in lithium battery, a 24V internal mains module or an internal 230 Vac mains module.
The two wires from battery or mains module are to be mounted in terminals 60 and 61 of the calculator. The polarity has to be correct; connect the red wire to terminal no. 60 (+) and the black wire to terminal no. 61 (-).

Battery Supply

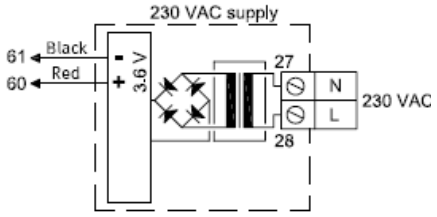
The optimal battery life is obtained by keeping the battery temperature below 30°C, through wall mounting.
The voltage of a lithium battery is almost constant throughout the entire lifetime of the battery (approx. 3.65 V). Therefore, it is not possible to determine the remaining capacity by means of voltage measurement.

Mains Supply

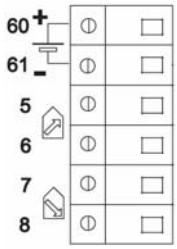
The modules are in protection class II and are connected via a two-wire cable (without earth) through the cable bush of the calculator placed in the right side of the bottom of the connection unit. Use connection cable with an outside diameter of 5-10 mm and be aware of correct dismantling as well as correct mounting of the cable.



Note: The MW-HM401 cannot be supplied with 24Vdc

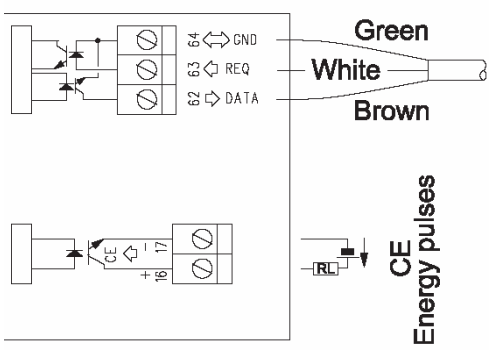


Connections



	Terminal Number	Standard Heat
+	60	Supply (red)
-	61	Supply (black)
T1	5 & 6	Sensor flow (red)
T2	7 & 8	Sensor return (blue)

Data, pulsed outputs

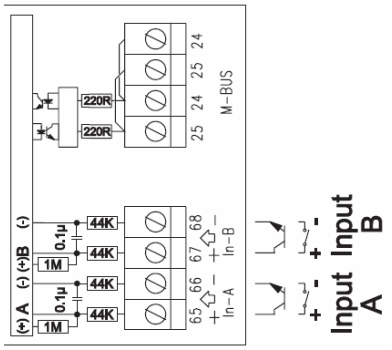


Pulse:

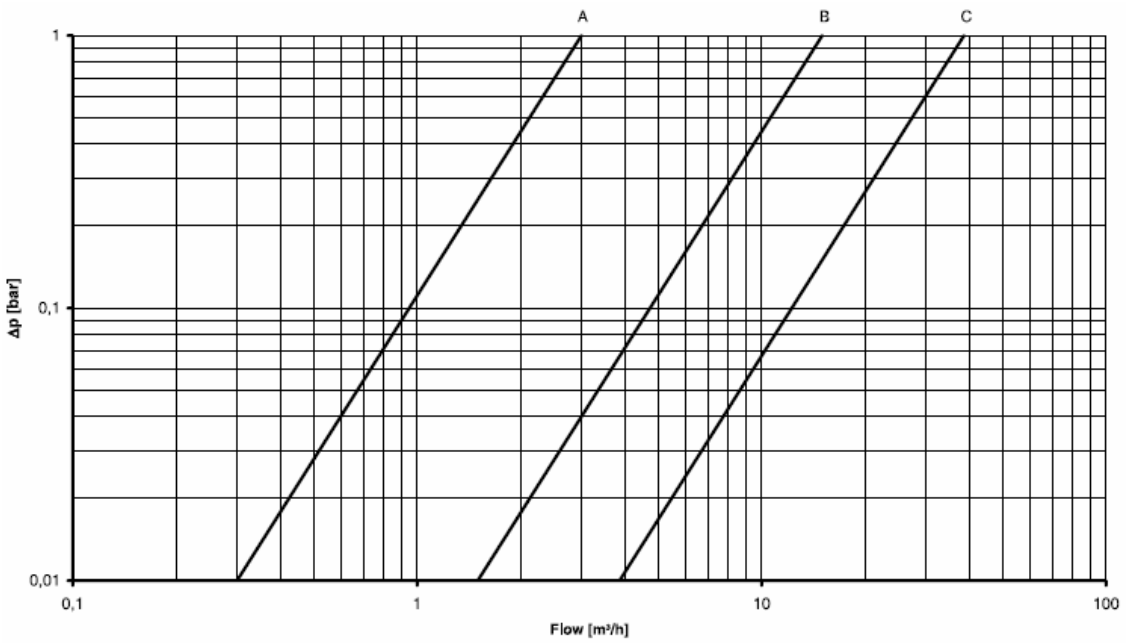
I <10mA
U <30V
Pulse duration 1msec./30msec./0.1sec.

M-bus , Pulse Inputs

M-Bus can be mounted in star, ring, or bus topology. The number of connected meters can be up to 250, depending on the power supply of the M-Bus Master as well as the total cable resistance.
Cable resistance < 29 Ohm
Cable capacity < 180 nF
The M-Bus network is to be connected to the terminals 24 and 25. The polarity is unimportant.



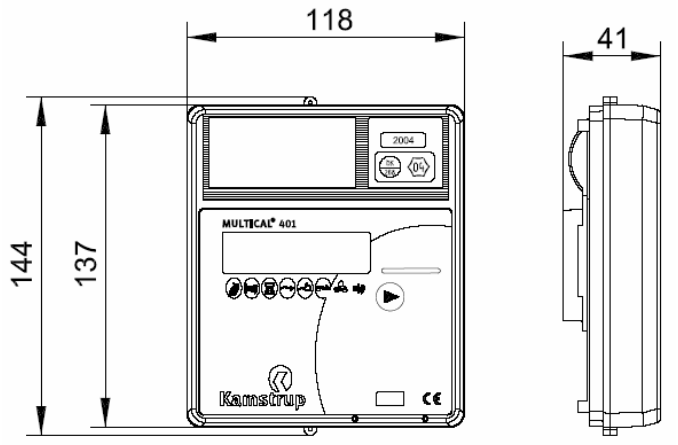
Pressure Loss Graph



Graph	Qp (m³/h)	Nom. Diameter (mm)	Kv	Q@0.25 bar (m³/h)
A	0.6 & 1.5	DN15 & DN20	3	1.5
B	3, 3.5 & 6	DN20 & DN25	15	7.5
C	10 & 15	DN40 & DN50	39	19

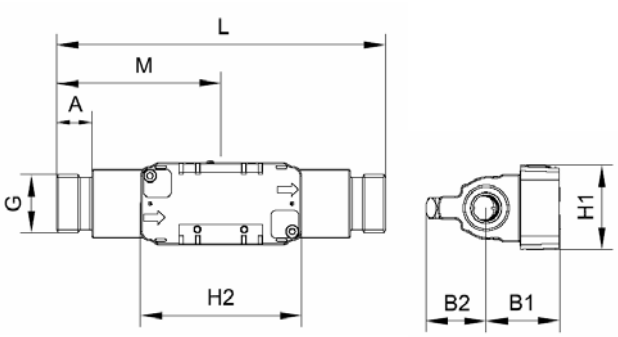
Dimensions

Integrator

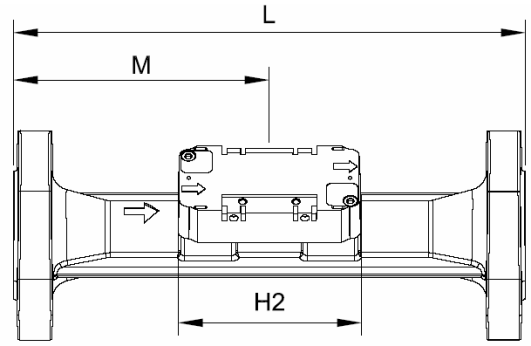


Dimensions (continued)

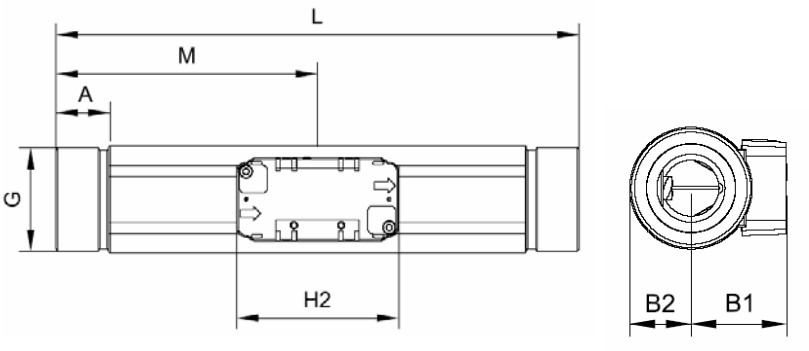
Threaded ½ " & ¾":

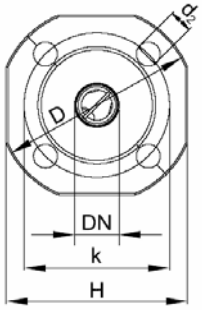


Flanged DN25, DN40 & DN50:



Threaded 1 " & 1½":





Part code	L	M	H2	A	B1	B2	H1	Weight (kg)
MW-HM401-66-W-x-x-x-1	110	L/2	92.5	10.5	42	35	47.5	1.4
MW-HM401-66-W-x-x-x-4	110	L/2	92.5	10.5	42	35	47.5	1.4
MW-HM401-66-W-x-x-x-5	165	L/2	92.5	20.5	42	35	47.5	1.8
MW-HM401-66-W-x-x-x-7	130	L/2	92.5	20.5	42	35	47.5	1.5
MW-HM401-66-W-x-x-x-9	190	L/2	92.5	20.5	42	35	47.5	2
MW-HM401-66-W-x-x-x-A	130	L/2	92.5	20.5	42	35	47.5	1.4
MW-HM401-66-W-x-x-x-B	190	L/2	92.5	20.5	42	35	47.5	1.9
MW-HM401-66-W-x-x-x-D	260	L/2	92.5	17	42	22	n/a	2.9
MW-HM401-66-W-x-x-x-F	260	L/2	92.5	17	42	22	n/a	2.9
MW-HM401-66-W-x-x-x-H	300	L/2	92.5	21	48	31	n/a	5.1

	L	M	H2	D	H	K	Bolts			Weight (kg)
							Number	Thread	d2	
MW-HM401-66-W-x-x-x-G	260	L/2	92.5	115	106	85	4	M12	14	5.6
MW-HM401-66-W-x-x-x-J	300	L/2	92.5	150	136	110	4	M16	18	8.9
MW-HM401-66-W-x-x-x-K	270	115	92.5	165	145	125	4	M16	18	10.7