

## 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 bi-directional 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
- Adherence to AWWA manual M36

### 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

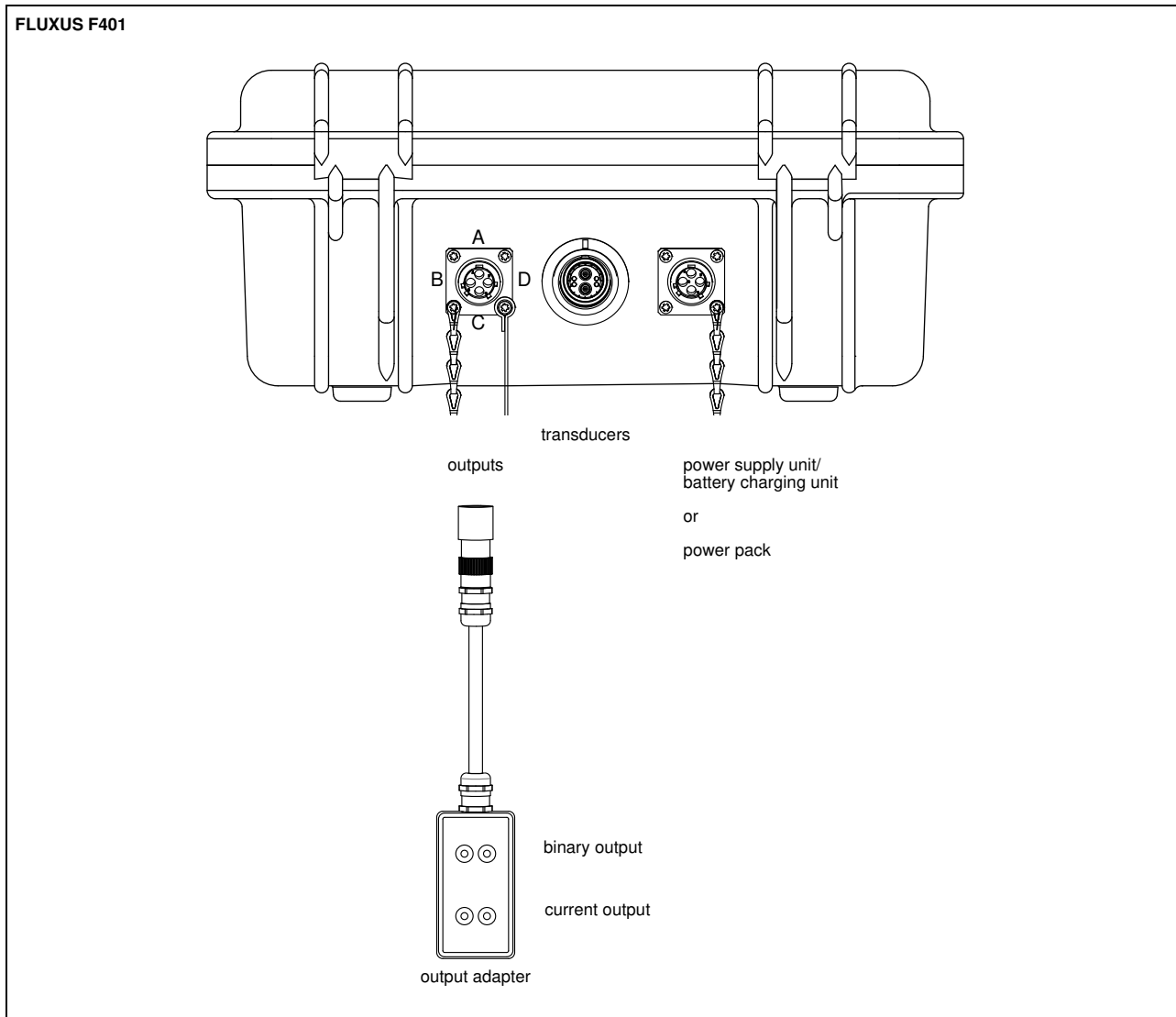
## Technical data

		FLUXUS F401
<b>measurement</b>		
measurement principle		transit time difference correlation principle
flow velocity	ft/s	0.03 to 82
repeatability		0.25 % of reading $\pm 0.03$ ft/s
fluid		water
accuracy <sup>1</sup>		
• volumetric flow rate		$\pm 2$ % of reading $\pm 0.03$ ft/s
<b>transmitter</b>		
power supply		<ul style="list-style-type: none"> <li>• 100 to 230 V/50 to 60 Hz (power supply unit)</li> <li>• 12 V DC (socket at transmitter)</li> <li>• integrated battery</li> </ul>
integrated battery		Li-Ion
• operating time	h	without outputs and backlight, inner pipe diameter max. 55.1 in: <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 to 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		NEMA 6 (housing cover closed) NEMA 4 (housing cover open)
dimensions	in	10.75 x 9.72 x 5
weight	lb	6.8
ambient temperature	°F	14 to +122
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		optional
• 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
<b>outputs</b>		
		The outputs are galvanically isolated from the transmitter.
<b>• current output</b>		
number		1 (continuous measurement)
range	mA	4 to 20 (0 to 22)
accuracy		0.1 % of reading $\pm 15$ $\mu$ A
passive output		$U_{\text{ext}} = 4$ to 24 V, depending on $R_{\text{ext}}$ ( $R_{\text{ext}} < 1$ 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 to 1000
• pulse width	ms	80 to 1000

<sup>1</sup> for reference conditions and  $v > 0.82$  ft/s

# Terminal assignment

## Connection

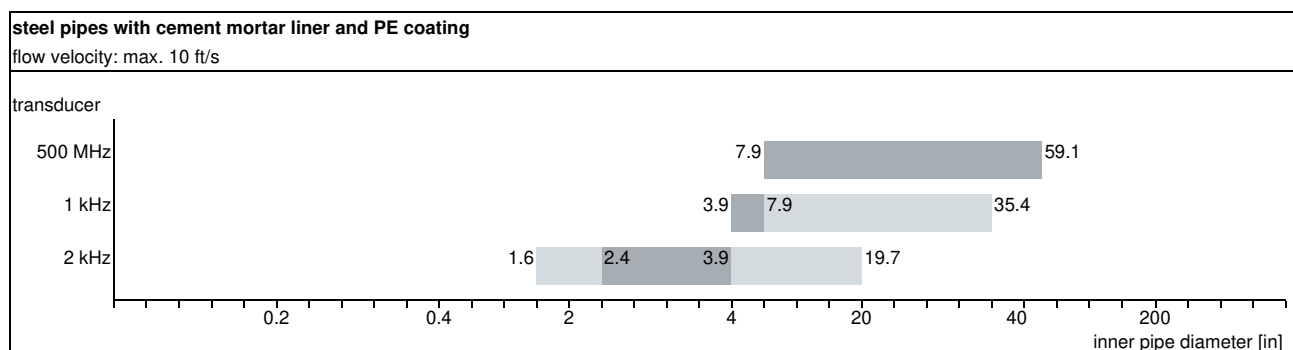
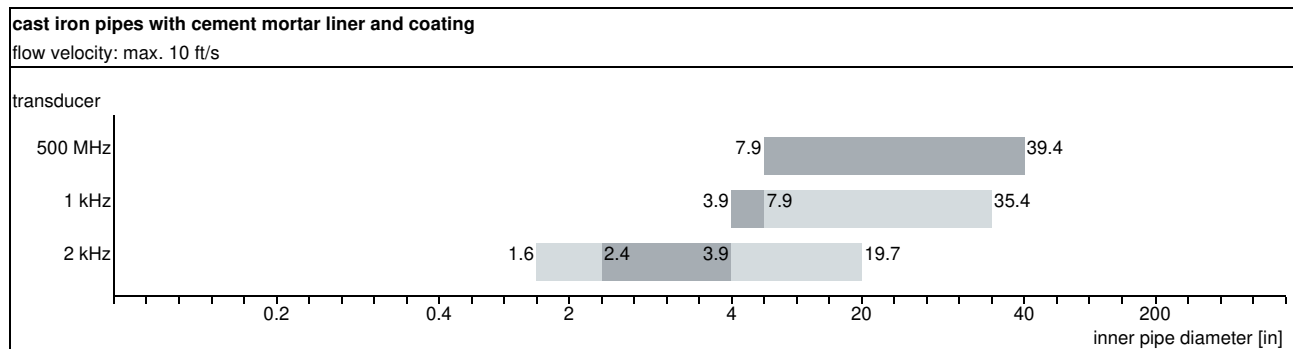
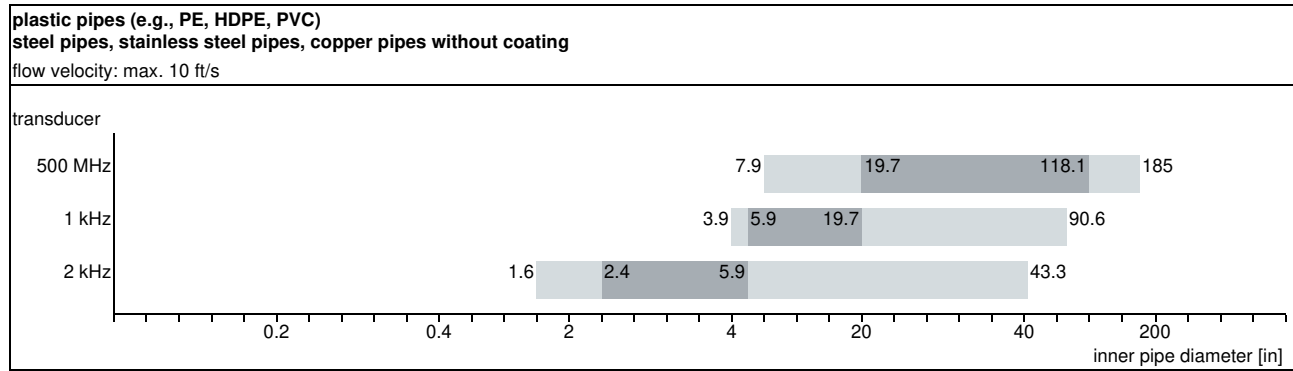


### Output adapter

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

# Transducers

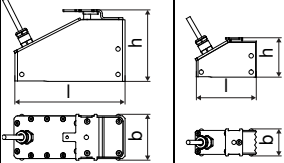
## Transducer recommendation for typical water pipe materials



■ recommended      ■ possible

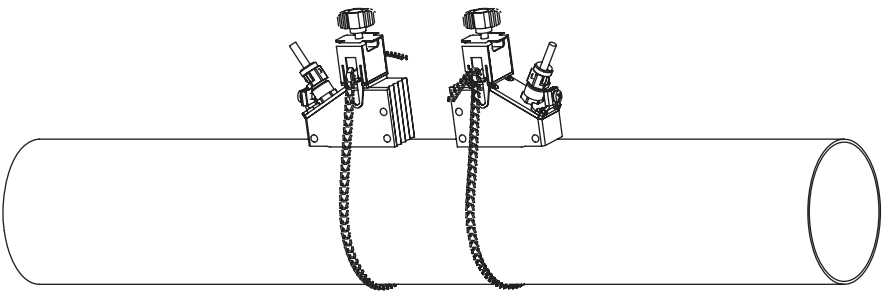
For other pipe materials and higher flow velocities please contact FLEXIM.

### Technical data

technical type		500 MHz	1 kHz	2 kHz
transducer frequency	MHz	0.5	1	2
inner pipe diameter		see transducer recommendation		
<b>pipe wall thickness</b>				
min.	in	0.2	0.1	0.05
<b>material</b>				
housing		PEEK with stainless steel cap 316Ti		
contact surface		PEEK		
degree of protection		IP68 <sup>1</sup>		
<b>transducer cable</b>				
type		7819		
length	ft	19		
<b>dimensions</b>				
length l	in	5.12	2.76	
width b	in	2.13	1.26	
height h	in	3.29	1.81	
dimensional drawing				
weight (without cable)	lb	0.95	0.19	
<b>ambient temperature</b>				
min.	°F	-40		
max.	°F	+212		

<sup>1</sup> test conditions: 3 months/29 psi (65 ft)/36 °F

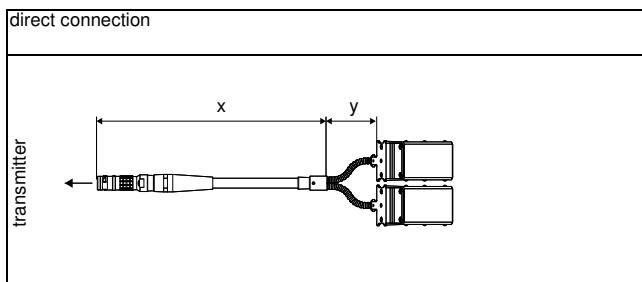
### Transducer mounting fixture

<p><b>ladder chain mounting accessory</b></p> 	<p>material: 301, 304 chain length: 30/78 in</p>
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### Coupling materials for transducers

type	ambient temperature °F	material
coupling pad type VT	14 to +392	fluoroelastomer

### Connection systems



## Cable

transducer cable		
type		7819
ambient temperature	°F	-40 to +212
cable jacket		
material		PUR
outer diameter	in	0.2 ±0.01
thickness	in	0.04
color		gray
shield		x
sheath x		
material		PUR
outer diameter	in	0.51 ±0.02
color		gray
sheath y		
material		stainless steel 316Ti
outer diameter		0.31

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