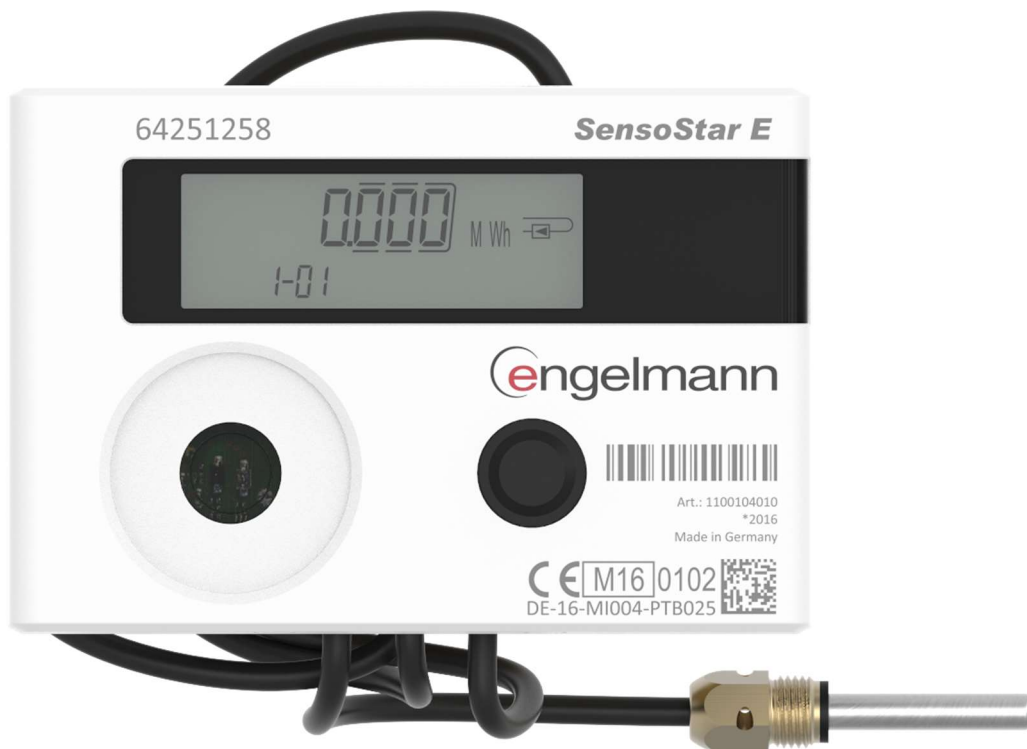


## Engelmann Compact Heat Meter

# SensoStar E

Single-jet flow sensor for inline installation points



- Detection of back flow
- Measuring cycle temperature, dynamic: 2 / 60 s
- Outlet flow and inlet flow can be set on site
- Detachable calculator unit, pulse cable length 50 cm (optional)
- Communication interfaces:
  - wireless M-Bus;
  - wireless M-Bus + 3 pulse inputs;
  - M-Bus;
  - M-Bus + 3 pulse inputs;
  - Modbus RTU;
  - LoRaWAN + 3 pulse inputs;
  - 1 pulse output;
  - 2 pulse outputs

## Technical data:

### Flow sensor

Measuring method	bidirectional inductive scanning system					
Sizes	Nominal flow $q_p$	$m^3/h$	0,6	1,5	1,5	2,5
	Low flow threshold	horizontal	3,5 l/h	7,0 l/h	7,0 l/h	10,0 l/h
		vertical	4,0 l/h	7,0 l/h	7,0 l/h	10,0 l/h
	Minimum flow $q_i$	l/h	24	60	60	100
	Maximum flow $q_s$	$m^3/h$	1,2	3,0	3,0	5,0
Pressure drop $\Delta p$ at $q_p$		bar	0,155	0,210	0,225	0,165
Pressure drop $\Delta p$ at $q_s$		bar	0,660	0,840	0,910	0,675
Nominal diameter		mm	DN 15	DN 15	DN 20	DN 20
Thread		inch	G3/4B	G3/4B	G1B	G1B
Length		mm	110	110	130	130
Dynamic range $q_i/q_p$			1:25	1:25	1:25	1:25
Accuracy class (MID)			class 3			
Nominal pressure PN		bar	16			
Temperature range medium heat		°C	15 – 90			
Temperature range medium cooling		°C	5 – 50			
( $q_p$ 1,5 (DN 15) and $q_p$ 2,5)						
Point of installation			outlet flow and inlet flow; can be set when the amount of energy is still $\leq 10$ kWh			
Mounting position			horizontal / vertical			
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)			

### Calculator unit

Temperature range medium heat	°C	0 – 150
Temperature range medium cooling	°C	0 – 50
( $q_p$ 1,5 (DN 15) and $q_p$ 2,5)		
Ambient temperature in the field	°C	5 – 55 at 95 % relative humidity
Transport temperature	°C	-25 – 70 (for maximal 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	K	> 0,5 / < -0,5
$\Delta\theta_{HC}$ heat / cooling		
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
Decimal places		up to 3 after comma
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 $\leq 10$ kWh
Interfaces		optical interface (M-Bus protocol); optional:

Power supply		wireless M-Bus; wireless M-Bus + 3 pulse inputs; M-Bus; M-Bus + 3 pulse inputs; Modbus RTU; LoRaWAN + 3 pulse inputs; 1 pulse output; 2 pulse outputs
Estimated lifetime	years	exchangeable 3 V lithium battery; all types prepared for 3 V power pack (input voltage 230 V / 24 V) 10 (no option: 1 pulse output); 6+1
Data storage		nonvolatile memory
Reading dates		selectable yearly reading date; 15 monthly and semimonthly values via display or wireless M-Bus (compact mode); 24 monthly and semimonthly values via optical interface or M-Bus
2 tariff registers		can be set individually; adding up energy or time
Storage of maximum values		flow, power and temperatures (inlet, outlet, $\Delta\theta$ ), plus the respective maximum values of the last 15 months
Protection class		IP65
CE		yes
EMC		EN 1434

**Temperature sensors** (2-wire technique)

Platinum precision resistor		Pt 1000
Diameter	mm	5; 5,2; 6; AGFW 27,5; 38; needle sensor 3,5 x 75
Length of cable	m	1,5; 3; 6
Installation		asymmetrical; symmetrical

**Weights**

Weight (basic version, kg)	$q_p$ 0,6 / $q_p$ 1,5 (DN 15)	$q_p$ 1,5 (DN 20) / $q_p$ 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
Thread	G3/4", DN 15: $q_p$ 0,6 / $q_p$ 1,5	G1", DN 20: $q_p$ 1,5 / $q_p$ 2,5

(on the right the separable version with a detachable calculator)

