



Electronic Heat Meter – Measuring cell Version

WMM4...
WMP4...

Electronic battery-supplied meters for determining the heat consumption in autonomous heating and service water systems. Saving and displaying of cumulative values on a selectable due date. Available as compact multiple-jet meter with nominal flow of 0,6 m³/h, 1,5 m³/h and 2,5 m³/h.

The electronic heat meter can be read out and parameterized via an IrDa interface.

Application

The measuring capsule version of the electronic heat meter is used for measuring heat energy. The major areas of application are systems with central heating facilities in which the heating energy is supplied to several consumers as required.

This is useful in:

- Apartment buildings
- Offices and administration buildings

Typical users are:

- Private building owners
- Residential building cooperatives
- Facility management providers
- Real estate management

Functions

- Determination of heat consumption based on the measurement of flow and difference in temperature
- Cumulation of consumption values
- Saving of cumulative consumption values on the due date
- Display of consumption values and optional of significant operating data
- Self-monitoring with error indication
- Parameterisation and read out via optical interface (IrDA-compatible)

Measuring capsule set-up

The measuring capsule meter comprises a measuring capsule and a single-pipe connector (EAT) and it can be mounted and replaced as a complete unit.

The measuring capsule that is enclosed in a brass housing contains the measuring chamber with the impeller. The flow against the impeller is multiple-jet.

The single pipe brass connector has 2 connecting pieces for mounting as well as a 2" internal screw thread into which the measuring capsule is screwed. It is installed in the grid type network by screwing or soldering the single-pipe connector.

Type overview – heat meter

Place of installation: Return

<i>Nominal Flow</i> Q_p	<i>Cable Length</i> <i>Temperature</i> <i>Sensor</i>	<i>Flow Sensor</i>	<i>Return Sensor</i>	<i>Place of</i> <i>Installation</i>	<i>Type Ref. *</i>
0.6 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Return	WMM407.B003
1.5 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Return	WMM407.D003
2.5 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Return	WMM407.E003

Place of installation: Flow

<i>Nominal Flow</i> Q_p	<i>Cable Length</i> <i>Temperature</i> <i>Sensor</i>	<i>Return Sensor</i>	<i>Flow Sensor</i>	<i>Place of</i> <i>Installation</i>	<i>Type Ref. *</i>
0.6 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Flow	WMP407.B003
1.5 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Flow	WMP407.D003
2.5 m ³ /h	1.5 m	Direct / integrated	Direct / integrated	Flow	WMP407.E003

* Abbreviation Measuring capsule

Scope of delivery – heat meter – measuring capsule version

Article	Place of Installation		Packing
	Measuring Capsule 2" ET Return	Measuring Capsule 2" ET Flow	
Compact heat meter	•	•	Box
Protective cap	•	•	Box
Profile seal WME.PRODICHT	•	•	Box
Installation manual	•	•	Box
Operating instructions	•	•	Box
Seal wire	2x	2x	Bag 1
Self lock seal	2x	2x	Bag 1
Plastic screw for fixing temperature sensors	1x	1x	Bag 2
Tool for assembly temperature sensors	•	•	Bag 2

Type overview– EAT installation kits

Scope of delivery, description	Type Ref.
1x EAT 3/4" ET 18 mm solder, 1x locking ring, 1x profile seal 2x ball valves without temperature sensor seat 1/2" IT with fixed union nut 3/4" IT	WMZ.E18/M
1x EAT 1/2" ET 15 mm solder, 1x locking ring, 1x profile seal 2x ball valves without temperature sensor seat, 1/2" IT on both sides	WMZ.E15/M

Type overview – Accessories

Accessories	Description, scope of delivery	Type Ref.
EAT 15 mm solder	EAT 1/2" ET, 15 mm solder, length 110 mm	WME.L15/M
EAT 18 mm solder	EAT 3/4" ET, 18 mm solder, length 110 mm	WME.L18/M
EAT 22 mm solder	EAT without external thread, 22 mm solder, length mm	WME.L22/M
EAT 80 mm	EAT 3/4" IT, length 80 mm	WME.G20/M
EAT 130 mm	EAT 1" ET, length 130 mm (only for measuring capsule Q_p=2.5 m³/h)	WME.G22
T-piece	Internal thread 1/2", with immersion sleeve M10x1	WFZ.T16/M
T-piece	Internal thread 3/4", with immersion sleeve M10x1	WFZ.T19/M
T-piece	Internal thread 1", with immersion sleeve M10x1	WFZ.T22/M
immersion sleeves assembly kit	MID with TH M10x1 and TH 1/4" 5,0mm	WFZ.T50
immersion sleeves assembly kit	MID with TH M10x1 and TH 1/4" 5,2mm	WFZ.T52
Read-out software	PC-software tool (additional tool required: USB-Tool set WHZ3.USB or IrDA interface F12150-2018 on Com (RS232 port)	ACT20

IT = Internal thread

ET = External thread

EAT / EAS = single-pipe connector

VAS = valve connection

Order

When ordering, specify the type ref. according to the type overview. The standard electronic heat meter has an IrDA interface.

If a due date other than the 31 December is desired, the desired month should also be entered in addition to the type reference (the last day of a month is always the due date).

Order model for a measuring capsule heat meter 30 April as due date: **WFM407.D003**,
Due date: April

Technology

Measuring Principle

The meter operates according to the multiple-jet principle. The speed of the impeller is scanned electronically and without a magnetic field.

The temperatures in the flow and return are measured with immersion sensors Pt1000 (platinum measuring elements).

Determination of heat consumption

The heat meter is equipped either for installing in the return or in the flow.

The flow is continuously measured in the calculator and at least once every minute the flow and the return temperature. A microprocessor in the calculator determines the difference in temperature and calculates the consumed quantity of heat based on the average flow and the heat coefficient.

Save consumption values

The heat consumption values are totalled continuously. The current state is saved on the next due date at 24.00 h.

The due date can be factory-programmed; the standard due date is entered as 31 December (compare «Order»)

When the annual consumption is saved, the heat meter simultaneously calculates a control number. After special parameterisation with ACT20 service software the checksum is readable. Self-readers must inform the utility company/property management of this control number and the due date value that has been read out so that they can check that the display has been read correctly.

Display

The due date value remains saved for one year.

The heat meter has a scrolling display with the following values and variables:

- Cumulative heat consumption since starting up the heat meter
- Segment test
- Due date
- Cumulative water consumption up to last due date

With the aid of the parameterization tools the following display options can be activated:

- Due date (only if due date and cut off date are different)
- Control number
- Current flow
- Difference in temperature
- Error display (see also following section)

Error messages

The heat meter is self-monitoring and can display errors that have been detected. The cumulative values remain saved until the error occurs for the first time.

Version

The heat meter comprises the flow meter, the calculator and both temperature sensors. The flow meter is installed in the EAT that is located in the pipe. The housing of the flow meter is made of brass and contains the multiple-jet measuring chamber with the impeller sensor. The water inlet has a filter to trap large dirt particles. The heat meter is a compact version.

Calculator

The calculator contains the electronics and the 8-digit display (LCD). The operating voltage of DC 3 V is supplied by a lithium battery. The IrDA interface for automatically reading out the readings is located beneath the display. The calculator on the flow meter can be rotated 360°.

Temperature sensor

The temperature sensors can be installed for indirect or direct immersion. The sensor comprises the protection sleeve at the end of which is the measuring element Pt 1000 and the PVC cable that connects it (fixed) to the calculator. The temperature sensors are mounted in the ball valves with the temperature sensor seat either (directly immersed) or in Tee with immersion sleeves (indirectly immersed). Mounted (fixed), approved, pairs of and certified temperature sensors are used.

Mounting instructions

- The provisions of the regulations for meter calibration must be observed
- Observe the local regulations for the use of heat meters (mounting, sealing, operation, etc.).
- Mount the heat meter according to the type either in the flow or return between two shut-off valves. It must be easily accessible for reading and service work.
- If the device is only to be used when starting up, the EAT with seal and cover can be mounted first.
- Before installing the meter, rinse the pipe well; mount the EAT for this purpose.
- Only labelled EATs may be fitted in new installations. (see Fig. 6)
- When installing the EAT, observe the flow sign – an arrow on the EAT.
- If a pre-installed EAT is in place, ensure that it corresponds to the drawing in Fig. 5..
- If T-pieces of a different brand are used, ensure that they comply with the standard EN1434!
- Only immersion sleeves that have been successfully tested and proven to conform to the relevant standard may be used. .
- Position the calculator so that the display is easy to read.
- After mounting, test the system for pressure.
- Protect the calculator, both temperature sensors and the screw pipe connections with seals against unauthorized access.
- Insulate the lead at the installation site of the temperature sensors.

Operating hint

- Observe the local regulations for recalibration purposes

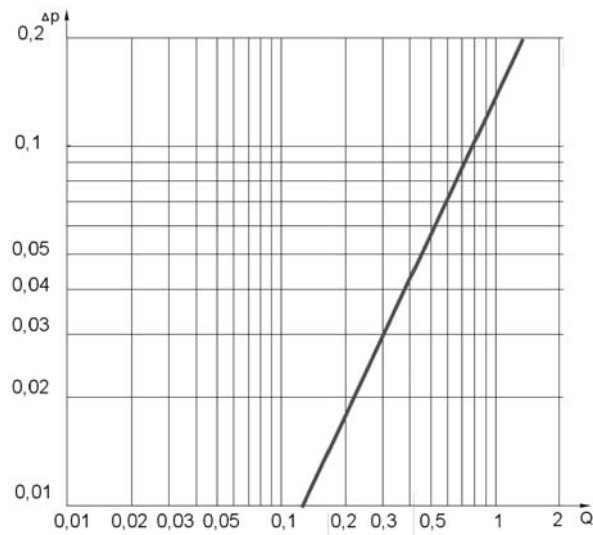


Fig. 1: Pressure loss curve $Q_p 0,6 \text{ m}^3/\text{h}$

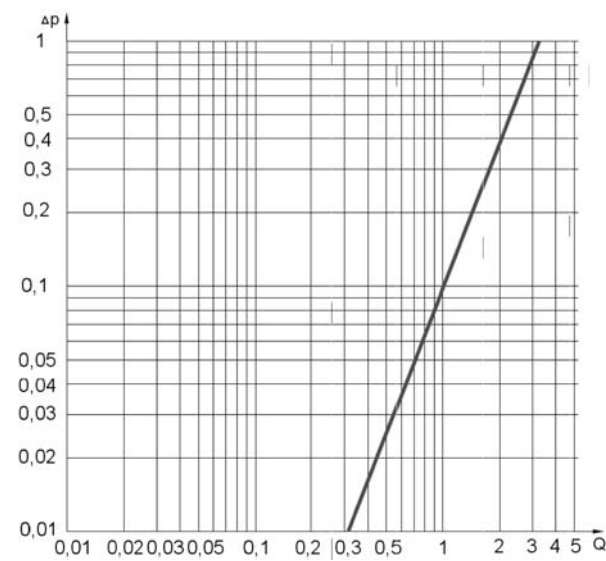


Fig. 2: Pressure loss curve $Q_p 1,5 \text{ m}^3/\text{h}$

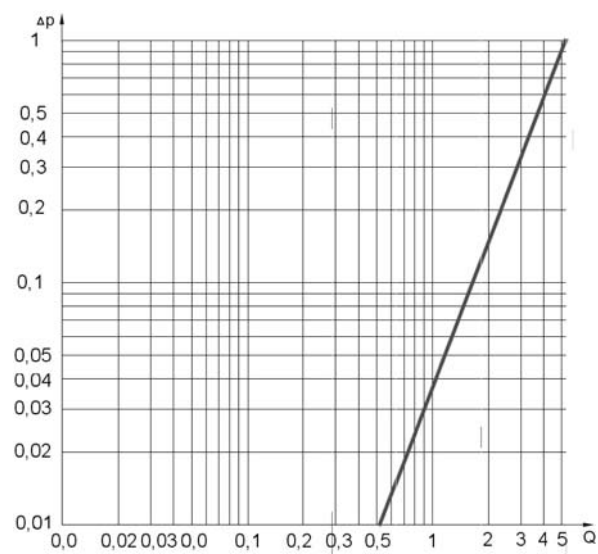


Fig. 3: Pressure loss curve $Q_p 2,5 \text{ m}^3/\text{h}$

Δp Pressure loss in bar
 Q Flow in m^3/h

Technical data

Metrological class	3 to DIN EN 1434 Ratio $q_s / q_p = 2 : 1$ Ratio $q_p / q_i = 50 : 1$ horizontal Ratio $q_p / q_i = 25 : 1$ vertical		
Fittings	A to DIN EN 1434		
Degree of protection	IP 54 to EN 60529		
Energy unit			
Standard	kWh		
On request	GJ		
Flow values	0,6 m ³ /h	1,5 m ³ /h	2,5 m ³ /h
Minimum flow q_i			
Horizontal	12 l/h	30 l/h	50 l/h
Vertical	24 l/h	60 l/h	100 l/h
Nominal flow q_p	600 l/h	1500 l/h	2500 l/h
Maximum flow q_s	1200 l/h	3000 l/h	5000 l/h
typ. starting value – horizontal	4 l/h	10 l/h	16 l/h
Maximum measurable heat output capacity	0,6 m ³ /h	1,5 m ³ /h	2,5 m ³ /h
	125 kW	313 kW	523 kW
Quality of heating water	VDI guide line 2035 (VDI – union of german engineers)		
Max. permissible operating pressure	10 bar		
Range of use – flow meter	15... 90 °C		
Temperature measurement			
temperature range of sensor	15...105 °C		
temperature difference	5...90 K		
Start temperatures	≥ 1 °C und $\Delta T \geq 0,6$ K		
Behaviour of flow			
Flow $\leq 2,1 * q_p$	Linear		
Flow $> 2,1 * q_p$	Constant		
Permissible ambient temperature			
Transport and storage	-20 °C .. +70 °C		
Operation	+5 °C .. +55 °C		
Battery life time	10 years + ½ years		
Connection sizes and mass	0,6 m ³ /h	1,5 m ³ /h	2,5 m ³ /h
Mass	0,582 kg	0,582 kg	0,585 kg
Temperature sensor			
temperature sensing element	Pt 1000 to EN 60751		
Temperature probe type	Typ DS		
response time $\tau_{0,5}$	$\leq 3,5$ s		
diameter of protective sheath	5 mm		
Connecting lead	1,5 m		
Standards, CE	EN 61000-4-3		
	DIN EN 61000-4-Parts 2,4,8		
	DIN EN 55022		
	DIN EN 1434		
	STANDARD 2004/22/EG (MID)		

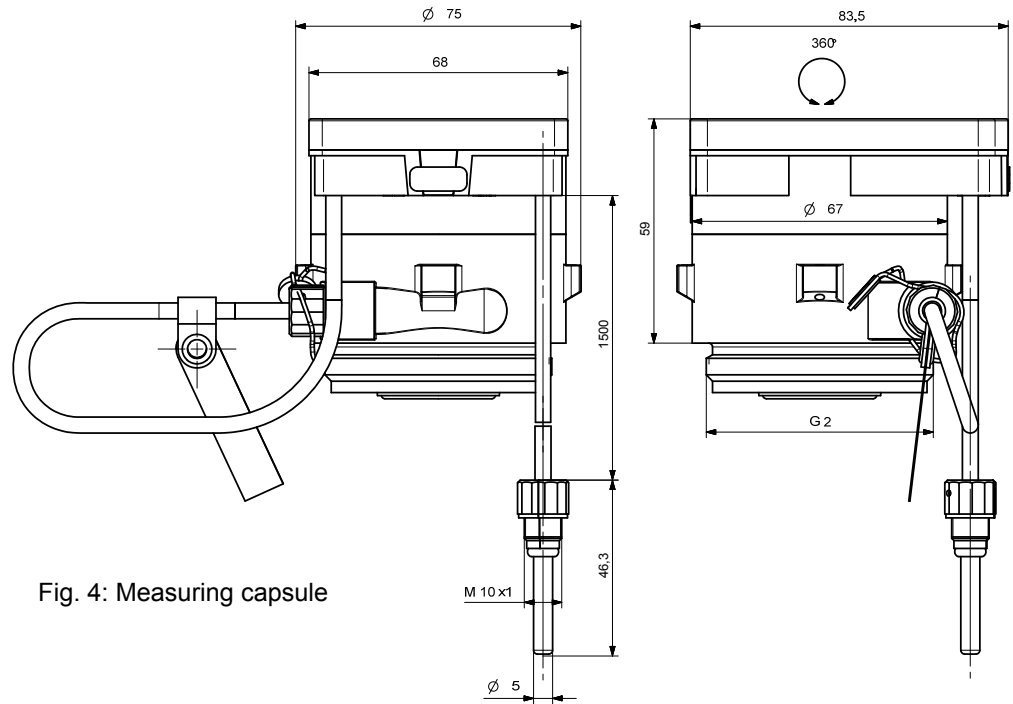


Fig. 4: Measuring capsule

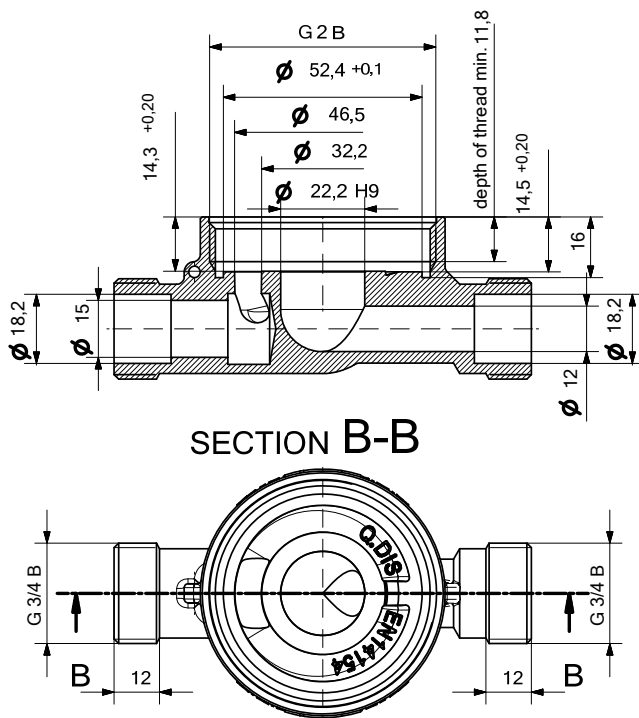


Fig. 5: EAT

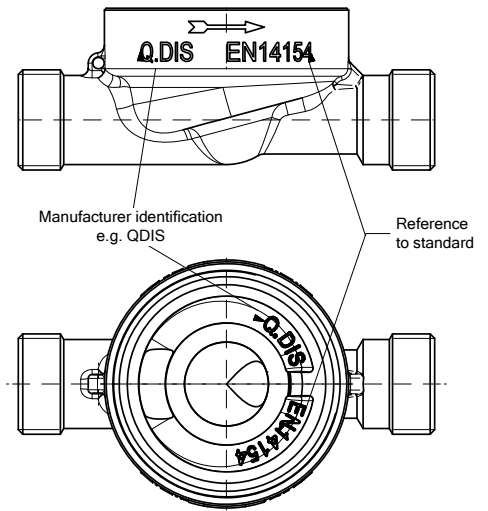


Fig. 6: EAT-labeling

This Data Sheet only contains general descriptions and technical features which, in the case of specific applications, may not necessarily apply, or which may change due to further development of the product. Technical details and features are binding only if explicitly agreed upon at the time of contract closure.

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