

# SeFlow 400

## Ultrasonic flowmeter for water

Portable, very robust and easy-to-use ultrasonic flowmeter for the water and wastewater industry.

### Features

- Several months of battery operation possible.
- Very high bidirectional measuring accuracy and highly dynamic flow measurement.
- IP68 transducers, reinforced transducer cables and very robust housing.
- Easy and intuitive use.
- Very fast and easy installation.
- Permanent coupling foils.
- High measuring accuracy, even at low flow velocities.
- Suitable for highly diverse nominal pipe sizes and pipe materials.
- Minimum nightflow mode.



### Applications

- Temporary measurements in the water and wastewater industry.
- Leakage detection.
- Water loss balancing.
- Accuracy verification of permanently installed flowmeters.
- Monitoring of pumping tests.



# Technical specifications

## Transmitter

### Technical data

		<b>SeFlow 400</b>
<b>Measurement</b>		
Measurement principle		Transit time difference correlation principle
Flow velocity	m/s	0.01...25
Repeatability		0.25 % of reading $\pm$ 0.01 m/s
Fluid		Water
Measurement uncertainty (volumetric flow rate) <sup>1</sup>		$\pm$ 2 % of reading $\pm$ 0.01 m/s
<b>Transmitter</b>		
Power supply		<ul style="list-style-type: none"> <li>• 100...230 V/50...60 Hz (Power supply unit)</li> <li>• 10.5...15 V DC (Socket at transmitter)</li> <li>• Integrated battery</li> </ul>
Integrated battery		Li-Ion
• Operating time		without outputs and backlight, inner pipe diameter max. 1 400 mm: <sup>2</sup> <ul style="list-style-type: none"> <li>• Continuous measurement: &gt; 48 h</li> <li>• Low power mode:                             <ul style="list-style-type: none"> <li>→ 7 d (measuring interval: 1 min)</li> <li>→ 30 d (measuring interval: 10 min)</li> <li>→ 180 d (measuring interval: 30 min)</li> <li>→ 270 d (measuring interval: 60 min)</li> </ul> </li> <li>• Minimum nightflow mode:                             <ul style="list-style-type: none"> <li>→ 14 d (4 h continuous measurement per 24 h)</li> <li>→ 30 d (2 h continuous measurement per 24 h)</li> <li>→ 60 d (1 h continuous measurement per 24 h)</li> </ul> </li> </ul>
Power consumption	W	< 3, charging: 18
number of measuring channels		1
Damping	s	0...100 (adjustable, continuous measurement)
Measuring cycle	Hz	10
Measuring interval		<ul style="list-style-type: none"> <li>• 1 s (continuous measurement)</li> <li>• 1, 5, 10, 15, 30, 60 min (low power mode)</li> <li>• max. 12 h continuous measurement per 24 h (minimum nightflow mode)</li> </ul>
Housing material		PP
Degree of protection		IP67 (housing cover closed) IP65 (housing cover open)
Dimensions	mm	273 x 247 x 127
Weight	kg	3.1
Ambient temperature	°C	-10...+50
Display		2 x 16 characters, dot matrix, backlight
Menu language		English, German, French, Dutch, Spanish
<b>Measuring functions</b>		
Physical quantities		volumetric flow rate, mass flow rate, flow velocity
Totalizer		volume, mass
<b>Communication interfaces</b>		
Service interfaces		<ul style="list-style-type: none"> <li>• RS232</li> <li>• USB (with adapter)</li> </ul>
<b>Accessories</b>		
Serial data kit		
• Cable		RS232
• Adapter		RS232 - USB
Software		<ul style="list-style-type: none"> <li>• FluxDiagReader: download of measured values and parameters, graphical presentation</li> <li>• FluxDiag (optional): download of measurement data, graphical presentation, report generation</li> </ul>
Adapter		Output adapter (optional)
<b>Data logger</b>		
Loggable values		All physical quantities and totalized values
Capacity		> 100 000 measured values

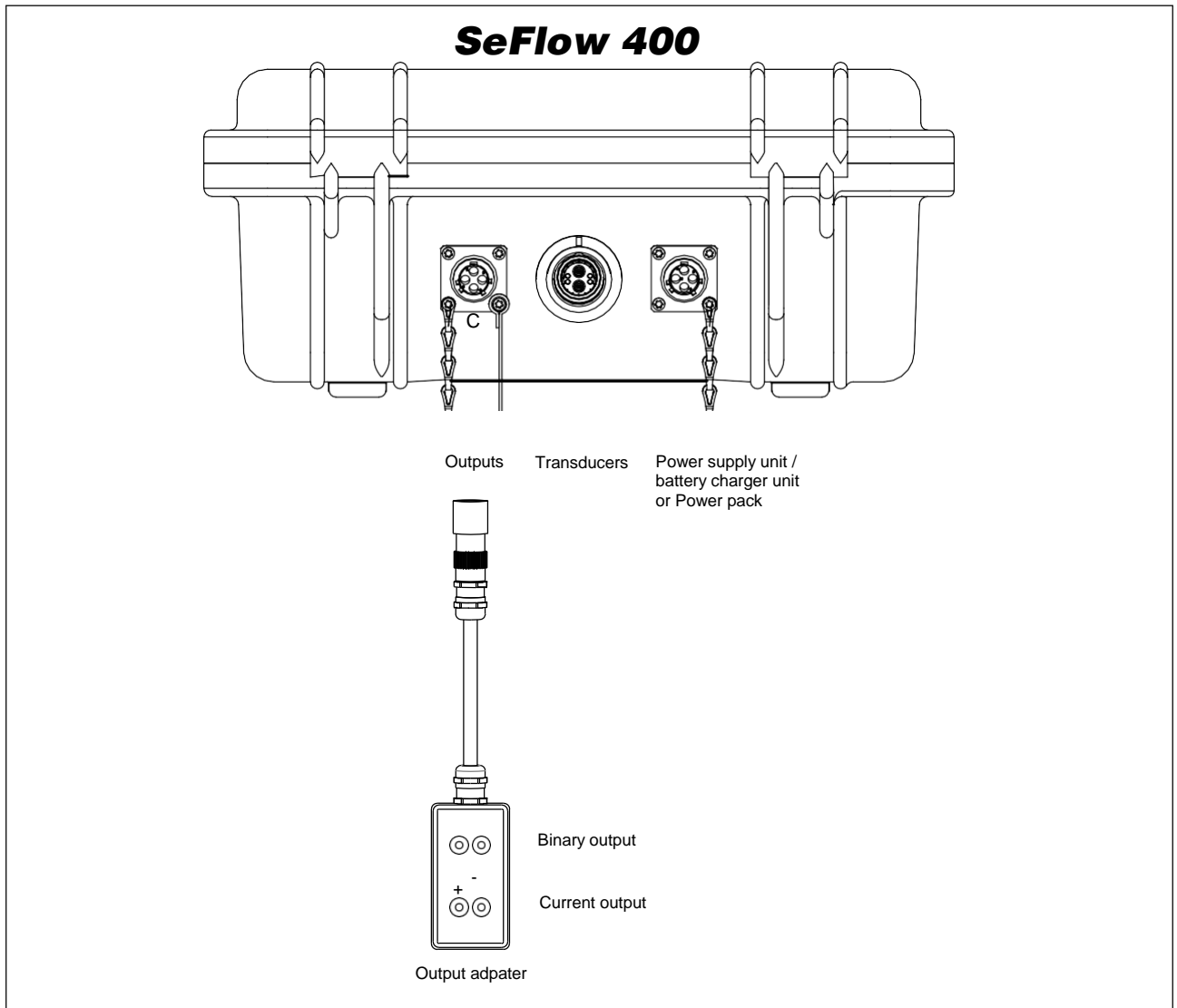
## Technical specifications

		<b>SeFlow 400</b>
<b>Outputs</b>		
The outputs are galvanically isolated from the transmitter.		
<b>• Current output</b>		
Number		1 (continuous measurement)
Range	mA	4...20 (0...22)
Accuracy		0.1 % of reading $\pm 15 \mu\text{A}$
Passive output		$U_{\text{ext}} = 4...24 \text{ V}$ , depending on $R_{\text{ext}}$ ( $R_{\text{ext}} < 1 \text{ k}\Omega$ at 24 V)
<b>• Binary output</b>		
Number		1 (continuous measurement)
Optorelay		32 V/200 mA
Binary output as alarm output		
• Functions		Limit or error
Binary output as pulse output		
• Functions		Mainly for totalizing
• Pulse value	units	0,01...1000
• Pulse width	ms	80...1000

<sup>1</sup> For reference conditions and  $v > 0.25 \text{ m/s}$

<sup>2</sup> Operating time extension using the Power pack **ACC-IB4** (option)

## Connections

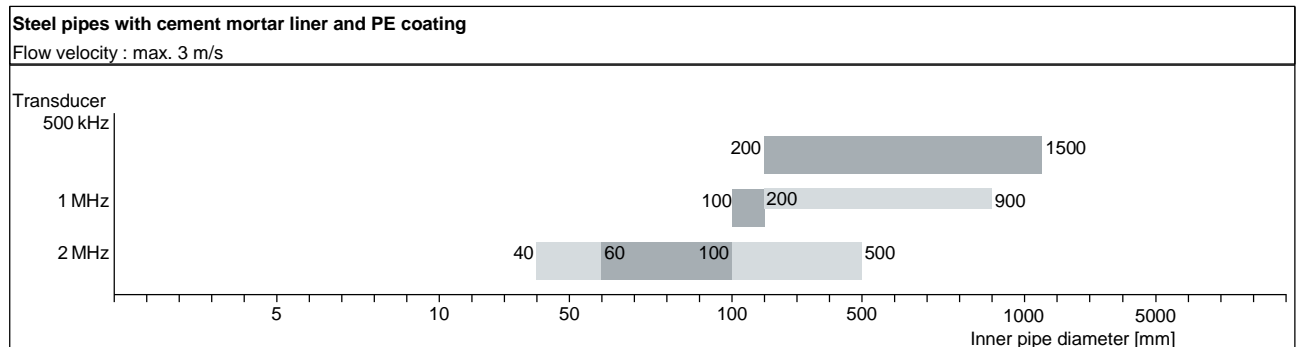
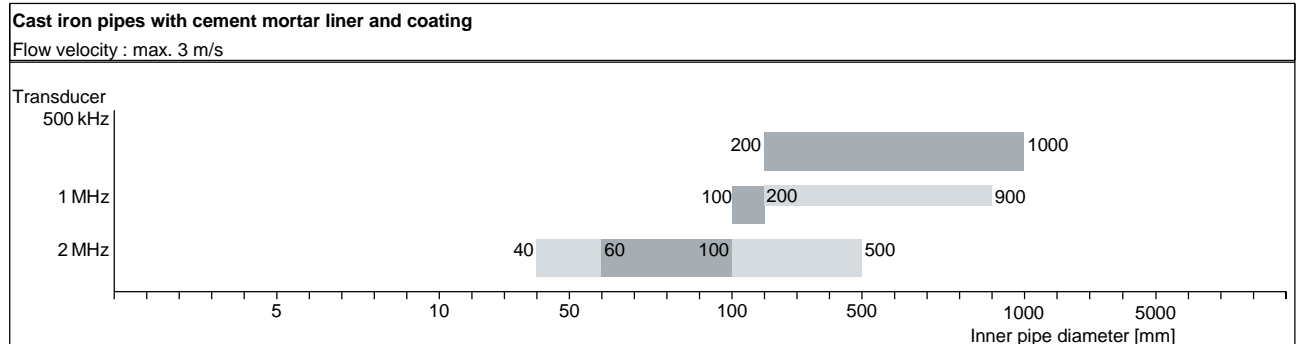
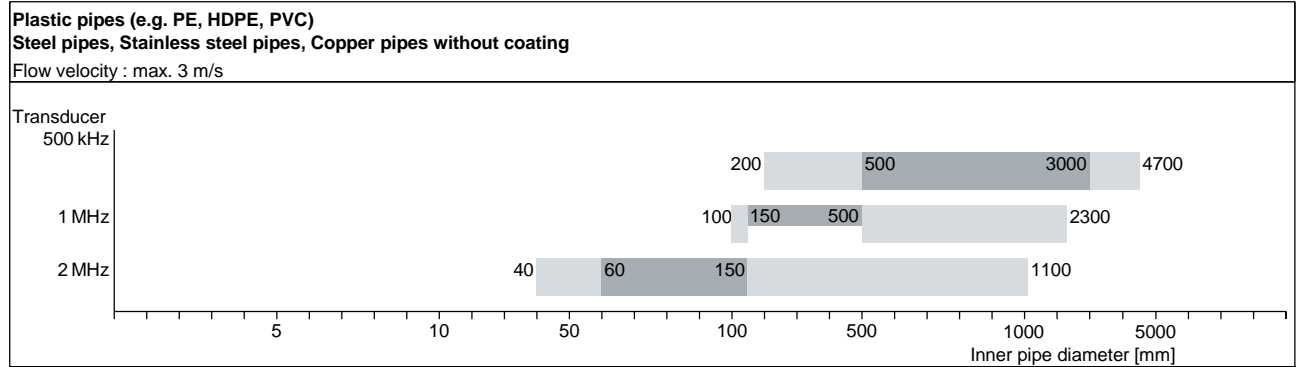


## Output adapter

Pin	Connection
A	Binary output (+)
B	Binary output (-)
C	Current output (+)
D	Current output (-)

## Transducers

### Transducer recommendation for typical water pipe materials

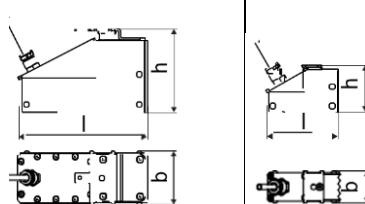


Recommended
  Possible

For other materials and higher flow velocities please contact **SEWERIN**.

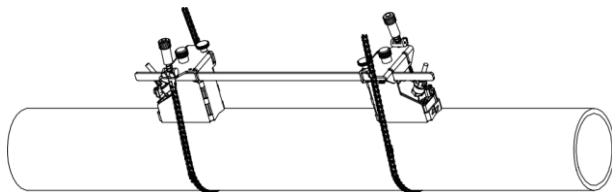
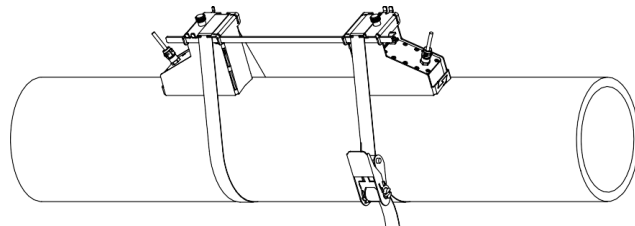
## Technical specifications

### Technical data

Order code	FSK-NNNNL/IP68	FSM-NNNNL/IP68	FSP-NNNNL/IP68
Technical type	CDK1LI7	CDM2LI7	CDP2LI7
Transducer frequency	MHz 0.5	1	2
Inner pipe diameter	See transducer recommendation		
<b>Pipe wall thickness</b>			
min.	mm 5	2.5	1.2
<b>Material</b>			
Housing	PEEK with stainless steel cap 316Ti (1.4571)		
Contact surface	PEEK		
Degree of protection	IP68 <sup>1</sup>		
<b>Transducer cable</b>			
Type	7819		
Length	m 6		
<b>Dimensions</b>			
Length l	mm 130	72	
Width b	mm 54	32	
Height h	mm 83.5	46	
Dimensional drawing			
Weight (without cable)	kg 0.43	0.085	
<b>Pipe surface temperature</b>			
min.	°C -40		
max.	°C +100		
<b>Ambient temperature</b>			
min.	°C -40		
max.	°C +100		

<sup>1</sup> Test conditions : 3 months, 2 bar (20 m) @ 20 °C

### Transducer mounting fixture

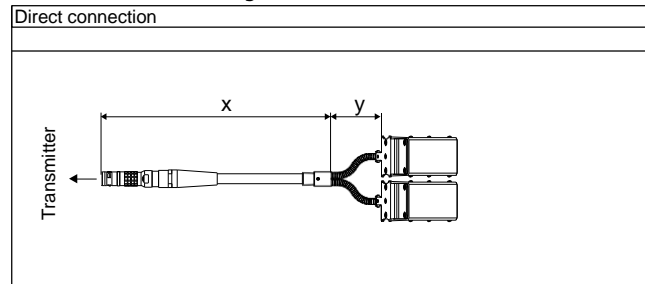
<p><b>Chains and transducer shoes</b></p> 	<p>Material: stainless steel 316Ti (1.4571), 316L (1.4404), 304 (1.4301) Chain length: 1 or 2 m</p>
<p><b>Tension belts TB</b></p> 	<p>Transducer frequency: K Material: stainless steel 316Ti (1.4571), 316L (1.4404), Steel, powder coated and textile tension belt. Length: 5 or 7 m. Ambient temperature: max. 60 °C Outer pipe diameter : max. 1500 / 2100 mm</p>

## Technical specifications

### Coupling materials for transducers

Type	Ambient temperature °C
Coupling foil type VT	-10...+200
Coupling compound type E	-30...+200


### Connection systems



### Cable

Transducer cable	
Type	7819
Length	m x, y: 3
Ambient temperature	°C -40...+100
<b>Cable jacket</b>	
Material	PUR
Outer diameter	mm 5.2 ±0.2
Thickness	mm 0.9
Colour	grey
Shield	x
<b>Sheath x</b>	
Material	PUR
Outer diameter	mm 13 ±0.4
Colour	grey
<b>Sheath y</b>	
Material	Stainless steel 316Ti (1.4571)
Outer diameter	mm 8
<b>Connector</b>	
Type	Lemo 3K

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