

## 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 foil
- 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



FLUXUS F401

# Transmitter

## Technical data

FLUXUS F401	
<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>12 V DC (socket at transmitter)</li> <li>integrated battery</li> </ul>
integrated battery • operating time	Li-Ion 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>-&gt; 7 d (measuring interval: 1 min)</li> <li>-&gt; 30 d (measuring interval: 10 min)</li> <li>-&gt; 180 d (measuring interval: 30 min)</li> <li>-&gt; 270 d (measuring interval: 60 min)</li> </ul> </li> <li>minimum nightflow mode:               <ul style="list-style-type: none"> <li>-&gt; 14 d (4 h continuous measurement per 24 h)</li> <li>-&gt; 30 d (2 h continuous measurement per 24 h)</li> <li>-&gt; 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 • adapter	optional RS232 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 totaled values
capacity	> 100 000 measured values

<sup>1</sup> for reference conditions and  $v > 0.25$  m/s

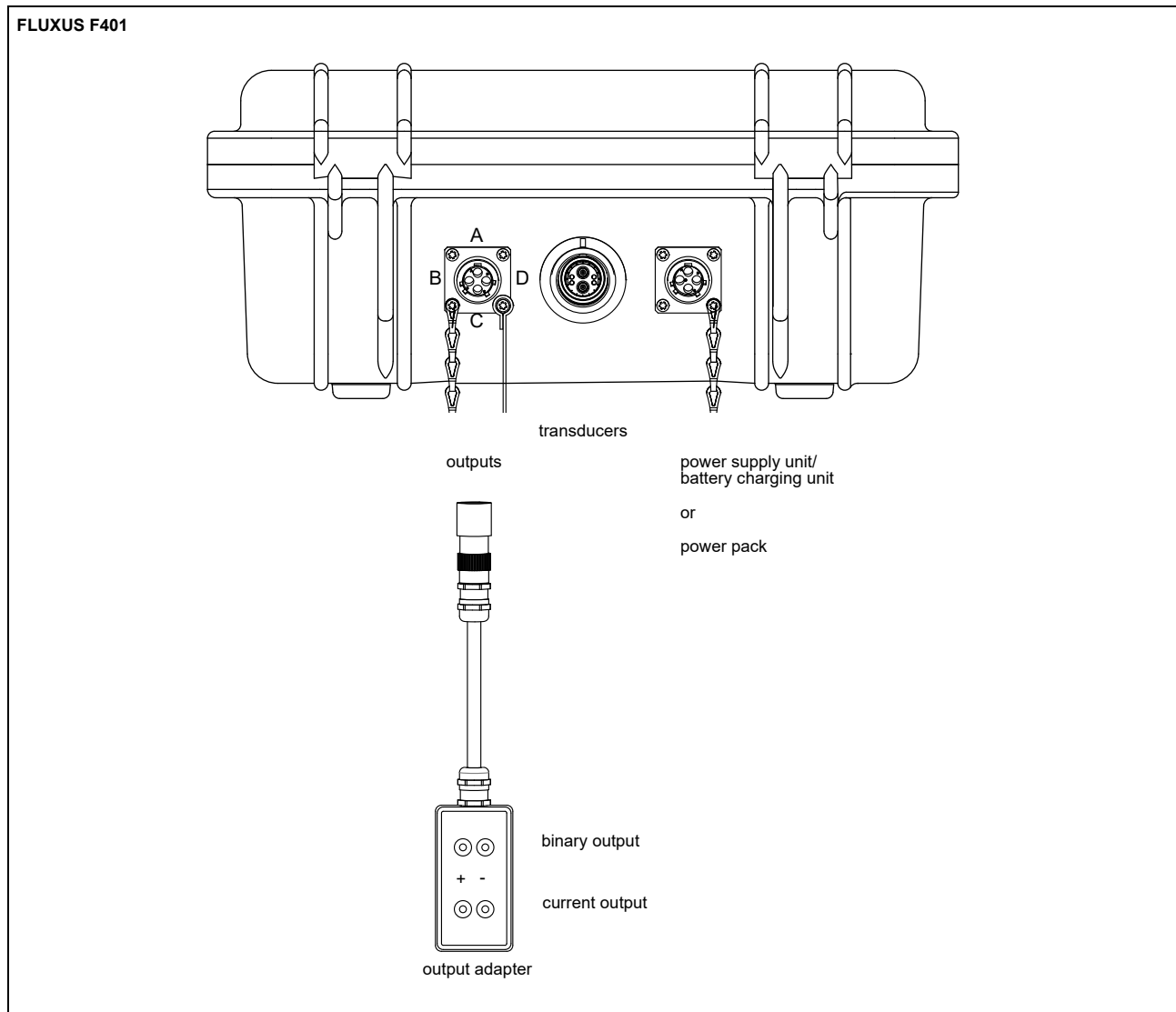
<sup>2</sup> operating time extension using the power pack PP026NN (optional)

		FLUXUS F401
<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 ±15 µA
passive output		$U_{ext} = 4...24 \text{ V}$ , depending on $R_{ext}$ ( $R_{ext} < 1 \text{ k}\Omega$ 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 PP026NN (optional)

## Connection

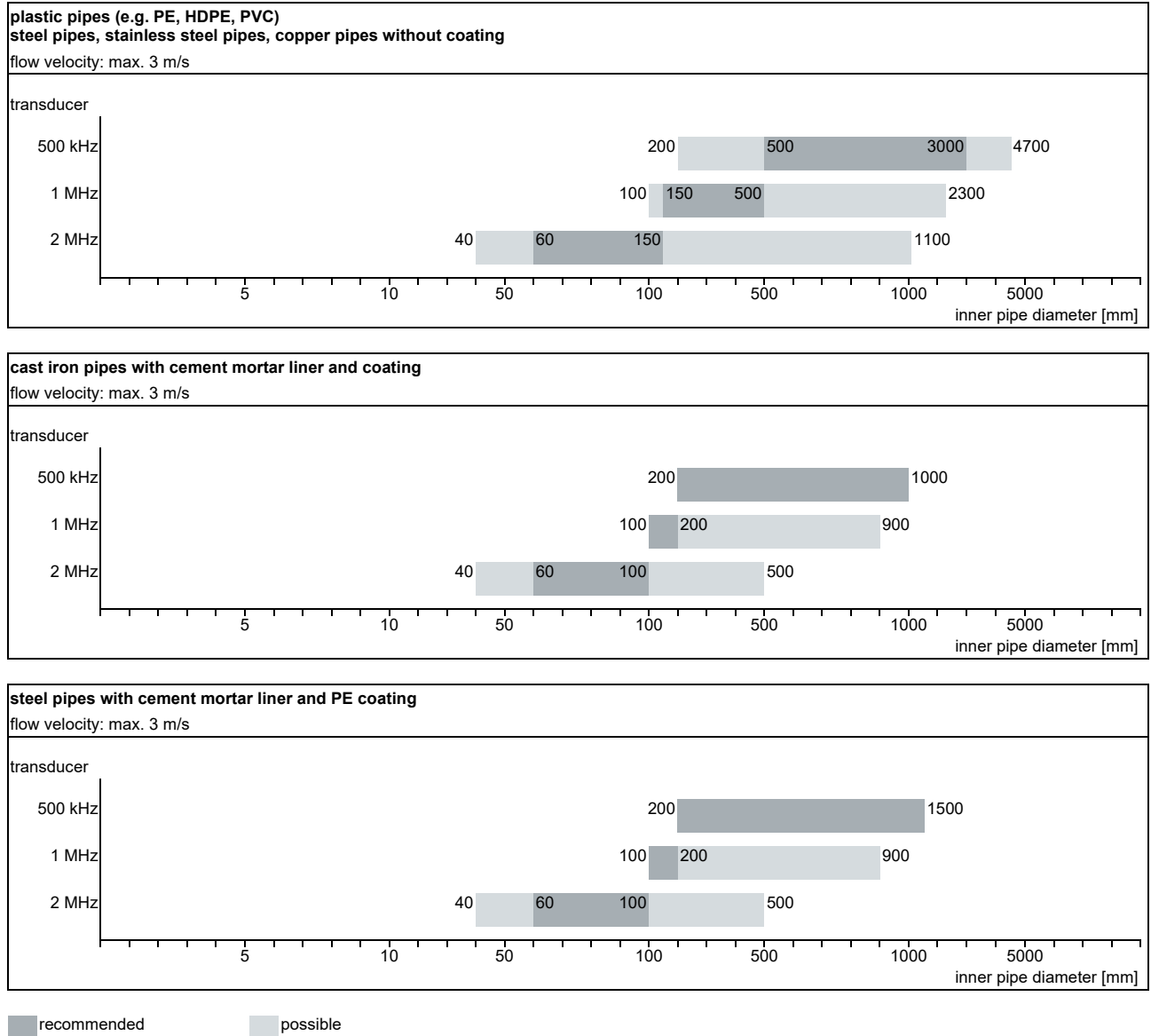


### Output adapter

pin	connection
A	binary output (+)
B	binary output (-)
C	current output (+)
D	current output (-)

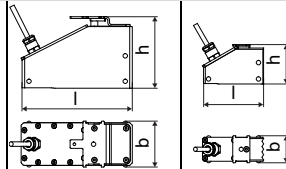
## Transducers

### Transducer recommendation for typical water pipe materials



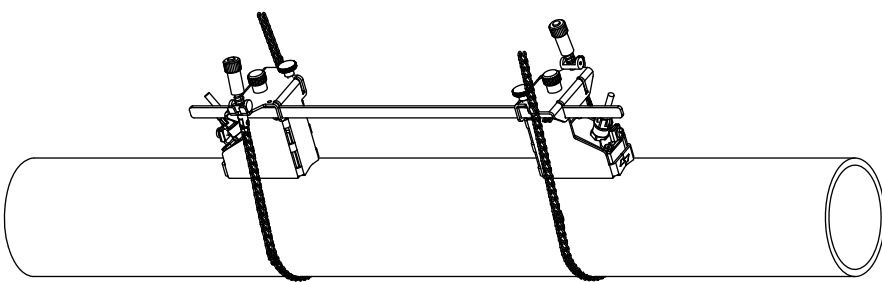
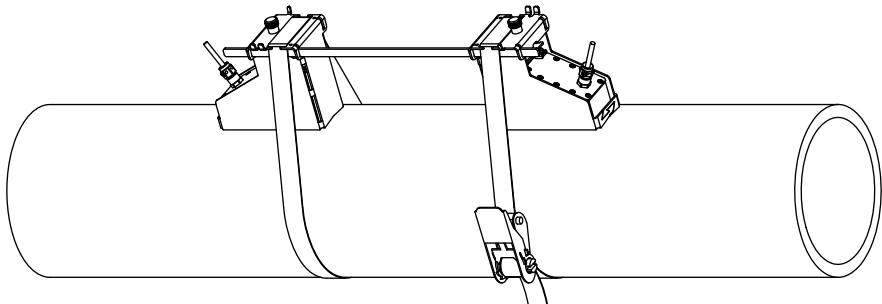
For other pipe materials and higher flow velocities please contact FLEXIM.

### Technical data

technical type		500 kHz	1 MHz	2 MHz
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

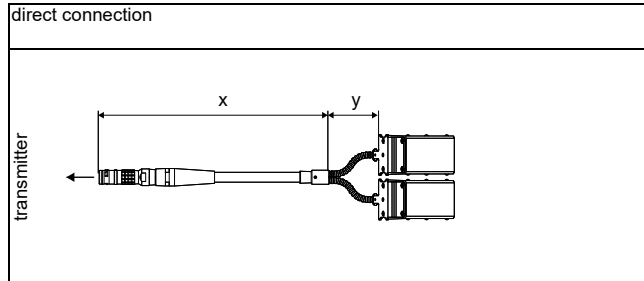
### Transducer mounting fixture

<p><b>chains and transducer shoes</b></p> 	<p>material: stainless steel 316Ti (1.4571), 316L (1.4404), 304 (1.4301) chain length: 1/2 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: 5/7 m ambient temperature: max. 60 °C outer pipe diameter: max. 1500/2100 mm</p>

## 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	8
<b>connector</b>	
type	Lemo 3K

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