Installation and Operating Instructions

Flow meter *SENSOSTAR* type MSH

DE-08-MI004-PTB003

CONTENTS

1 Application and Function

This flow meter ***SENSOSTAR*** type MSH is designed for the measurement of the volume flowing through a closed heating system for the purpose of calculating the consumed heat energy.

2 Scope of Delivery

- Flow meter, incl. gasket
- Installation accessory kit: seal, sealing wire
- Installation and Operating Instructions

3 General Information

- The valid standards for the application of flow meters for heat meters are EN 1434, parts 1 + 6, the Directive 2004/22/EC ('MID'), in particular annexes I and MI-004, and the relevant national verification regulations.
- The regulations for electrical installations are to be observed.
- The relevant national verification regulations of the country in which the flow meter is installed must be observed.
- The quality of the water has to meet the conditions as specified in the AGFW Recommendation FW-510.
- The instrument must be stored and transported at above-freezing temperatures. The storage and/or ambient temperature must not fall below +1°C.
- The flow meter left the factory in conformance with all applicable safety regulations.
- The flow meter may be installed and exchanged only by qualified and authorized technical personal.
- The seals and locking wires required for the verification of the flow meter must not be damaged or removed – otherwise the verification and guarantee of the instrument no longer apply!
- All details and specifications listed in the technical data of the flow meter must be adhered to.
- When exchanging a flow meter note the serial numbers of the old and new instrument.
- To protect against damage and dirt the flow meter should only be removed from the packaging directly before installation.
- To clean the flow meter (only if necessary) use a slightly moist (not dripping wet!) cloth.
- Flush the system well before installing the flow meter in a new system.
- Do not install in a dry system as operational and leak tightness measurements are mandatory.
- Do not use hemp packing or other sealing materials.
- Insert a screening filter into the pipe in front of the flow meter if there is a danger of dirty water.
- The flow meter has been approved for "symmetrical installation" only. This means that direct mounting of one temperature sensor in the installation point of the flow meter is not allowed. The seal on the plug closing this input must not be damaged.
- The flow meter may only be mounted in a vertical or horizontal position.
- Pay attention to the point of installation (forward or return flow). See type identification.
- The input pulse value of the calculator must be identical to the 1 liter/pulse value of the flow meter.
- The flow meter must be positioned at a **minimum distance of 20 cm** to sources of electromagnetic interference (switches, controllers, pumps, etc.)
- In addition, the pulse cable must be laid at a **minimum distance of 5 cm** to other current-carrying wires.
- The single pipe connection piece (EAS) must correspond to the following table: "**Installation of VMT *SENSOSTAR* Type MSH in Single Pipe Connection Pieces (EAS)**".

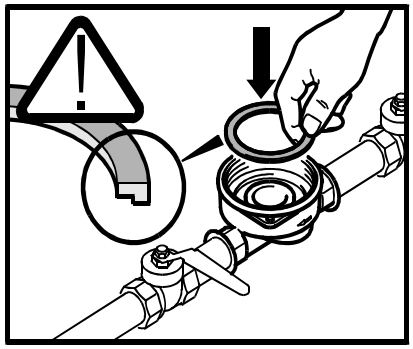
Installation of VMT *SENSOSTAR* type MSH in Single Pipe Connection Pieces (EAS)

The flow meter type MSH in this heat meter has a 2" connection as described in EN 14154 (2005) and must be installed without an adapter in the following EASs or a single pipe connection piece that is metrologically completely identical. These EASs are pipe connections which have no metrological influence on the measurement accuracy:

English description as in EAS installation instructions	Corresponding DN	Complete length [mm]	Type approval no.; owner of approval	Exact identification of EAS as in original ista type approval (PTB)
Internal thread Rp 1/2	15	94	9.11-96/95 Z 22.12/95.03; 2.1.2; ista Deutschland GmbH	EAS 1/2"IG
Internal thread Rp 3/4	20	100		EAS 3/4"IG
EAS with ball valve Rp 3/4	20	147	9.11-23/96 1.Nachtrag Z 22.12/95.03; 2.1.2; ista Deutschland GmbH	EAS-Kugelhahn 3/4" IG Sensonic
EAS with ball valve Rp 1	25	159		EAS-Kugelhahn 1" IG Sensonic
UNI Rp 3/4	20	105	9.11-23/96 1.Nachtrag Z 22.12/95.03; 2.1.2; ista Deutschland GmbH	EAS UNIVERSAL 3/4" IG
UNI Rp 1	25	105		EAS UNIVERSAL 1" IG
External thread G 3/4	15	80	9.11-96/95 Z 22.12/95.03; 2.1.2; ista Deutschland GmbH	EAS 3/4“ AG
	15	110		
External thread G 1	20	105	9.11-96/95 Z 22.12/95.03; 2.1.2; ista Deutschland GmbH	EAS 1"AG
	20	130		
	20	190		

4 Mounting the Flow Meter

- Close shut-off valves
- Drain the closed-off pipe section.
- Remove overflow flange or the old flow meter from the connection piece (EAS).
- Remove old profile gasket.
- Check sealing surfaces and threads for imperfections or dirt, and if necessary, clean with a suitable cleansing liquid.
- Place the new profile gasket in the connection piece with the flat surface facing up.



- Check that the O-ring on the outlet of the flow meter is in the correct position.
- Check the flow direction (arrow on the connection piece)!
- Screw in the flow meter tightly by hand and then tighten to the **mechanical** stop (metal-to-metal).

5 Connection to the calculator

☛ Only calculators with an input pulse value of 1 liter/pulse may be connected to this flow meter.

The flow meter is equipped with a three-pole cable connection:

- green = pulse
- white = ground
- brown = not for connection

6 Start of Operation

- Slowly open the shut-off valves.
- **The calculator should display a pulse value or a volume if there is a flow in the pipe.** (See also calculator operating instructions.)
- **If not,** check the following points:
  - Is the pulse value or volume displayed as a sub-item in a lower level of the display menu? (See calculator operating instructions.)
  - Is the heating system in operation?
  - Is the heating pipe clear (strainer not clogged)?
  - Is the directional arrow on the EAS in the right direction?
- Upon ascertaining that the flow meter is functioning correctly, attach the seals to the meter.

7 Technical Data

Approval data	
EC examination certificate	DE-08-MI004-PTB003
Accuracy class[1)]	EN 1434-1:2007 class 2 / class 3
Min. flow[1)] q_i/q_p	1:100 / 1:50 / 1:25
Max. flow q_s/q_p	2:1
Mechanical class	M1
Electromagnetic class	E1
Protection rating	IP54
Flow disturbance class	U0

[1)]Accuracy class and minimum flow: see type identification

Flow sensor				
Nominal flow q_p	m^3/h	0.6	1.5	2.5
Max. flow	m^3/h	1.2	3.0	5.0
Low flow threshold horizontal	l/h	2.5	3.5	4
Low flow threshold vertical	l/h	3	5	6
Max. pressure MAP	bar	25		
Nominal pressure	bar	16		
Pressure drop at q_p	mbar	120	225	240
Temperature range	°C	15…90		
Mounting position		horizontal, vertical		
Connection		G2B (2")		
Connection compatibility See Table "Installation of VMT ***SENSOSTAR*** Type MSH in Single Pipe Connection Pieces (EAS)"				
Electronics				
Ambient temperature	°C	+5 … +55		
Power supply		3 V, lithium		
Lifetime of battery		6 + 2 years		
Pulse output (EN 1434-2)				
Class		OC (open collector)		
Pulse value		1 l / pulse		
Length of cable		3m (optional 10m)		
Pulse form		rectangular		
Max. voltage		20 VDC		
Max. current		0.1 mA		
Min. pulse duration		20 ms		
Min. pulse interval		100 ms		

8 MID Declaration of Conformity

For the product described in this document we confirm, as the manufacturer, that it meets the requirements according to the Council Directive 2004/22/EC on the approximation of the laws of the member states relating to measurement instruments, in particular those in annexes I and MI-004, as well as the requirements relating to emissions in the European Council Directive 89/336/EEC, and the requirements according to the Council Low Voltage Directive 2006/95/EC.

The complete signed declaration can be found at **www.engelmann.de**.

9 Contact

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