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Product overview

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Engelmann Ultrasonic Thermal Energy Meter

SensoStar U / UC

Ultrasonic flow sensor for inline installation points

- Most accurate measurement results in any installation position
- Various installation options due to a large selection of installation lengths
- Flexible communication based on modular system
- Fast response due to dynamic temperature measurement cycle

Status 2026/06/08 Subject to technical change!
Engelmann Sensor GmbH I Rudolf-Diesel-Straße 24 - 28 I 69168 Wiesloch, Germany

Overview

SENSOSTAR U / SENSOSTAR UC

Precise heat/cooling measurement via ultrasound

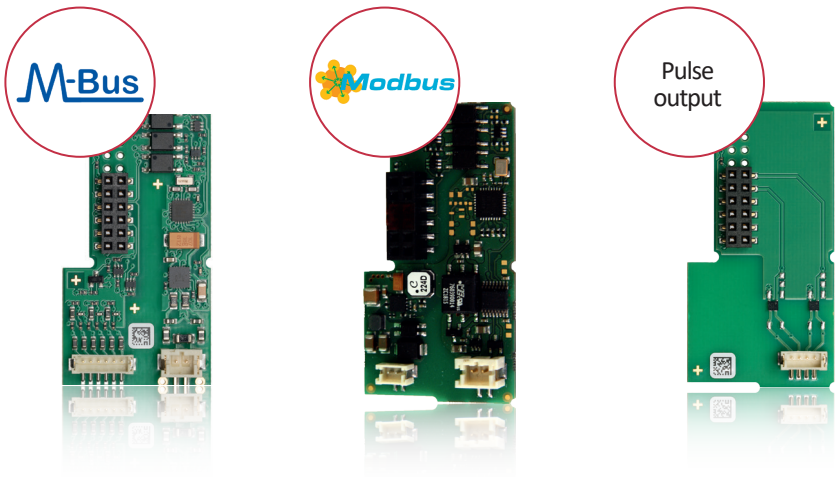
The SensoStar U and SensoStar UC are high-precision measuring devices that use ultrasonic measurement technology to record heat or cooling energy. Whether in brass or composite version – this meter offers the right solution for every installation situation and every requirement. The comprehensive range 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

WIRED MODULES



Features & Range of Functions

- Sizes: DN 15 to DN 50
- Meters from Qp 0.6 to Qp 15
- Lengths: 105 mm to 300 mm
- Horizontal / vertical / overhead installation
- Installation point and display unit adjustable on site
- Return flow and air detection
- Detachable calculator with 0.85 m or 2.85 m connection cable
- Battery capacity of up to 20 years

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

SensoStar U / SensoStar UC

TECHNICAL DATA

General

Environmental class (MID)		C (EN 1434)
Mechanical class (MID)		M2
Electromagnetic class (MID)		E2

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 ΔΘ heat	K	3 – 100
Temperature difference range ΔΘ cooling	K	-3 – -50
Minimum temperature difference ΔΘ heat	K	> 0.05
Minimum temperature difference ΔΘ cooling	K	<-0.05
Minimum temperature difference ΔΘ heat/cooling	K	> 0.5 / <-0.5
Resolution temperature	°C	0.01
Measuring cycle temperature; dynamic	s	2 / 60; by using external power supply: 2 s permanent
Measuring cycle flow	s	2
Calculator housing dimensions (H x W x D)	mm	75 x 110 x 34.5
Length of connecting cable calculator – flow sensor	m	0.85 (optional: 2.85)
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, ZVEI according to EN 62056-21) *optional communication:* radio: wireless M-Bus*, LoRaWAN* wired: M-Bus*, Modbus, 2 pulse outputs * Optional with 3 pulse inputs.
Power supply		easily replaceable 3 V lithium battery (A-cell, 0.86 g lithium) 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 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
Calming section		U0D0
Approvals		DE-16-MI004-PTB025; DE-16-M-PTB-0097 CH-T2-18768-00; CE
Type designation		S3
EMC (MID)		EN 1434

TECHNICAL DATA

Flow sensors (general)		
Measuring method		ultrasound; time-of-flight
Accuracy class (MID)		class 2 (EN 1434)
Protection class		IP68
Nominal pressure PN	bar	16
Medium		water
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 15 – 130 high temperature (150; for max. 2000 h) (optional)
Temperature range medium cooling (from Qp 0.6 to Qp 15)	°C	5 – 50
Temperature range medium heat/cooling	°C	15 – 90 heat 15 – 120 high temperature (optional) 5 – 50 cooling

Temperature sensors (2-wire technology)		
Platinum precision resistor Pt 1000 (soldered in place)		
Sensor diameter	mm	UTS: 5; 5.2; 6; AGFW: 27.5; 38
Connection cable length	m	1.5; 3; 6
Installation type		asymmetrical; symmetrical
Platinum precision resistor Pt 500 (interchangeable in pairs)		
Sensor diameter	mm	UTS: 5; 5.2
Connection cable length	m	1.5; 3
Installation type		asymmetrical; symmetrical

TECHNICAL DATA

Flow sensor brass

Sizes	**Nominal flow rate Qp**	m³/h	0.6	0.6	1.5	1.5	2.5	2.5	3.5	3.5	6	6	10	15
	Low flow threshold value	l/h	6	6	6	6	12	12	14	14	30	30	50	50
	Minimum flow Qi	l/h	12	12	12	12	25	25	28	28	60	60	100	150
	Maximum flow Qs	m³/h	1.2	1.2	3	3	5	5	7	7	12	12	20	30
Pressure drop Δp at Qp*		bar	0.03	0.03	0.21	0.04	0.12	0.12	0.21	0.21	0.20	0.20	0.11	0.14
Pressure drop Δp at Qs		bar	0.13	0.13	0.85	0.17	0.46	0.46	0.89	0.89	0.80	0.80	0.43	0.71
Nominal diameter		mm	DN 15	DN 20	DN 15	DN 20	DN 20	DN 25	DN 20	DN 25	DN 25	DN 32	DN 40	DN 50
Dynamic range Qi/Qp		-	1:50	1:50	1:125	1:125	1:100	1:100	1:125	1:125	1:100	1:100	1:100	1:100

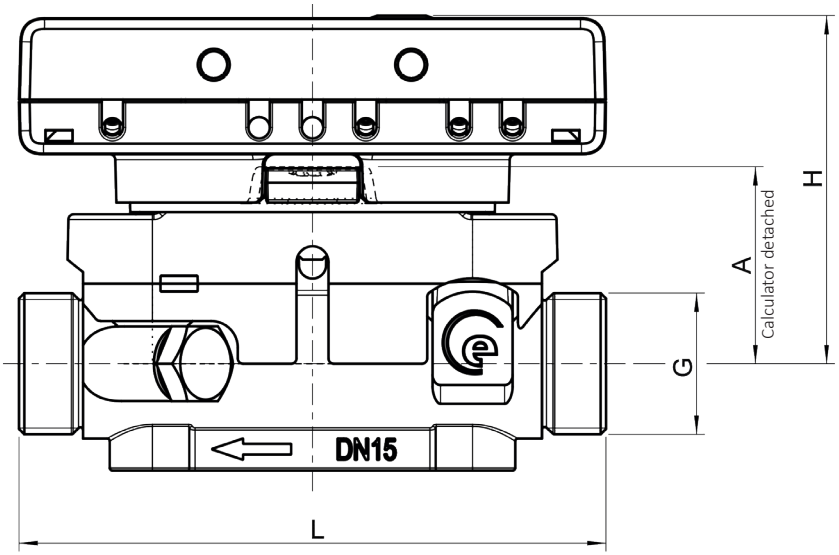
* Pressure drop ≤ 0.25 bar according to standard EN 1434.

Meter dimensions brass

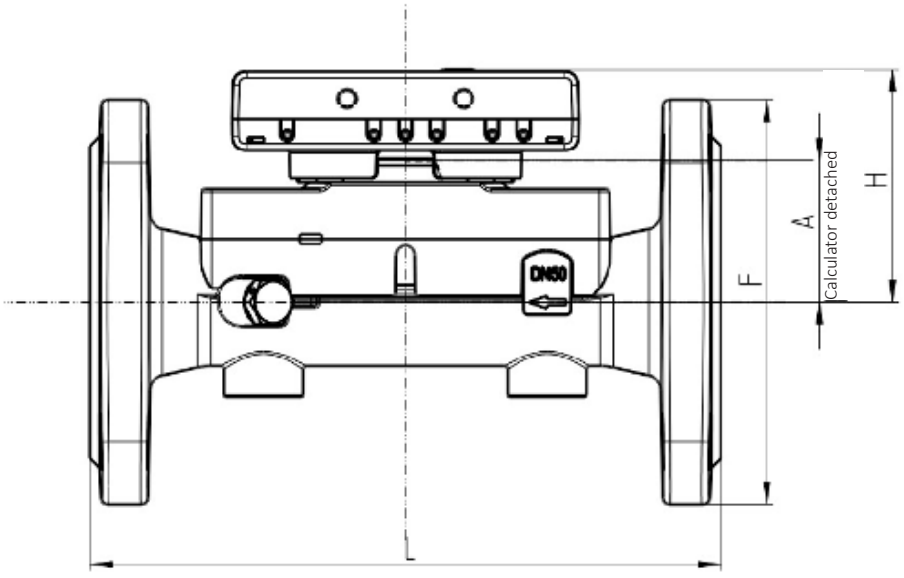
Qp (m³/h)	Nominal diameter	G (“) F (mm)	L (mm)	H (mm)	A (mm)	Weight standard version (kg)
0.6	DN 15	G3/4B	110	65	38.5	0.600
0.6	DN 20	G1B	190	65	38.5	0.770
1.5	DN 15	G3/4B	110	65	38.5	0.600
1.5	DN 20	G1B	105	66	39.5	0.650
1.5	DN 20	G1B	130	66	39.5	0.680
1.5	DN 20	G1B	190	65	38.5	0.770
2.5	DN 20	G1B	105	66	39.5	0.650
2.5	DN 20	G1B	130	66	39.5	0.680
2.5	DN 20	G1B	190	66	39.5	0.790
2.5	DN 25	G1 1/4B	260	66	39.5	1.080
3.5	DN 20	G1B	130	66	39.5	0.680
3.5	DN 20	G1B	190	66	39.5	0.790
3.5	DN 25	G1 1/4B	150	66	39.5	0.820
3.5	DN 25	G1 1/4B	260	66	39.5	1.080
6.0	DN 25	G1 1/4B	150	68.5	42	0.820
6.0	DN 25	G1 1/4B	260	68.5	42	1.080
6.0	DN 32	G1 1/2B	150	68.5	42	1.020
6.0	DN 32	G1 1/2B	260	68.5	42	1.330
10.0	DN 40	G2B	200	73	46.5	1.530
10.0	DN 40	G2B	300	73	46.5	1.970
15.0	DN 50	F 128.4	200	73.7	44.9	4.600
15.0	DN 50	F 128.4	270	73.7	44.9	4.950

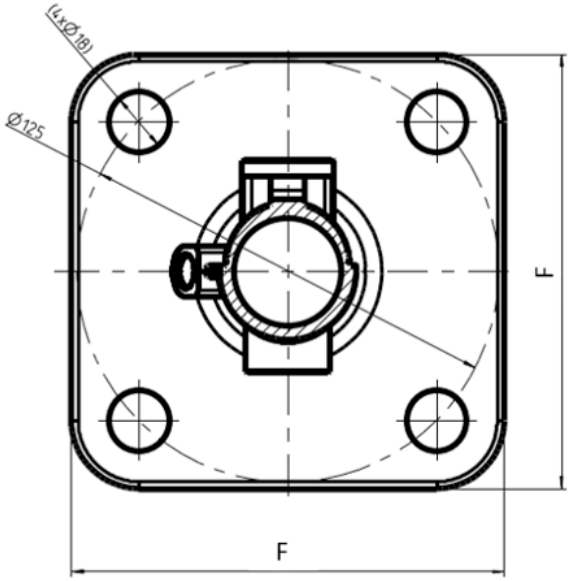
TECHNICAL DATA

SENSOSTAR U (QP 0.6 – QP 10)

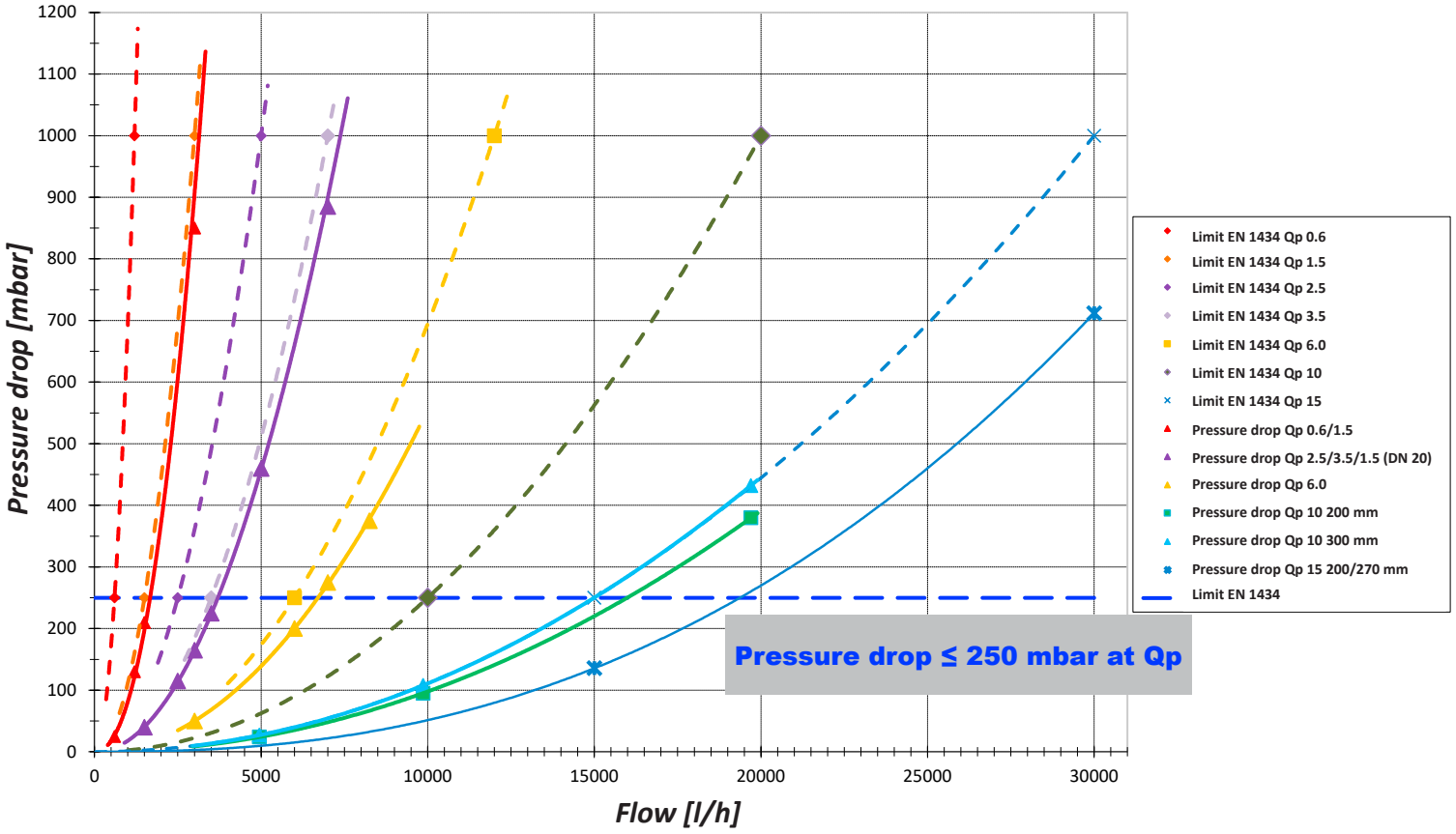


SENSOSTAR U FLANGE (QP 15)





PRESSURE DROP SENSOSTAR U



TECHNICAL DATA

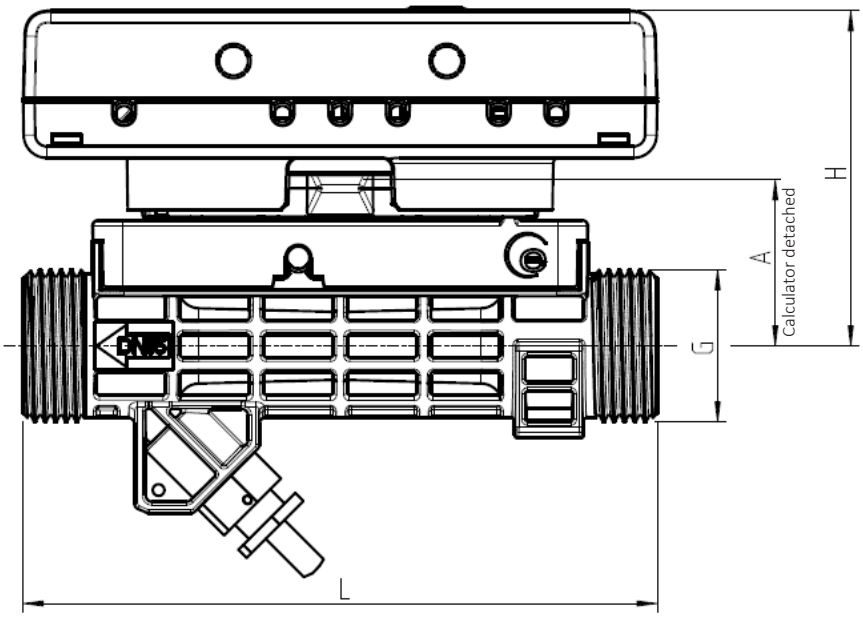
Flow sensor composite

Sizes	**Nominal flow rate Qp**	m³/h	0.6	1.5
	Low flow threshold value	l/h	6	6
	Minimum flow Qi	l/h	12	12
	Maximum flow Qs	m³/h	1.2	3
Pressure drop Δp at Qp		bar	0.05	0.16
Pressure drop Δp at Qs		bar	0.11	0.68
Nominal diameter		mm	DN 15	DN 15
Dynamic range Qi/Qp		-	1:50	1:125

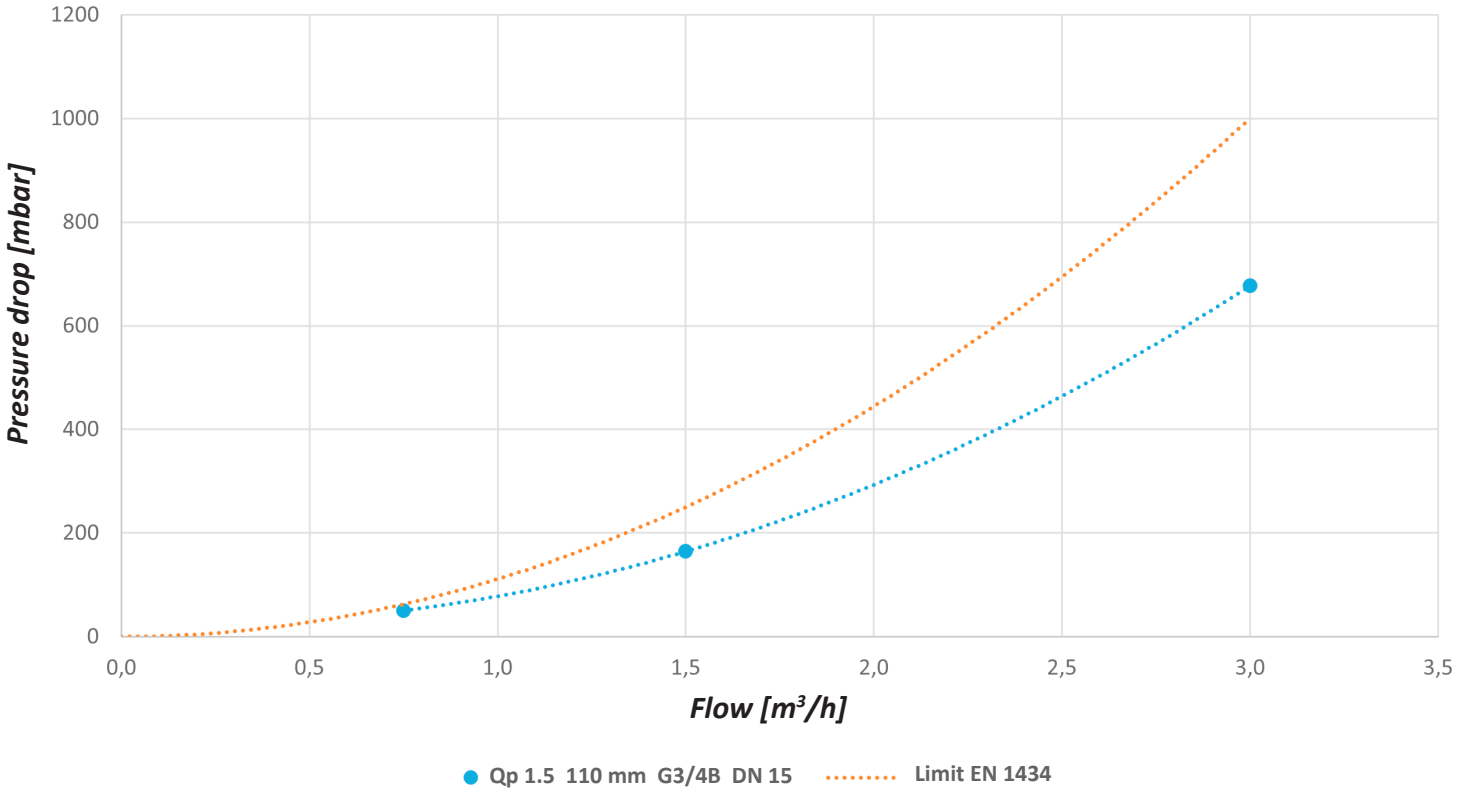
Meter dimensions composite

Qp (m³/h)	Nominal diameter	G (“)	L (mm)	H (mm)	A (mm)	Weight standard version (kg)
0.6	DN 15	G3/4B	110	58	38.5	0.260
1.5	DN 15	G3/4B	110	58	38.5	0.260

SENSOSTAR UC



PRESSURE DROP SENSOSTAR UC



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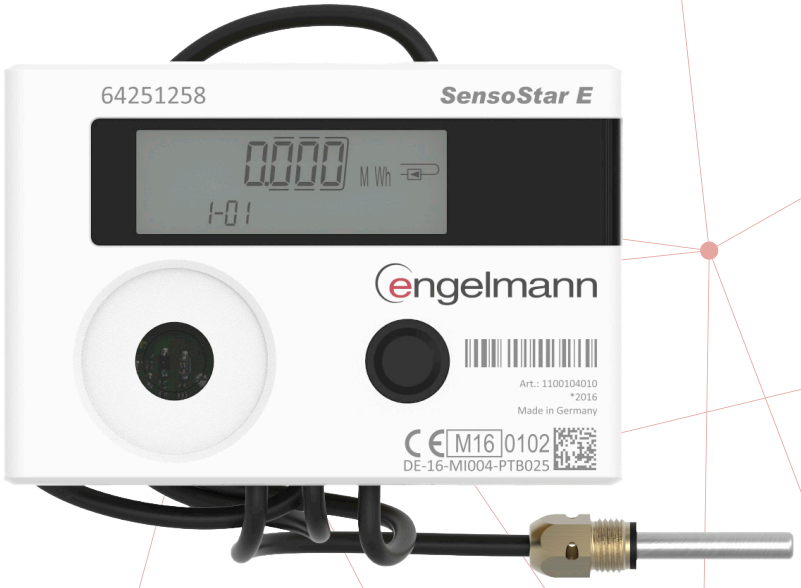
Engelmann Heat Meter

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

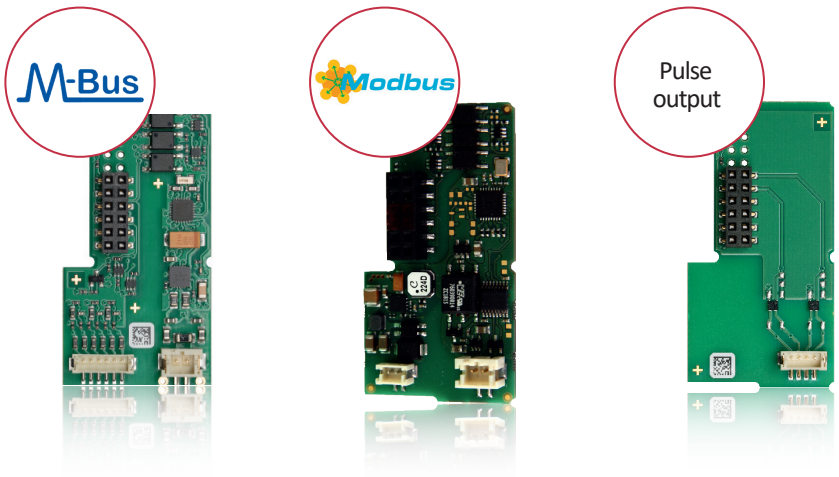
The SensoStar E is a high-precision measuring device that uses inductive sensing to record heat or cooling energy. This meter offers the right solution for every installation situation or requirement. The comprehensive range covers all installation lengths, temperature sensor and communication variants.

We speak your language

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

RADIO MODULES

WIRED 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

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

SensoStar E

TECHNICAL DATA

Flow sensor

Sizes	**Nominal flow rate Qp**	m³/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 Qi	l/h	24	60	60	100
	Maximum flow Qs	m³/h	1.2	3	3	5
Pressure drop Δp at Qp		bar	0.155	0.210	0.225	0.165
Pressure drop Δp at Qs		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 Qi/Qp		-	1:25	1:25	1:25	1:25

Measuring method		bidirectional inductive scanning system
Accuracy class (MID)		class 3
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		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	°C	15 – 90
Temperature range medium cooling (Qp 1.5 (DN 15) and Qp 2.5)	°C	5 – 50

Calculator

Temperature range medium	°C	0 – 150 heat / 0 – 50 cooling (Qp 1.5 (DN 15) and Qp 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 ΔΘ heat	K	3 – 100
Temperature difference range ΔΘ cooling	K	-3 – -50
Minimum temperature difference ΔΘ heat	K	> 0.05
Minimum temperature difference ΔΘ cooling	K	<-0.05
Minimum temperature difference ΔΘ 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 E

TECHNICAL DATA

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) *optional communication:* 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

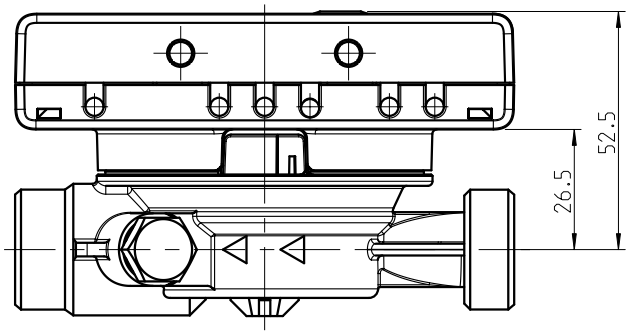
Weight (standard version in kg)	Qp 0.6 / Qp 1.5 (DN 15)	Qp 1.5 (DN 20) / Qp 2.5
Calculator not detachable	0.755	0.795
Calculator detachable	0.840	0.880

Dimensions

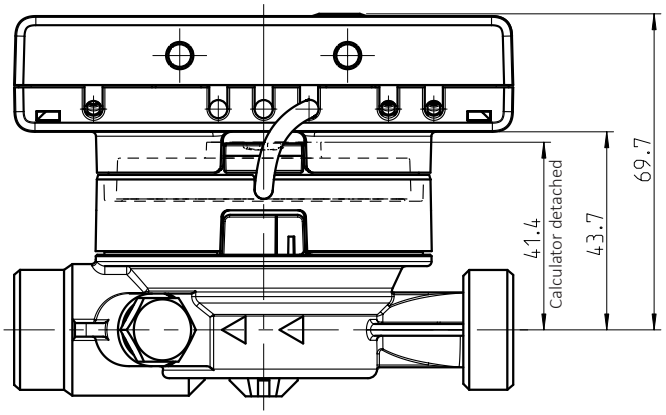
Pulse cable length (only separable version)	m	0.50	
Calculator housing (H x W x D)	mm	75 x 110 x 34.5	
Connection thread		G3/4“, DN 15: Qp 0.6 / Qp 1.5	G1“, DN 20: Qp 1.5 / Qp 2.5

TECHNICAL DATA

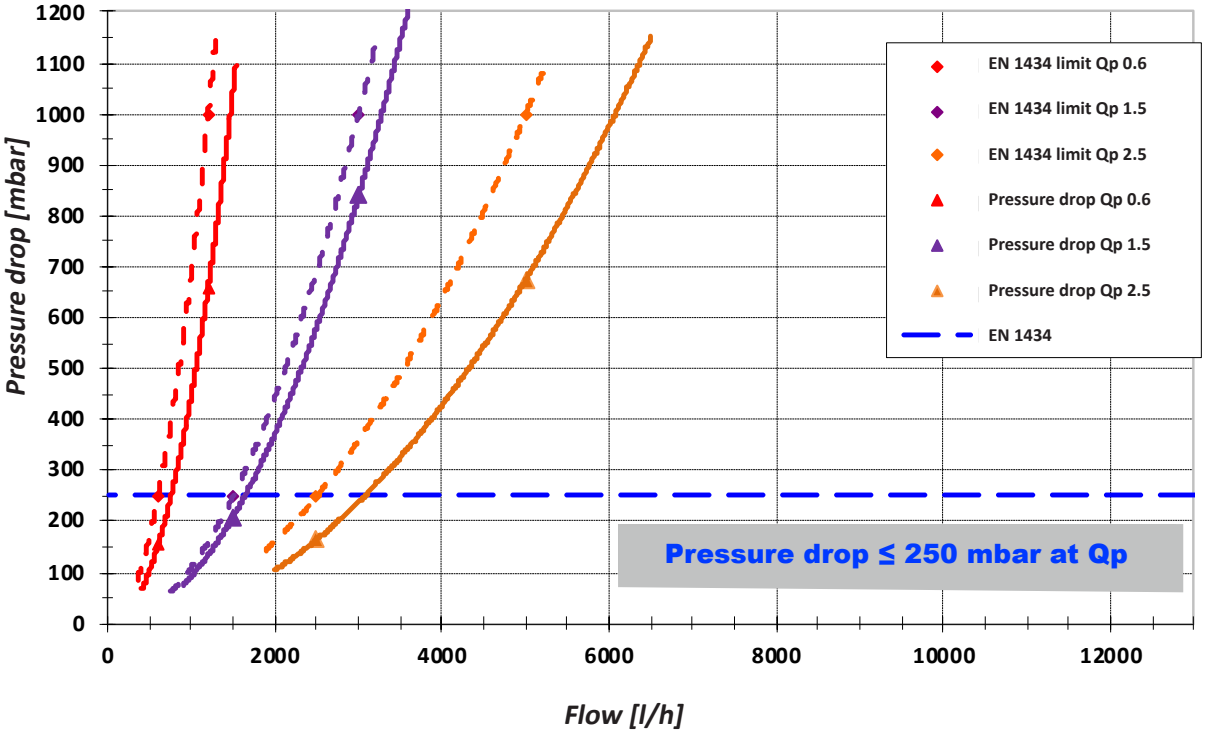
SensoStar 3
ESH / compact



SensoStar 3
ESH / split



PRESSURE DROP SENSOSTAR E



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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

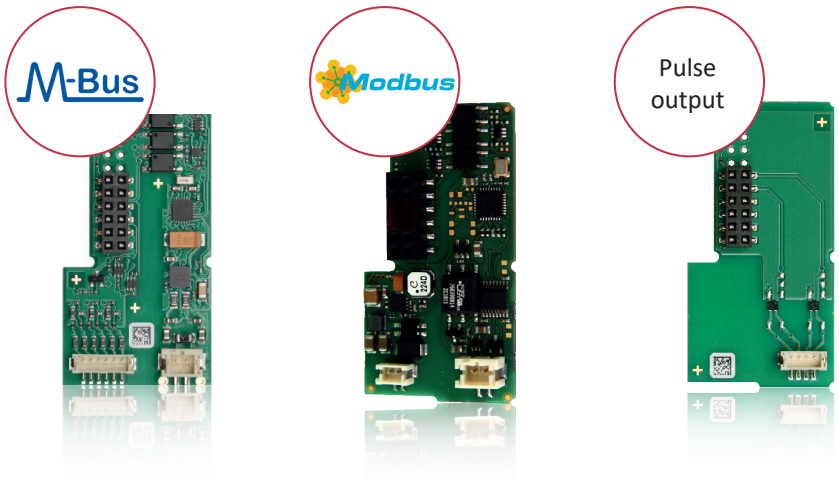
The SensoStar C is a flexible calculator for recording heat or cooling energy that offers a suitable solution for every installation situation. Specially designed for the measurement of large volume flows, the calculator can be easily combined with all standard flow sensors. The range is rounded off 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

WIRED 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

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

SensoStar C

TECHNICAL DATA

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 ΔΘ heat	K	3 – 100
Temperature difference range ΔΘ cooling	K	-3 –-50
Minimum temperature difference ΔΘ heat	K	> 0.05
Minimum temperature difference ΔΘ cooling	K	<-0.05
Minimum temperature difference ΔΘ 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, m³, m³/h (kWh, GJ); unit of energy can be set when the amount of energy is still ≤ 10 kWh
Interfaces		optical interface (M-Bus protocol); *optional communication:* 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, ΔΘ) 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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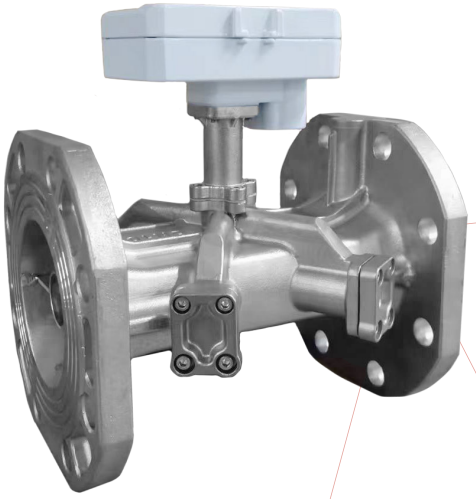
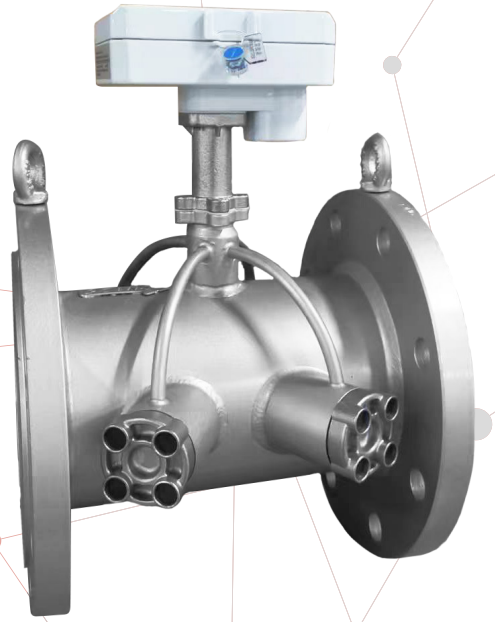
Engelmann Flow Sensor

FlowStar U

Ultrasonic flow sensor



DN 50 – DN 100



DN 125 – DN 300

Precise flow measurement with dual-channel ultrasonic measuring

High quality with stainless steel body for DN 50 to DN 300 and stainless steel flanges for DN 50 to DN 100

Measuring components in aluminum housing

Status 2025/06/08 Subject to technical change!

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Overview

FLOWSTAR U

The FlowStar U impresses with its flexible usability and high temperature range. With a temperature range of 1 – 130 °C, the flow sensor fulfills all requirements. This makes it an ideal solution for a wide range of applications and demanding environments. From DN 50 to DN 300, it is the ideal extension to the compact meters SensoStar U.

The FlowStar U flow sensor records the flow rate using high-precision ultrasonic measurement technology, guaranteeing you reliable and accurate volume measurement that meets the highest demands. In combination with the SensoStar C calculator and the temperature sensors, the thermal energy can be calculated precisely and efficiently. This enables comprehensive and exact energy control and billing.

Features

- Sizes: DN 50 to DN 300
- Meters from Qp 15 to Qp 600
- Horizontal / vertical / overhead installation
- Pressure classes PN16/PN25
- Connection cable with 10 m length
- Battery capacity of up to 12 years

General data

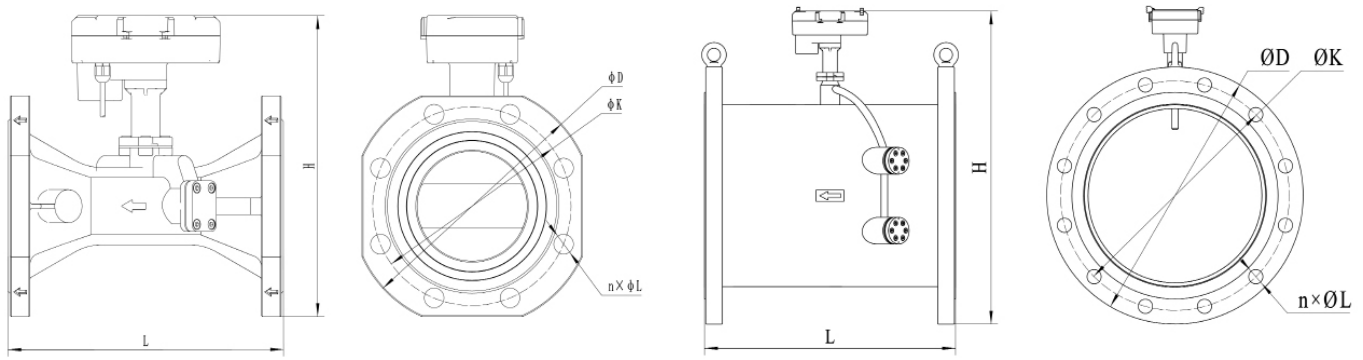
Measuring method		ultrasonic; dual-channel
Accuracy class (MID)		class 2
Mechanical class (MID)		M2 – EN1434
Electromagnetic class (MID)		E2 – EN1434
Protection class		IP68
Medium		water
Calming section		U3D0
Approvals		DE-18-MI004-PTB018; CE
Mounting position		any position
Installation		outlet flow / inlet flow; consider configuration of the calculator
Battery capacity	years	up to 12
Battery supply	V	3.6
Temperature measurement range medium	°C	1 – 130 (150 within 2000 hours)
Storage and transport temperature range	°C	-25 – 55
Ambient temperature in the field	°C	5 – 55
Maximum height of installation point	m	2000 above mean sea level

FlowStar U

TECHNICAL DATA

Pulse output according to EN 1434-2

Class		open collector (OC)
Cable length	m	10
Min. pulse length	ms	50
Volume pulse maximum input voltage	V	12 DC
Volume pulse maximum input current	mA	10



Flow values

Nominal diameter	mm	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
Nominal flow Qp	m³/h	15	25	40	60	100	150	250	400	600
Low flow threshold value	m³/h	0.01	0.02	0.03	0.05	0.08	0.1	0.2	0.3	0.4
Minimum flow Qi	m³/h	0.15	0.25	0.4	0.6	1	1.5	2.5	4	6
Maximum flow Qs	m³/h	30	50	80	120	200	300	500	800	1200
Pressure drop Qp	bar	0.04	0.06	0.09	0.11	0.07	0.06	0.04	0.04	0.04
Pulse value	l/pulse	25	25	100	100	100	250	250	1000	1000

Max. operation pressure PN16

Nominal diameter	mm	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
Length (L)	mm	200	200	225	250	350	350	350	400	450
Diameter (D)	mm	165	185	200	220	250	285	340	405	460
Height (H)	mm	221	232	253	273	360	390	450	510	565
Hole circle (K)	mm	125	145	160	180	210	240	295	355	410
Number screw x diameter	mm	4x18	4x18	8x18	8x18	8x18	8x22	12x22	12x26	12x26
Weight	kg	8.7	12.4	12.5	20.3	36.0	42.0	54.0	75.0	101.0

Max. operation pressure PN25

Nominal diameter	mm	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
Length (L)	mm	200/270	200/300	225/300	360	350	350	350	400	450
Diameter (D)	mm	165	185	200	235	270	300	360	425	485
Height (H)	mm	221	232	253	282	370	400	450	520	575
Hole circle (K)	mm	125	145	160	190	220	250	310	370	430
Number screw x diameter	mm	4x18	8x18	8x18	8x22	8x26	8x26	12x26	12x30	16x30
Weight	kg	9.5	12.4	15.2	20.3	40.0	42.0	54.0	75.0	101.0

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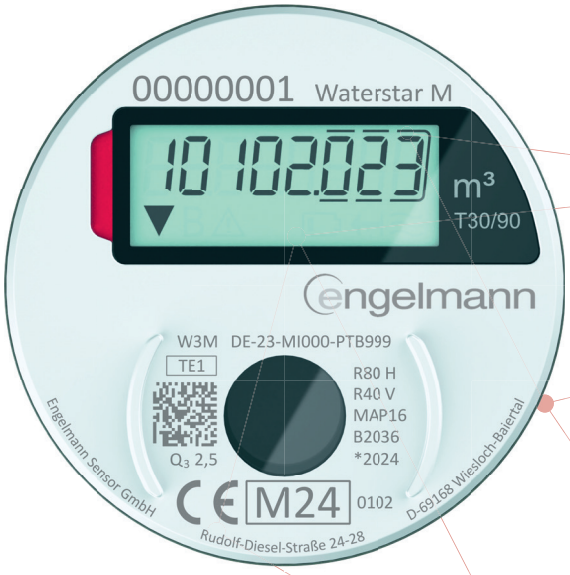
smartest metering technology

Engelmann Radio Water Meter

WaterStar M

The radio-integrated electronic water meter
for all common installation points



- Most accurate measurement results for any installation points
- Various installation options
- Leakage and manipulati on detecti on for maximum reliability
- Individually configurable
- Flexible adjustment of the radio settings via software or app

WATERSTAR M

The perfect choice for accurate and reliable measurement and transmission of your water consumption

The radio-integrated water meter is the perfect solution for recording your water consumption. With a wide range of single-jet and multi-jet flow sensors for cold and hot water applications, the meter is suitable for all common installation points and applications.
The integrated wireless M-Bus radio in accordance with the OMS standard enables the secure and reliable transmission of your consumption data at all times. Thanks to the automatic detection and transmission of leakage and manipulation notifications, you can keep an eye on your system at all times and react immediately if needed.

Gateway / AMR

Read-out software

Features

- Available as inline meters and measuring capsule meters in all common variants
- Integrated wireless M-Bus communication interface
- Easily readable LCD display
- Inductive impeller scanning
- 12 years battery life
- Return flow detection
- Leakage and manipulation detection

General data

Measuring method		inductive scanning
Ambient temperature in the fie	°C	5 – 55 at 95 % relative humidity
Temperature range storage and transport	°C	-25 – 70
Display		LCD – 8 digits + special characters; display can be rotated 360°
Unit		m³
Interfaces		wireless M-Bus; optical interface for configuration and readout
Radio mode		adjustable: C1; T1
Power supply		3 V lithium battery
Estimated lifetime	years	12 (depending on radio settings)
Billing dates		freely selectable annual billing date; 15 monthly values via radio; 15 monthly and semi-monthly values via optical interface
Mechanical class		M1
Electromagnetic class		E1
Environmental class		B
Protection class		IP68

TECHNICAL DATA

Type-specific data

Inline meters

Type	DN15	DN15	DN15	DN15	DN15	DN20	DN20
Installation length [mm]	80	110	115	115	130	130	130
Q3 [m³/h]	2.5	2.5	2.5	2.5	2.5	2.5	4.0
Thread	G3/4“	G3/4“	G3/4“	G3/4“ – G7/8“	G3/4“	G1“	G1“
Mounting position	Horizontal Vertical						
Ratio Q3/Q1	R160 H / R80 V						
Temperature range	T30 (0.1 – 30 °C) T30/90 (30 – 90 °C)						
Nominal pressure	MAP16						

Measuring capsule meters

Type (ISO 4064)	IST	MET	MOC/MOE	TE1	A34
Q3 [m³/h]	2.5	2.5	2.5	2.5	2.5
Thread	G2“	M64x2	M65x2	M62x2	M77x1.5
Mounting position	Horizontal Vertical				
Ratio Q3/Q1	R80				
Temperature range	T30 (0.1 – 30 °C) T30/90 (30 – 90 °C)				
Nominal pressure	MAP16				

Measuring capsule meters with converter

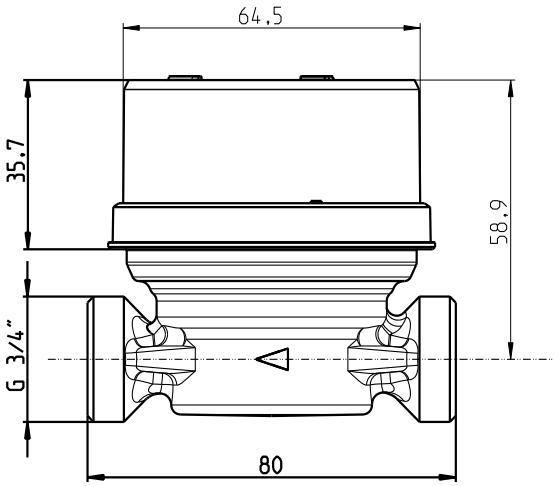
Type (ISO 4064)	MUK	DM1	HT2	MB3	WE1	WGU
Q3 [m³/h]	2.5	2.5	2.5	2.5	2.5	2.5
Thread	G2¼“	M60x2	M66x1	M76x1.5	M78x1.5	M66x1.25
Mounting position	Horizontal Vertical					
Ratio Q3/Q1	R80					
Temperature range	T30 (0.1 – 30 °C) T30/90 (30 – 90 °C)					
Nominal pressure	MAP16					

TECHNICAL DATA

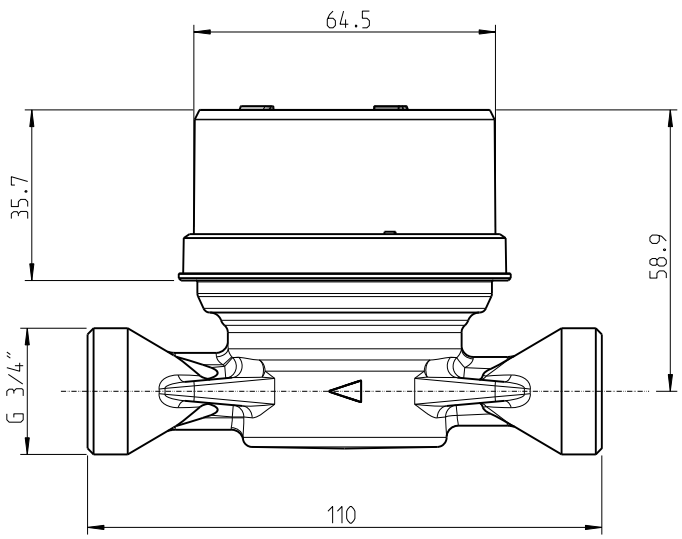
Dimensions

Inline meters

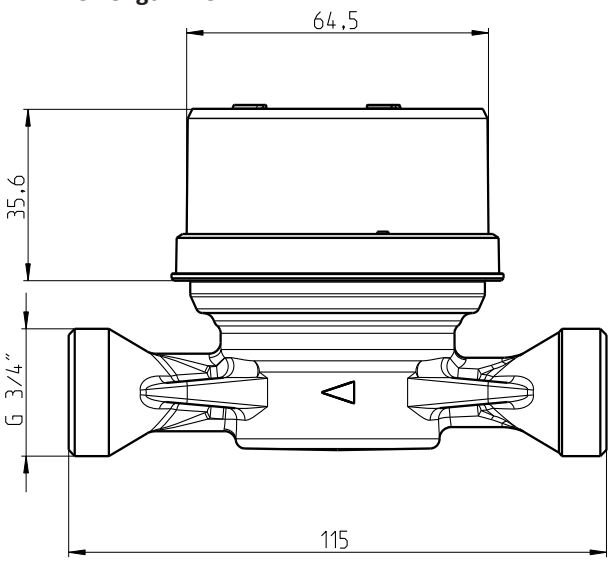
DN15 Length 80 mm



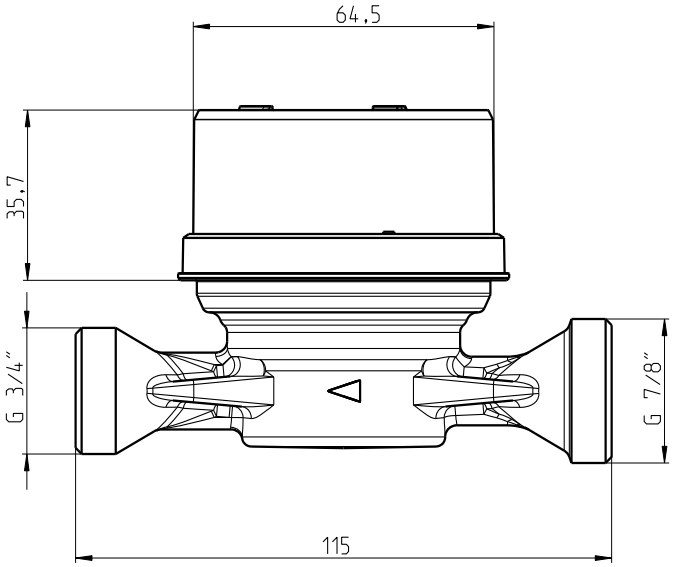
DN15 Length 110 mm



DN15 Length 115 mm

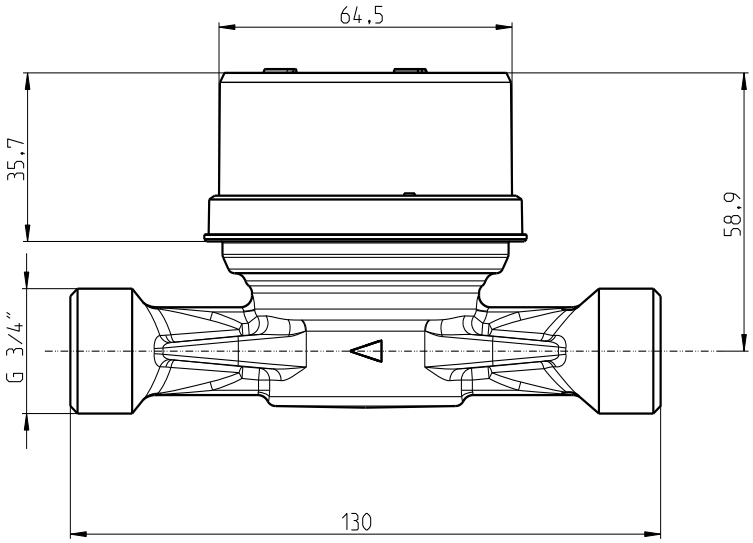


DN15 Length 115 mm

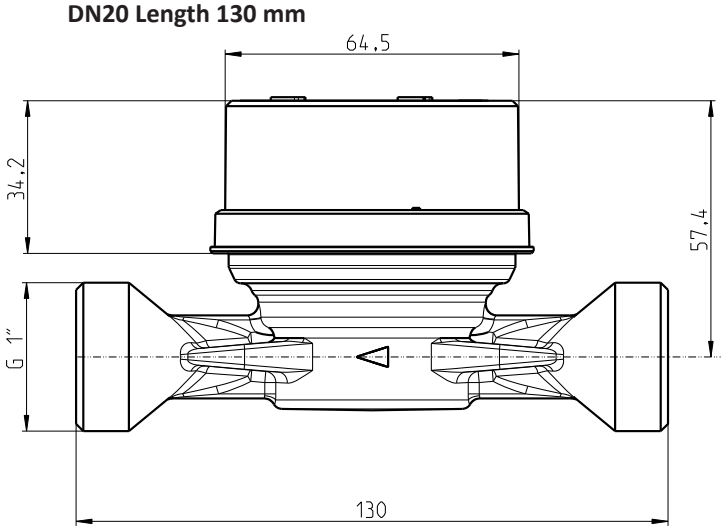


TECHNICAL DATA

DN15 Length 130 mm



DN20 Length 130 mm



Engelmann Heat Cost Allocator

Unifix

The all-round carefree heat cost allocator – compatible with numerous common heat conductors for maximum flexibility and comfort

Engelmann | Sontex | Qundis P2 | Qundis P3 | Caleffi | Techem

Easy installation on all standard back plates thanks to individual adapter seals

Detection of the back plate on which it is mounted

Typical battery capacity of 12 + 1 years

Flexible use thanks to remote sensors that can be mounted and removed at any time

Unifix

TECHNICAL DATA

The all-round carefree heat cost allocator – compatible with numerous common heat conductors for maximum flexibility and comfort

The Unifix consists of a base unit that can be flexibly adapted to all common back plates. With the appropriate adapter and specific seal, the heat cost allocator becomes the ideal device for any estate. The respective adaptation is automatically recognized and transferred – so you always have an overview of which system is installed.

The new Unifix heat cost allocator is fully integrated into the Engelmann system landscape. The consumption data from the installed heat cost allocators are conveniently read out by the respective reception technology (walk-by or Automatic Meter Reading – AMR). With its variable radio setup settings, the Engelmann Unifix provides the basis for flexible adaptation to your individual readout management.

Features & Range of Functions

- Approved according to EN 834:2017 and compliant with HKVO
- Type approval: A1.01.2025 according to HKVO
- Internal storage of 24 monthly and 24 semi-monthly values
- Clip-on remote temperature sensor
- Optical and wireless M-Bus communication interfaces according to EN 13757-4
- Radio transmission of 15 monthly values via wireless M-Bus
- Detection of the back plate on which it was mounted
- Transmission of the back plate in the radio telegram
- Flexibility in encryption mode (Mode 5 / Mode 7) and encryption type (customer-specific AES key or random individual encryption per device)
- Typical battery capacity of 12 years of operation and 1 year of storage

General

Device type		2-sensor device; adjustable measuring mode: 2-sensor mode or 1-sensor mode
Scaling		unit scale or product scale
Range of application	°C	2-sensor mode: 35 – 95 (with remote sensor up to 105); 1-sensor mode: 55 – 95 (with remote sensor up to 105)
Ambient temperature	°C	-25 – 60
Protection class		IP41 (mounted)
Basic sensitivity		1.07
Minimum temperature difference ΔΘ (counting start of temperature difference)	K	4.5
Remote sensors		clip-on (optional)
Measuring free summer months		May-June-July-August-September: freely selectable

Tampering detection		break contact
Interfaces		wireless M-Bus and optical interface (M-Bus protocol)
Display		LCD – 5 digits + special characters
Display values		current value, billing (due) date, billing date value, checksum (optional)
Billing date options		annually variable (1st – 31st day; last day of the month); monthly variable (1st – 31st day; last day of the month)
Stored monthly values		24 monthly and 24 semi-monthly values
Power supply	V	3; Li-polycarbonate battery
Battery capacity, designed	years	12 operation + 1 storage
Approvals		German HKVO; compliant with DIN EN 834; CE

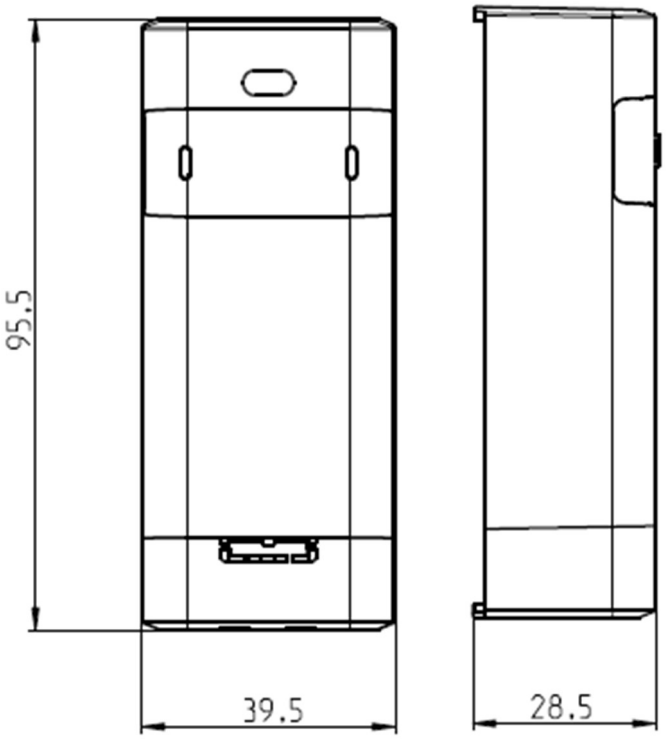
wireless M-Bus radio interface

Radio protocols		"short telegram" compliant with OMS (AMR) (current value, billing (due) date, billing date value, hint flag / error code, adaptation ID, last and penultimate monthly value); "long telegram" walk-by readout (current value, billing (due) date, billing date value, 15 monthly values, hint flag, adaptation ID)
Transmission power	dBm	14
Transmission frequency	MHz	868
Radio mode		adjustable: C1; T1
Encryption		AES 128
Encryption mode		Mode 5 / Mode 7
Start date of radio transmission		annually variable (except February 29th)
Transmission times (UTC+1)		transmission interval: 2 – 240 min
		transmission times per day: 12 a.m. – 12 p.m.
		transmission days per week: Mon. – Sun.
		transmission weeks per month: 1 – 4
		transmission months per year: Jan. – Dec.

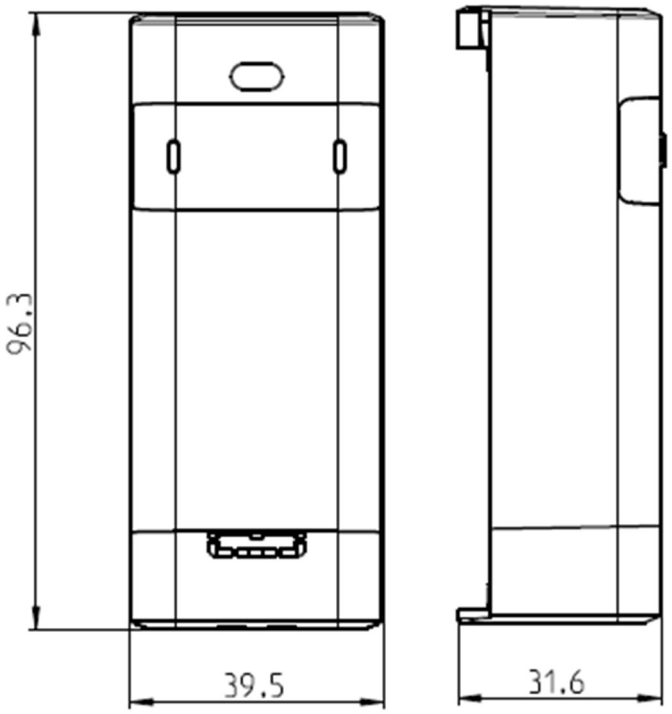
TECHNICAL DATA

Dimensions

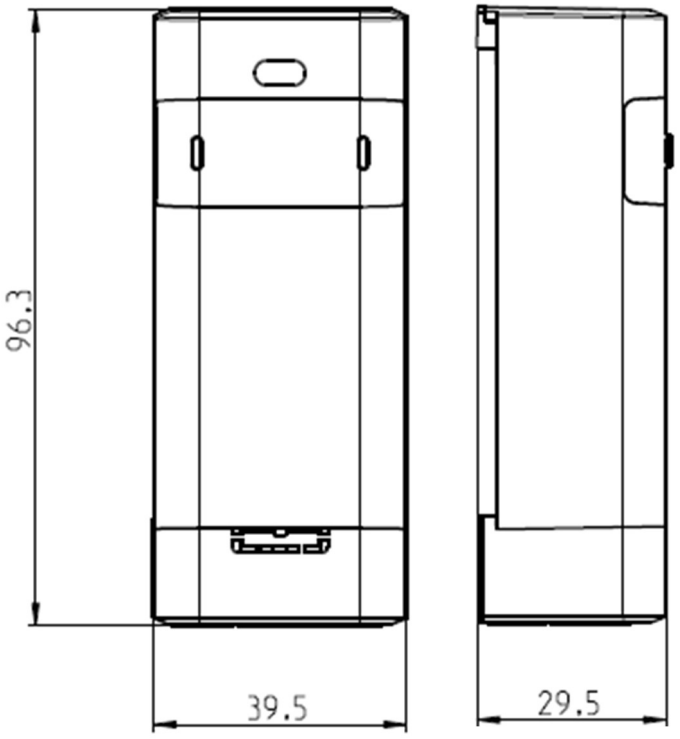
Engelmann



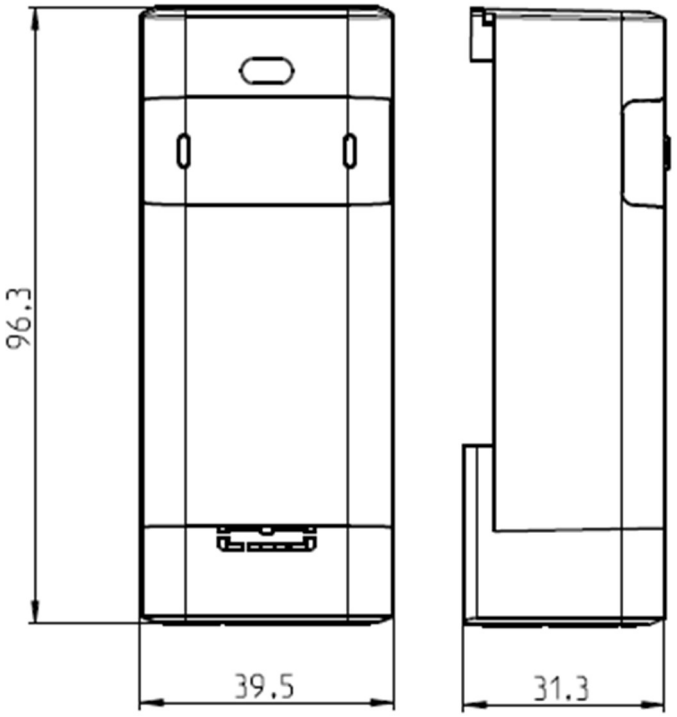
Sontex



Qundis P2



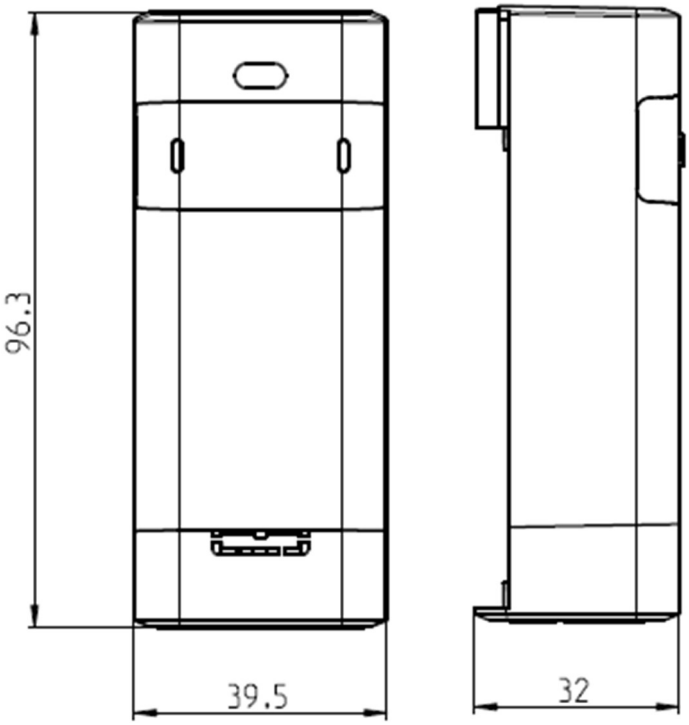
Qundis P3



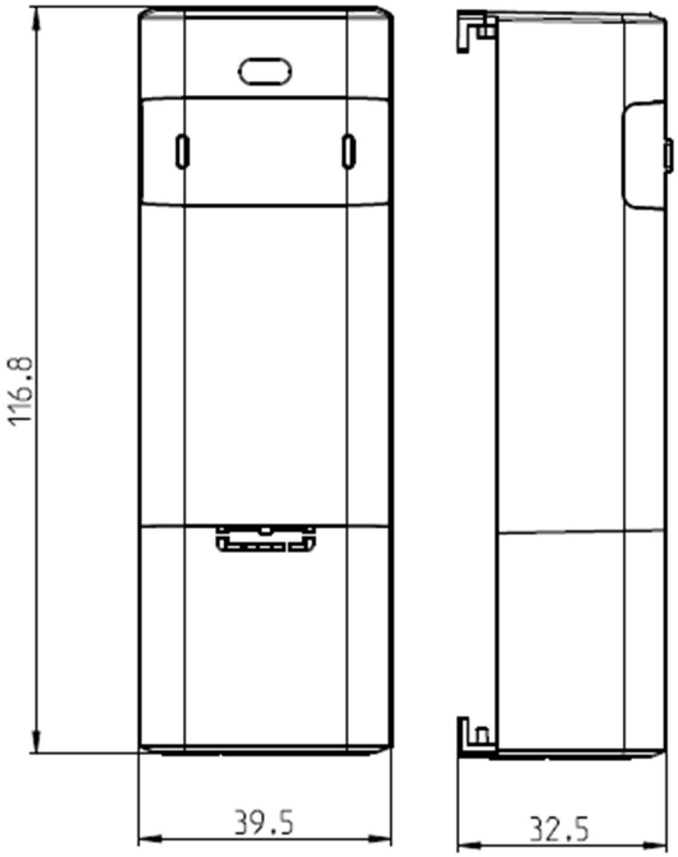
Unifix

TECHNICAL DATA

Caleffi



Techem



The base unit, an adapter and the specific seal are always required for adaptation to the various back plates. The only exception is the installation of the Unifix on the Engelmann back plate. Here, the adapter is already integrated into the base unit.

Back plate	Adapter	Seal
Engelmann		
Sontex		
Techem		
Qundis P2		

Unifix

TECHNICAL DATA

Qundis P3		
Caleffi		

The Unifix heat cost allocator can be ordered either pre-assembled or as a basic unit, in which case the adapter and seal must be ordered separately. Pre-assembled means that the adapter and seal are already pre-mounted on the basic unit and the heat cost allocator only needs to be attached to the heat conductor and sealed.

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Engelmann Connect

ComStar

Data collector for wireless M-Bus devices

- Data center with open system according to wireless M-Bus, OMS and LoRaWAN
- Flexible reception of all wireless M-Bus-compliant devices
- Versatile use as up to 2500 devices can be processed
- Lithium battery with typical capacity of 12 years of operation and 1 year of storage

Status 2025/07/31 Subject to technical change!
Engelmann Sensor GmbH I Rudolf-Diesel-Straße 24-28 I 69168 Wiesloch, Germany

Overview

COMSTAR

Flexible in use – strong in performance! With the Engelmann ComStar, you're perfectly equipped for the digital future of consumption data recording.

The ComStar is a battery-operated data collector for easy remote reading of wireless M-Bus devices for consumption data recording. Thanks to its wide range of configuration options, it can be individually tailored to your needs and fits seamlessly into your system landscape. Its modularity is impressive and allows you to use the ComStar independently of the system.

Features

- Data collector for easy remote readout
- Installation mode – success control directly on site
- Flexible setting of transmission and collect times
- Remote parameterization
- Independent on-site installation due to battery operation
- High number of devices in reception: up to 2500 units
- Lithium battery with typical capacity of up to 12 years of operation and 1 year of storage

General data

Interfaces (standard)	wireless M-Bus (data collection) 4G LTE-M (data forwarding, firmware update) LoRaWAN (data forwarding, firmware update)
Antennas wM-Bus / 4G / LoRaWAN	internal, optional: external antenna, can be retrofitted in the field
Configuration	MQTT / LoRaWAN
Data storage	read-only memory
Filter	whitelist for searched devices blacklist for unwanted devices
Data format forwarding	RAW
Data transmission	MQTT (standard) LoRaWAN (adjustable)
Protection class	IP65

Power supply

Battery type	V	3.6; lithium battery
1x D cell (standard)	Ah	19; battery capacity 12 + 1 years (2 readouts of 30 minutes each per month)
2x D cell (optional)	Ah	38; battery capacity 12 + 1 years (1 readout of 30 minutes per day)

ComStar

TECHNICAL DATA

wireless M-Bus

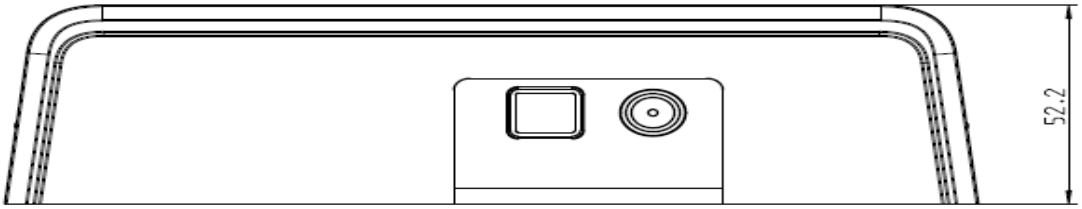
Operating frequency	MHz	868
Protocol		wireless M-Bus in accordance with EN 13757-3,-4
Optional operating mode		C1 / T1 S1

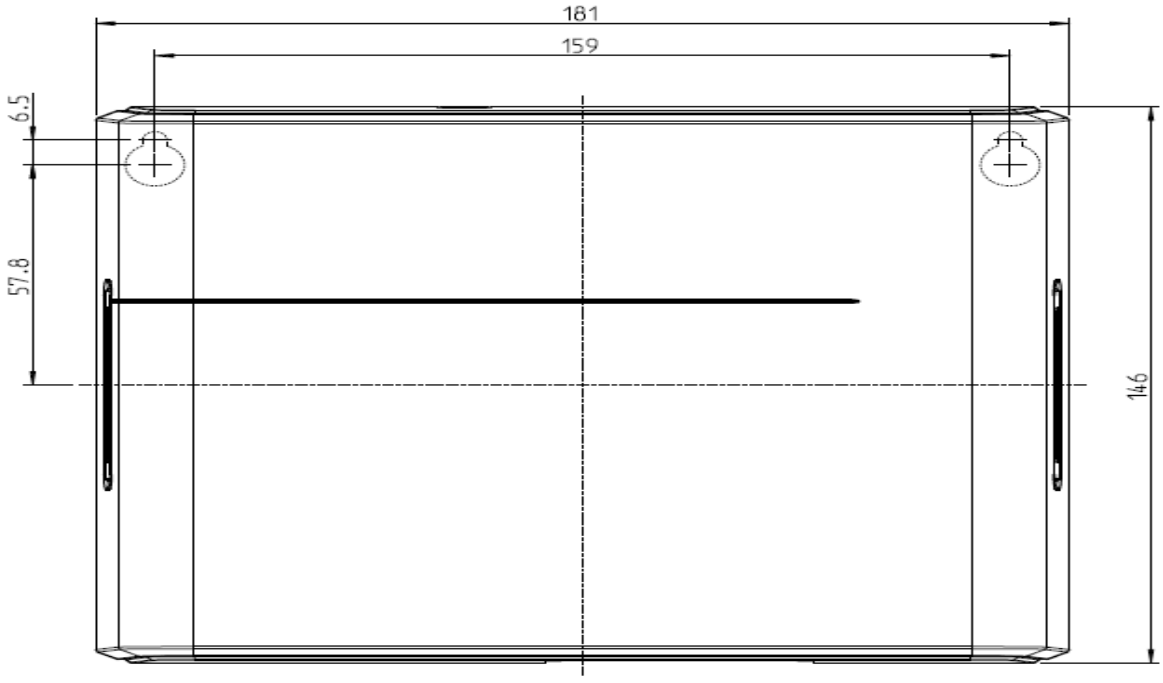
4G LTE-M

Frequency bands	MHz	791-969, 1710-1785; LTE bands B8, B20, B3
SIM card slot		mini-SIM, size 2FF
Output power	dBm	23
Sensitivity	dBm	-108

Weights

Gateway (standard version, without batteries)	kg	0.329 + packaging
Battery (standard)	kg	0.122 + packaging
Double pack (optional)	kg	0.222 + packaging





Engelmann Repeater

Repeater

Signal amplifier for wireless M-Bus devices

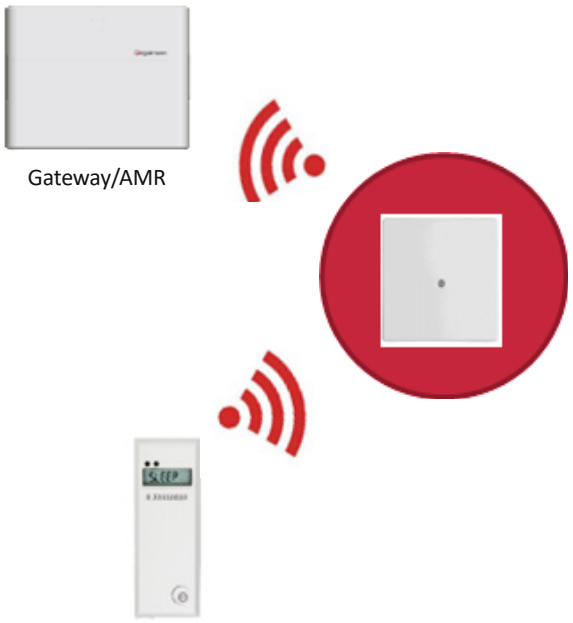
- Signal amplifier for bridging long radio links
- Can be used immediately in conjunction with the Engelmann factory setting
- Automatic device detection
- Installation mode for easy commissioning
- Battery operation for location-independent installation

Overview

REPEATER

A repeater is used to support a gateway in collecting device data. If the device signal is weak or absent, the repeater acts as a signal amplifier for the gateway.

The repeater is supplied as a single-hop version and can be used immediately in conjunction with the Engelmann factory settings. This means you can simply install the repeater and get started straight away – no complicated settings are required. For multi-hop operation (max. 4 hops) or to change the Engelmann settings, we also offer a dongle with corresponding software.



Features

- Automatic meter installation
- Radio operation wireless M-Bus (OMS)
- Single-Hop
- Max. 932 devices can be received
- Installation mode: 60 minutes
- Battery life approx. 10 years (with the Engelmann settings)
- Casing cover protected with security screw TORX T20H + pin

Repeater

TECHNICAL DATA

Casing

Repeater casing (H x W x D)	mm	150 x 150 x 53
Protection class		IP40
Material		UL 94 HB; flame-retardant, UV resistant PC/ABS

General

Voltage	V	3.6 DC; lithium battery (lifetime approx. 10 years with Engelmann default settings)
Ambient temperature	°C	operation: 0 … 50; storage: -10 … +55
Antenna		2 internal antennas
Conformity		2014/53/EU, 2011/65/EU, EN 301489, EN 62368-1, EN 61000-6-1
Hop version (max. 4 Hops)		Single-Hop (factory setting) Multi-Hop (dongle required for configuration)

Radio characteristics

Radio operation		OMS (Open Metering System)
Radio chipset		to wireless M-Bus (wM-Bus) M-Bus RF [EN 13757-3/4]
Frequency	MHz	T-, C-mode: 868.95; S-mode: 868.3 (additional software is required for operation)
Receive mode		T/C combined (factory setting)
Transmit mode		C (factory setting) or selectable: T
Output power		maximum +14 dBm
Sensitivity		up to -105 dBm
Received devices		max. 932

Control elements

Magnetic switch	activation: installation, configuration mode
Dongle (optional, art. no. 0500000079)	required for configuration
Engelmann-Default-Settings	Single-Hop receive mode: T/C (simultaneous) transmit mode: C listen time: 25 min / Mon. - Sun. start time: 08:00 AM UTC (corresponds to winter time 09:00 AM) magnetic timer: 60 minutes automatic meter installation battery connected clock activated

Engelmann Radio Module

FAW

Radio Module Wireless M-Bus for Water Meters with Modularis System

- **Plug-on detection**
- **Direct mounted (no cable)**
- **Detection of manipulation: removal; magnet**
- **Back flow detection**
- **Estimated lifetime:** **12 + 1 years**
- **Communication interfaces:** **wireless M-Bus;**
  optical interface

Technical data:

FAW

Temperature range medium	°C	0 – 105
Storage temperature / ambient temperature in the field	°C	1 – 55
Transport temperature minimum	°C	-20 for seven days
Transport temperature maximum	°C	70 for 24 hours
Interfaces		optical interface (M-Bus protocol), wireless M-Bus
Power supply	V	3; lithium battery
Estimated lifetime	years	12 + 1
Data storage		nonvolatile memory; once daily
Protection class		IP68

Technical data wireless M-Bus radio interface

Telegrams		short telegram in conformity with OMS (AMR) (serial number FAW / water meter, total volume, information message, serial number FAW), long telegram for walk-by read-out* (serial number FAW / water meter, reading date volume, reading date, 15 monthly values, total volume, information message, serial number FAW)
Transmission power (maximum)	dBm	13
Frequency	MHz	868
Selectable modes according to EN 13757-4		S1; T1; C1
Encryption		AES 128 (factory setting: Engelmann Master Key)
Radio activation date		01.01. - 31.12. (day.month) (not 29.02.)
Transmission period		transmission interval: 2 – 240 min (4 min)* transmission period: 0 h – 24 h (8 am – 6 pm)* weekdays: Mo – Su (Mo – Fr)* weeks in a month: 1 – 4 (1 – 4)* months: Jan – Dec (Jan – Dec)* * factory setting

Weight

Weight	kg	0,54 (package with 10 pcs)

Dimensions

Additional housing above display of water meter	mm	14

Engelmann Smoke Detector

Smoke Detector C1

- Approved according to DIN EN 14604
- Type C according to DIN 14676-1
- Designed service life of 10 years

Technical data:

Smoke Detector C1

Supply voltage	V	3; lithium battery
Lifetime; designed	years	10 + 1

Radio characteristics

Protocol		wireless M-Bus according to EN 13757-3, -4
Operating mode		868-MHz, C1-mode
AES encryption		Engelmann master key
Transmission interval	2	minutes

Testing according to DIN 14676:2018-12

Regular function test:

- Obstacle test via ultrasonic (with three US sensors)
  Double smoke entry monitoring via infrared
  - Entry into the housing
  - Entry into the smoke chamber
- Testing of alarm buzzer
- Testing Battery status
- Testing of the smoke detector removal

Housing

Housing (Ø x T)	mm	132 x 46
Protection class		IP32
Weight	g	250

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