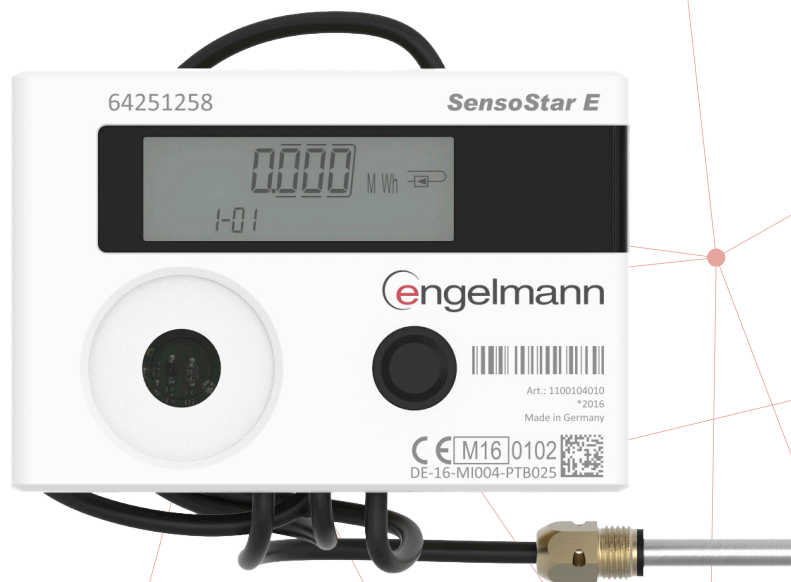


Engelmann Heat Meter

SensoStar E

Mechanical flow sensor for inline installation points



Most accurate measurement results using the single-jet principle

Various installation options due to a large selection of interfaces and options

Flexible communication based on modular system

Fast response due to dynamic temperature measurement cycle

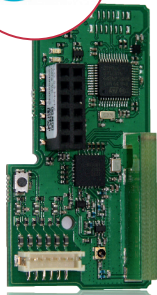
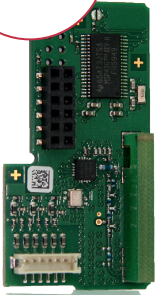
Precise heat/cooling measurement

The **SensoStar E** is a high-precision measuring device that uses inductive sensing to record heat or cooling energy. This meter offers the right solution for every installation situation or requirement. The comprehensive range covers all installation lengths, 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.

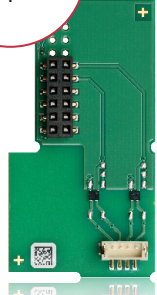
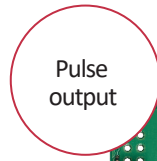
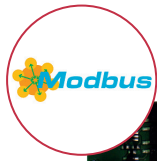
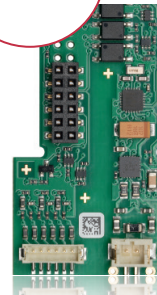
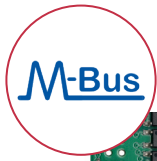
RADIO MODULES



Features

- Meters from Qp 0.6 to Qp 2.5
- Sizes: DN 15 and DN 20
- Installation lengths: 110 mm and 130 mm
- Vertical or horizontal installation
- Installation point and display unit adjustable on site
- Automatic 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 Q_p	m^3/h	0.6	1.5	1.5	2.5
	Low flow threshold value	horizontal	3.5 l/h	7 l/h	7 l/h	10 l/h
		vertical	4 l/h	7 l/h	7 l/h	10 l/h
	Minimum flow Q_i	l/h	24	60	60	100
	Maximum flow Q_s	m^3/h	1.2	3	3	5
Pressure drop Δp at Q_p	bar	0.155	0.210	0.225	0.165	
Pressure drop Δp at Q_s	bar	0.660	0.840	0.910	0.675	
Nominal diameter	mm	DN 15	DN 15	DN 20	DN 20	
Connection thread	inch	G3/4B	G3/4B	G1B	G1B	
Installation length	mm	110	110	130	130	
Dynamic range Q_i/Q_p	-	1:25	1:25	1:25	1:25	
Measuring method	bidirectional inductive scanning system					
Accuracy class (MID)	class 3					
Protection class	IP65					
Nominal pressure P_N	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	horizontal/vertical					
Point of installation	outlet flow and inlet flow can be set when the amount of energy is still ≤ 10 kWh					
Temperature range medium heat	$^{\circ}C$	15 – 90				
Temperature range medium cooling (Q_p 1.5 (DN 15) and Q_p 2.5)	$^{\circ}C$	5 – 50				

Calculator		
Temperature range medium	$^{\circ}C$	0 – 150 heat / 0 – 50 cooling (Q_p 1.5 (DN 15) and Q_p 2.5)
Ambient temperature in the field	$^{\circ}C$	5 – 55 at 95 % relative humidity
Transport temperature	$^{\circ}C$	-25 – 70 (for max. 168 h)
Storage temperature	$^{\circ}C$	-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	$^{\circ}C$	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, 2 pulse outputs	
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, LoraWAN)
Data storage	24 monthly and 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	

* Optional with 3 pulse inputs.

Temperature sensors (2-wire technology)

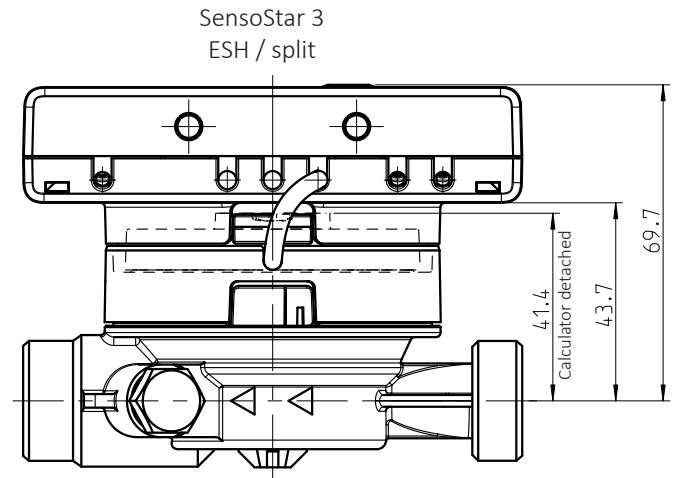
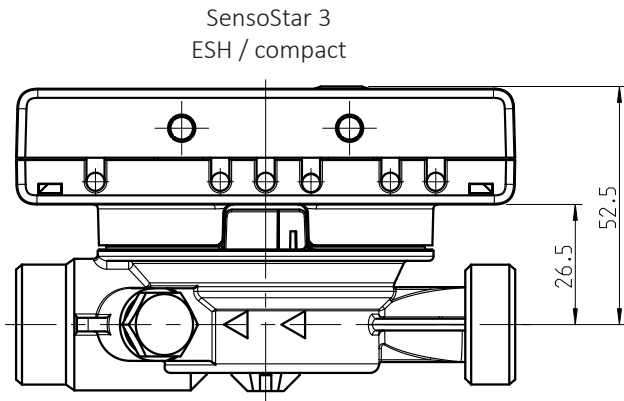
Platinum precision resistor	Pt 1000	
Sensor diameter	mm	UTS: 5; 5.2; 6; AGFW: 27.5; 38; needle sensor: 3.5 x 75
Connection cable length	m	1.5; 3; 6
Installation type	asymmetrical; symmetrical	

Weights

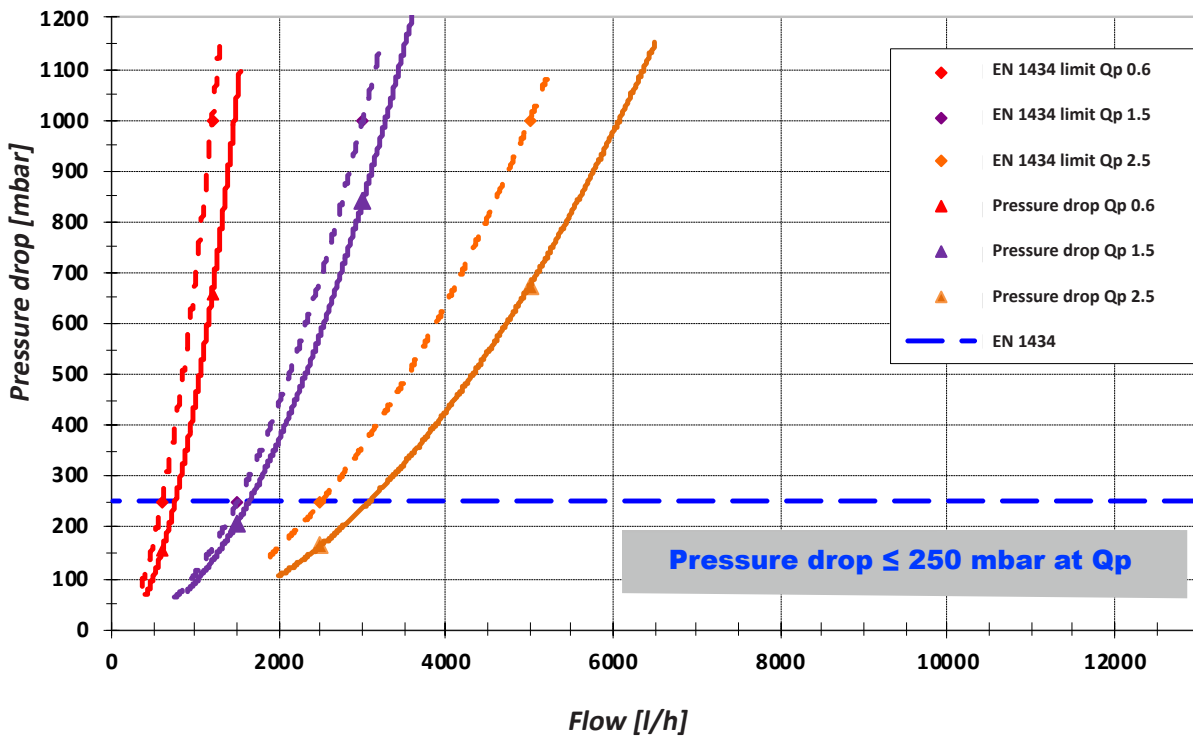
Weight (standard version in kg)	Qp 0.6 / Qp 1.5 (DN 15)	Qp 1.5 (DN 20) / Qp 2.5
Calculator not detachable	0.755	0.795
Calculator detachable	0.840	0.880

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	G3/4", DN 15: Qp 0.6 / Qp 1.5	G1", DN 20: Qp 1.5 / Qp 2.5



PRESSURE DROP SENSOSTAR E



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