

Engelmann **Heat Meter**

SensoStar I / T / M

Mechanical flow sensors for installation points IST, TE1, M60



Most accurate measurement results using the multi-jet principle

Various installation options due to a large selection of interfaces

Flexible communication based on modular system

Fast response due to dynamic temperature measurement cycle

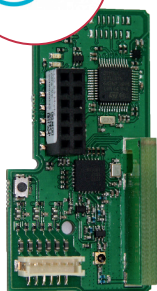
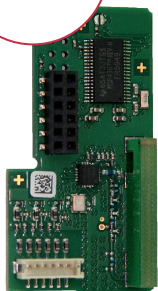
Precise heat/cooling measurement

The **SensoStar I / T / M** is a high-precision measuring device that uses inductive sensing to record heat or cooling energy. The comprehensive range covers all common installation interfaces as well as a variety of temperature sensor and communication variants.

We speak your language

The continuously growing portfolio of communication modules offers you a wide range of remote readout options.

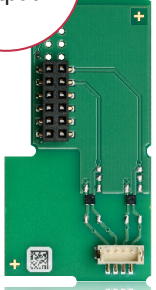
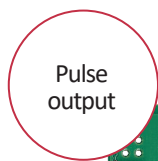
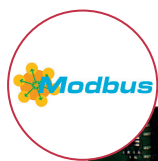
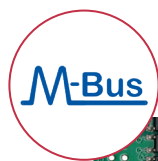
RADIO MODULES



Features

- Meters from Qp 0.6 to Qp 2.5
- Installation points: IST, TE1, M60
- Horizontal / vertical / overhead installation
- Installation point and display unit adjustable on site
- Return flow detection
- Detachable calculator with 0.50 m connection cable
- Battery capacity of up to 20 years

WIRED MODULES



wM-Bus, LoRaWAN and M-Bus can also be equipped with 3 pulse inputs to connect other devices.

Flow sensor

Sizes	Nominal flow rate Qp m³/h	m³/h	0.6	1.5	2.5
	Low flow threshold value	l/h	4	4	5.5
	Minimum flow Qi	l/h	30	30	50
	Maximum flow Qs	m³/h	1.2	3	5
Pressure drop Δp at Qp		bar	0.1	0.2	0.24
Pressure drop Δp at Qs		bar	0.4	0.74	0.92
Dynamic range Qi/Qp		-	1:20	1:50	1:50
Measuring method		bidirectional inductive scanning system			
Accuracy class (MID)		class 3 (EN 1434)			
Protection class		IP65			
Nominal pressure PN		bar	16		
Medium		water optional, without approval: water with a propylene glycol or ethylene glycol percentage rate of 20 %, 30 %, 40 % or 50 % (type and concentration of glycol can be set at any time)			
Mounting position		any position (horizontal, vertical, overhead)			
Point of installation		outlet flow and inlet flow can be set when the amount of energy is still ≤ 10 kWh			
Temperature range medium heat		°C	15 – 90		
Temperature range medium cooling (Qp 1.5 and Qp 2.5)		°C	5 – 50		

Calculator

Temperature range medium	°C	0 – 150 heat / 0 – 50 cooling (Q_p 1.5 and Q_p 2.5)
Ambient temperature in the field	°C	5 – 55 at 95 % relative humidity
Transport temperature	°C	-25 – 70 (for max. 168 h)
Storage temperature	°C	-25 – 55
Temperature difference range $\Delta\theta$ heat	K	3 – 100
Temperature difference range $\Delta\theta$ cooling	K	-3 – -50
Minimum temperature difference $\Delta\theta$ heat	K	> 0.05
Minimum temperature difference $\Delta\theta$ cooling	K	<-0.05
Minimum temperature difference $\Delta\theta$ heat/cooling	K	> 0.5 / <-0.5
Resolution temperature	°C	0.01
Measuring cycle temperature; dynamic	s	2 / 60; using a power pack: 2 s permanent
Display	LCD – 8 digits + special characters	
Displayed thermal energy	up to 3 decimal places	

Units		MWh, kW, m ³ , m ³ /h (kWh, GJ, MMBTU, Gcal) unit of energy can be set when the amount of energy is still ≤ 10 kWh
Interfaces		optical interface (M-Bus protocol) <i>optional communication:</i> radio: wireless M-Bus*, LoRaWAN* wired: M-Bus*, Modbus RTU, 2 pulse outputs * Optional with 3 pulse inputs.
Power supply		easily replaceable 3 V lithium battery preparation for 3 V power pack available (input voltage 230 V / 24 V)
Battery capacity, designed	years	20 (without communication module) 16 (M-Bus, readout interval 1 hour) 15 (M-Bus, readout interval 10 minutes) 10 (with others, e.g., wM-Bus, Modbus RTU, LoRaWAN)
Data storage		24 monthly and 24 semi-monthly values
Billing dates		freely selectable annual billing date 15 monthly and 15 semi-monthly values via display or radio (compact mode) 24 monthly and 24 semi-monthly values via optical interface or M-Bus
2 tariff registers		individually adjustable; store energy or time
Storage of the maximum values		flow, power and temperatures (inlet, outlet, ΔΘ) as well as the respective maximum values of the last 15 months
Protection class		IP65
Approvals		DE-16-MI004-PTB025; DE-16-M-PTB-0097 CH-T2-18768-00 CE
Type designation		S3
EMC (MID)		EN 1434

Temperature sensors (2-wire technology)

Platinum precision resistor		Pt 1000
Sensor diameter	mm	UTS: 5; 5.2; 6; AGFW: 27.5; 38; needle sensor: 3.5 x 75
Connection cable length	m	1.5; 3; 6
Installation type		asymmetrical; symmetrical

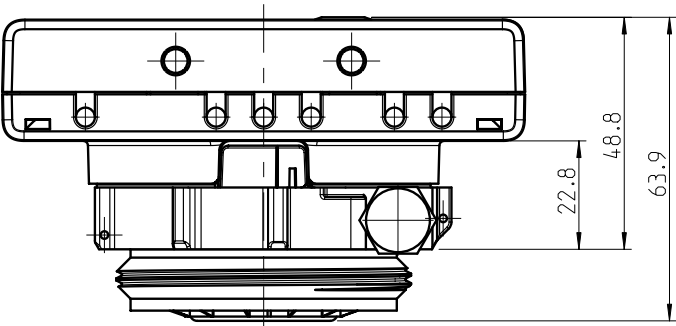
Weights

Weight (standard version in kg)	variant I	variant T	variant M
Calculator not detachable	0.655	—	—
Calculator detachable	0.700	0.780	0.700

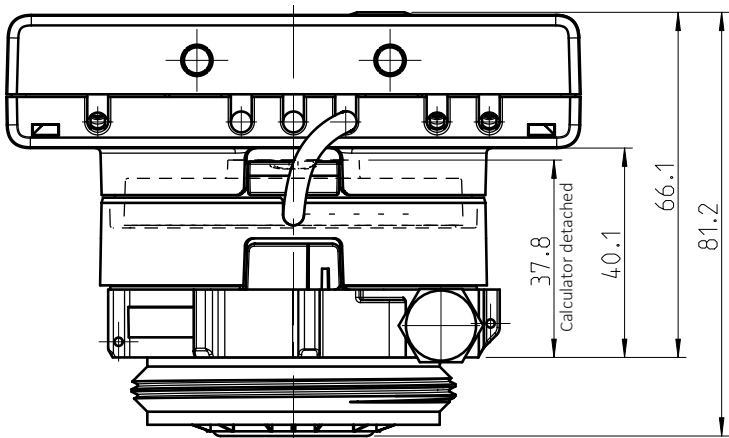
Dimensions

Pulse cable length (only separable version)	m	0.50
Calculator housing (H x W x D)	mm	75 x 110 x 34.5
Connection thread	variant I: 2"	variant T: M62 x 2 variant M: M60 x 1.5

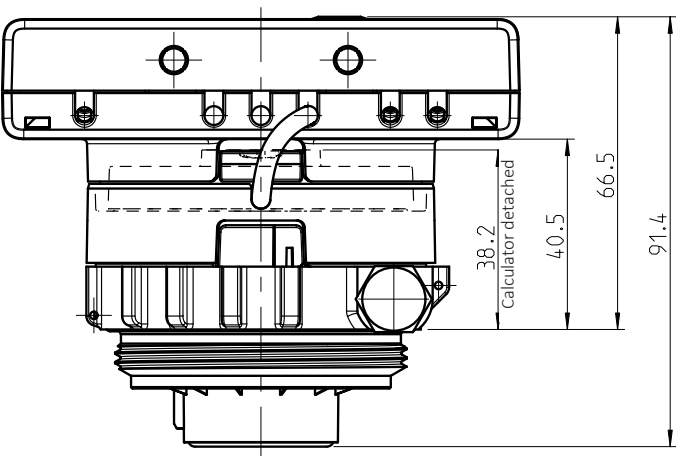
SensoStar I



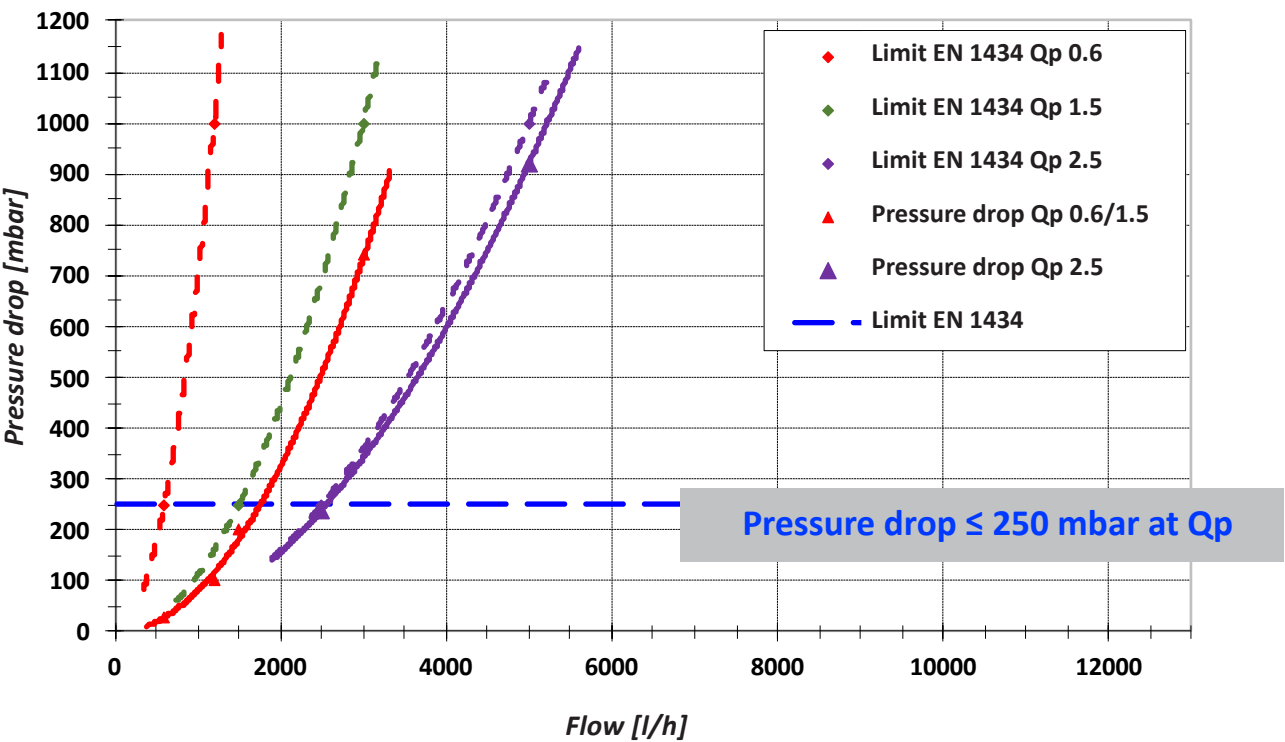
SensoStar M



SensoStar T



PRESSURE DROP SENSOSTAR I / T / M



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