

Engelmann Heat Meter Calculator

# SensoStar C



Various application options due to a large selection of variants and setting options

User-friendly mounting system for easy connection of flow and temperature sensors

Flexible communication based on a modular system

Connection of an external power pack enables direct monitoring of your system

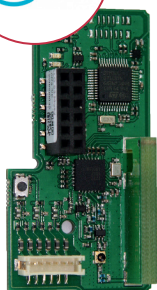
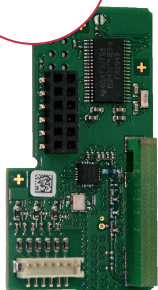
## Precise heat/cooling measurement

The **SensoStar C** is a flexible calculator for recording heat or cooling energy that offers a suitable solution for every installation situation. Specially designed for the measurement of large volume flows, the calculator can be easily combined with all standard flow sensors. The range is rounded off by a wide selection of retrofittable communication modules as well as the option of an external power pack for direct system monitoring.

### We speak your language

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

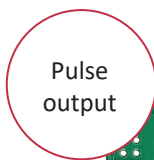
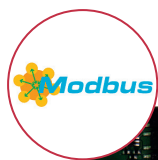
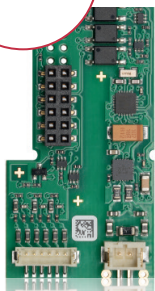
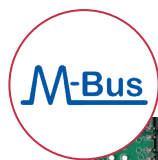
#### RADIO MODULES



#### Features

- Available for heating and cooling applications
- Wide range of variants for different requirements
- Installation point and display unit adjustable on site
- Battery capacity of up to 20 years
- Automatic adjustment of the temperature measurement cycle by using external power supply

#### WIRED MODULES



Pulse  
output



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

### Calculator

Temperature range medium	°C	0 – 150 heat / 0 – 50 cooling
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
Temperature measurement cycle in normal operation	s	30 with a lifetime of 6+1 years; 60 with a lifetime of 10 years (optional); 2 by using a power pack
Pulse values, optional	l/Imp	1; 2.5; 10; 25; 100; 250; 1000; 2500
Display	LCD – 8 digits + special characters	
Displayed thermal energy	up to 3 decimal places	
Units	MWh, kW, m <sup>3</sup> , m <sup>3</sup> /h (kWh, GJ); 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 AC)	
Battery capacity, estimated	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 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, $\Delta\theta$ ) as well as the respective maximum values of the last 15 months	
Protection class	IP54	
Approvals	DE-18-MI004-PTB037; DE-18-M-PTB-0049; CH-T2-18769-00; CE	
Mechanical / electromagnetic class (MID)	M2 / E2	
Pulse input device	microcontroller CMOS input of class IB according to EN 1434-2:2015 (D)	
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)	
Weight	kg	0.350
W x H x D	mm	150 x 130 x 35

\* Optional with 3 pulse inputs.

### Flow sensor requirements

Encoder type class (according to EN 1434-2:2015)	OA (reed contact); OC (open collector)	
Maximum input frequency	Hz	10
Pulse length	ms	at least 25
Pulse pause	ms	at least 50

### Temperature sensor requirements

Platinum precision resistor	Pt 500	
Connecting cable length (unshielded)	m	up to 10 m in 2-wire technology; (3 and 10 available at Engelmann)
Installation type	direct immersion; in thermowells	

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