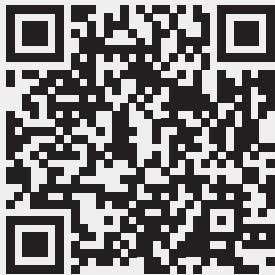
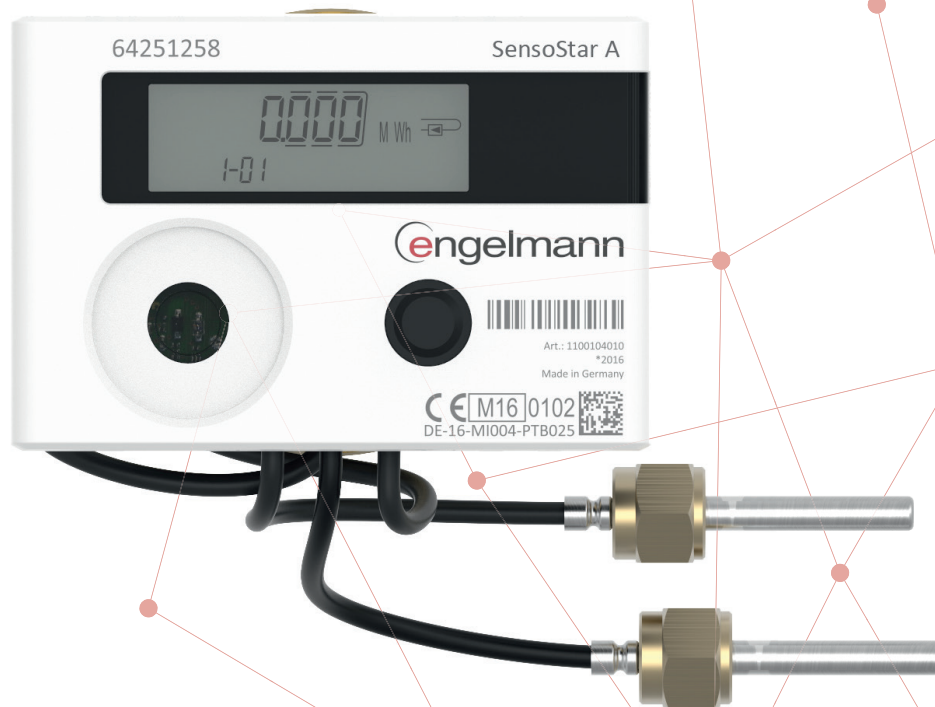


Engelmann **Heat Meter**

# SensoStar **A**

Mechanical flow sensor for installation points A1



Most accurate measurement results in any mounting position

Flexible communication based on modular system

Fast response due to dynamic temperature measurement cycle

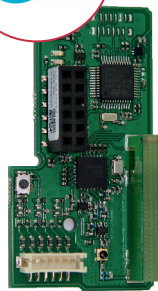
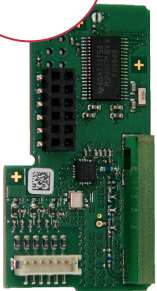
# Precise heat/cooling measurement

The SensoStar A is a high-precision measuring device that uses inductive sensing to record heat or cooling energy. The comprehensive range covers a large number 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.

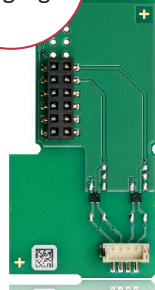
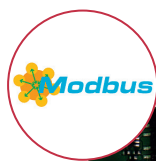
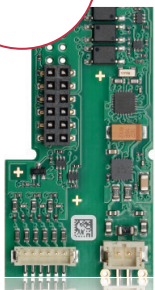
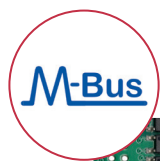
### RADIO MODULES



### Features

- Meters from qp 0.6 to qp 2.5
- Installation points: A1
- Horizontal / vertical / overhead installation
- Installation point and display unit adjustable on site
- Return flow detection
- Detachable calculator with 0.50 m connection cable
- Battery life 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.

## 1. Flow sensor

Sizes	Nominal flow rate qp	m³/h	0.6	1.5	2.5
	Low flow threshold value	l/h	3.5	4	5.5
	Minimum flow qi	l/h	12	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
Nominal diameter		mm	DN 15	DN 15	DN20
Connection thread		inch	G3/4B	G3/4B	G1B
Installation length		mm	110	110	130
Dynamic range qi/qp		-	1:50	1:50	1:50
Measuring method			bidirectional inductive scanning system		
Accuracy class (MID)			Class 3		
Nominal pressure PN		bar	16		
Temperature range medium heat		°C	15 – 90		
Temperature range medium cooling (from qp 1.5 to qp 2.5)		°C	5 – 50		
Point of installation			outlet flow and inlet flow; can be set when the amount of energy is still ≤ 10 kWh		
Mounting position			any position		
Protection class			IP65		
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)		

## 2. Calculator

Temperature range medium	°C	0 – 150 heat / 0 – 50 cooling (from $q_p$ 1.5 to $q_p$ 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

SensoStar A

TECHNICAL DATA

Display	LCD – 8 digits + special characters	
Displayed thermal energy	up to 3 decimal places	
Units	MWh, kW, m³, m³/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)	
Estimated lifetime	years	20 without communication module; 16 with M-bus hourly readout; 15 with M-Bus 10 minute readout; 10 with others e.g. wM-bus, Modbus, LoraWAN
Data storage	24 monthly and semi-monthly values	
Billing dates	freely selectable annual reference date; 15 monthly and semi-monthly values via display or radio (compact mode); 24 monthly and 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	
CE	yes	
EMC	EN 1434	

\* Optional with 3 pulse inputs.

3. 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	

4. Weight

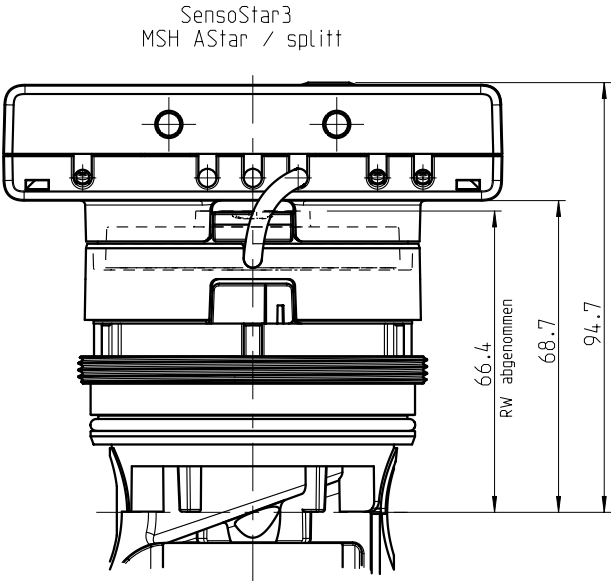
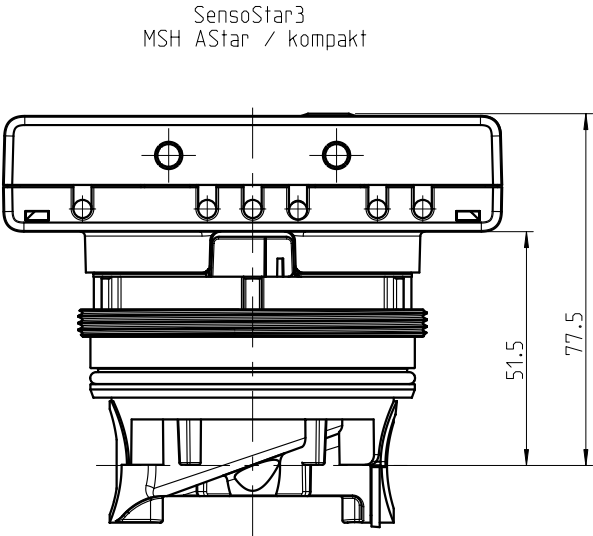
Weight (standard version in kg)	0.955	
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5. Dimensions

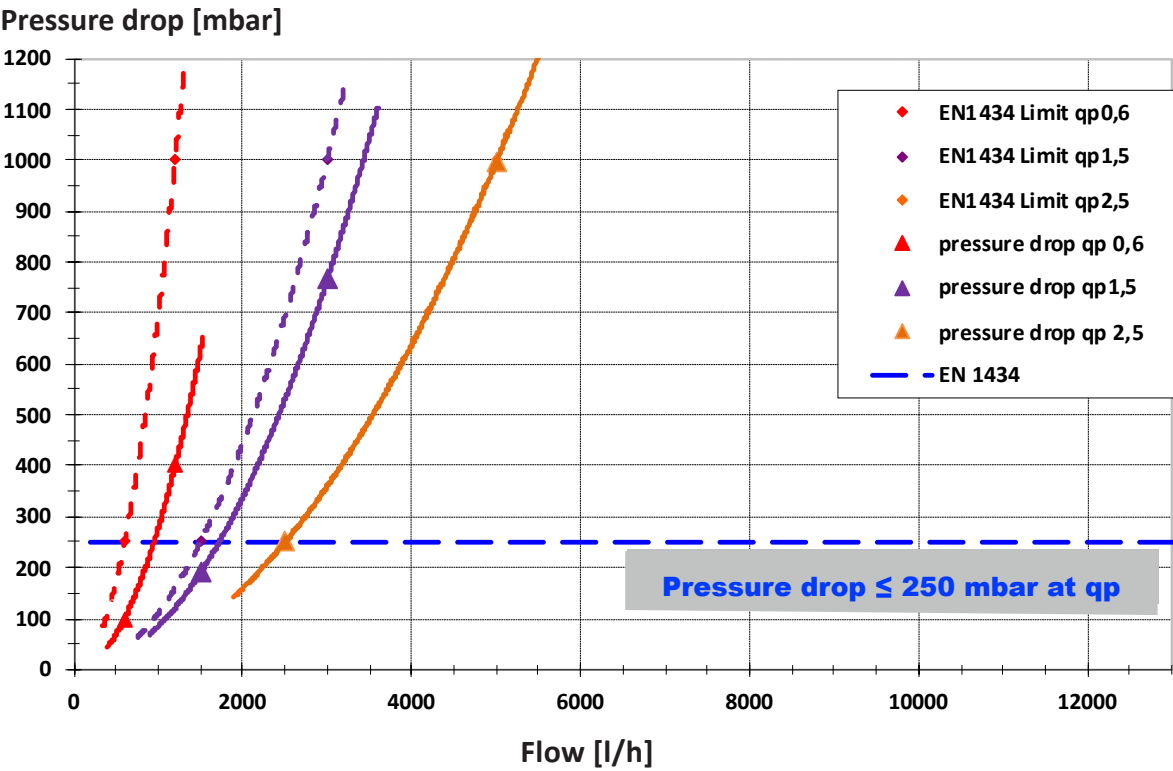
Pulse cable length (only separable version)	m	0.50
Calculator housing (H x W x D)	mm	75 x 110 x 34.5
External thread	M 77 x 1.5	

SensoStar A

TECHNICAL DATA



PRESSURE DROP SENSOSTAR A



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