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

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

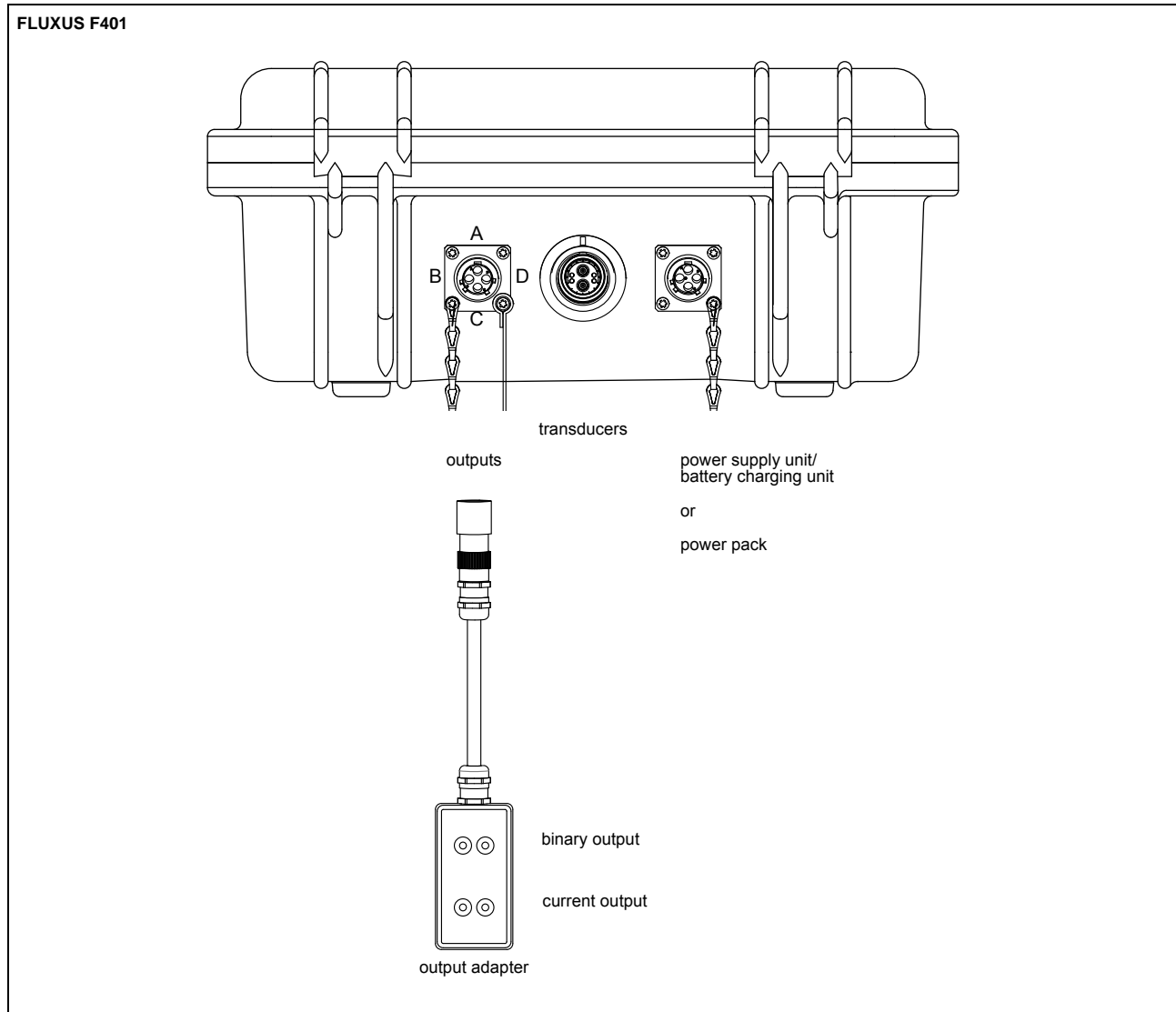|		FLUXUS F401
measurement		
measurement principle		transit time difference correlation principle
flow velocity	m/s	0.01...25
repeatability		0.25 % of reading ±0.01 m/s
fluid		water
accuracy[1] • volumetric flow rate		±2 % of reading ±0.01 m/s
transmitter		
power supply		• 100...230 V/50...60 Hz (power supply unit)
		• 12 V DC (socket at transmitter)
		• integrated battery
integrated battery • operating time	h	Li-Ion without outputs and backlight, inner pipe diameter max. 1 400 mm:[2]
		• continuous measurement: > 48 h
		• low power mode: – > 7 d (measuring interval: 1 min) – > 30 d (measuring interval: 10 min) – > 180 d (measuring interval: 30 min) – > 270 d (measuring interval: 60 min)
		• minimum nightflow mode: – > 14 d (4 h continuous measurement per 24 h) – > 30 d (2 h continuous measurement per 24 h) – > 60 d (1 h continuous measurement per 24 h)
power consumption	W	< 3, charging: 18
number of measuring channels		1
damping	s	0...100 (adjustable, continuous measurement)
measuring cycle	Hz	10
measuring interval		• 1 s (continuous measurement)
		• 1, 5, 10, 15, 30, 60 min (low power mode)
		• max. 12 h continuous measurement per 24 h (minimum nightflow mode)
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
measuring functions		
physical quantities		volumetric flow rate, mass flow rate, flow velocity
totalizer		volume, mass
communication interfaces		
service interfaces		• RS232
		• USB (with adapter)
accessories		
serial data kit • cable • adapter		optional RS232 RS232 - USB
software		• FluxDiagReader: download of measured values and parameters, graphical presentation • FluxDiag (optional): download of measurement data, graphical presentation, report generation
adapter		• output adapter (optional)
data logger		
loggable values		all physical quantities and totalized values
capacity		> 100 000 measured values

[1] for reference conditions and v > 0.25 m/s

[2] operating time extension using the power pack PP0026NN (optional)

		FLUXUS F401
outputs		
		The outputs are galvanically isolated from the transmitter.
• current output		
number		1 (continuous measurement)
range	mA	4...20 (0...22)
accuracy		0.1 % of reading ±15 µA
passive output		U_{ext} = 4...24 V, depending on R_{ext} (R_{ext} < 1 kΩ at 24 V)
• binary output		
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

[1] for reference conditions and v > 0.25 m/s

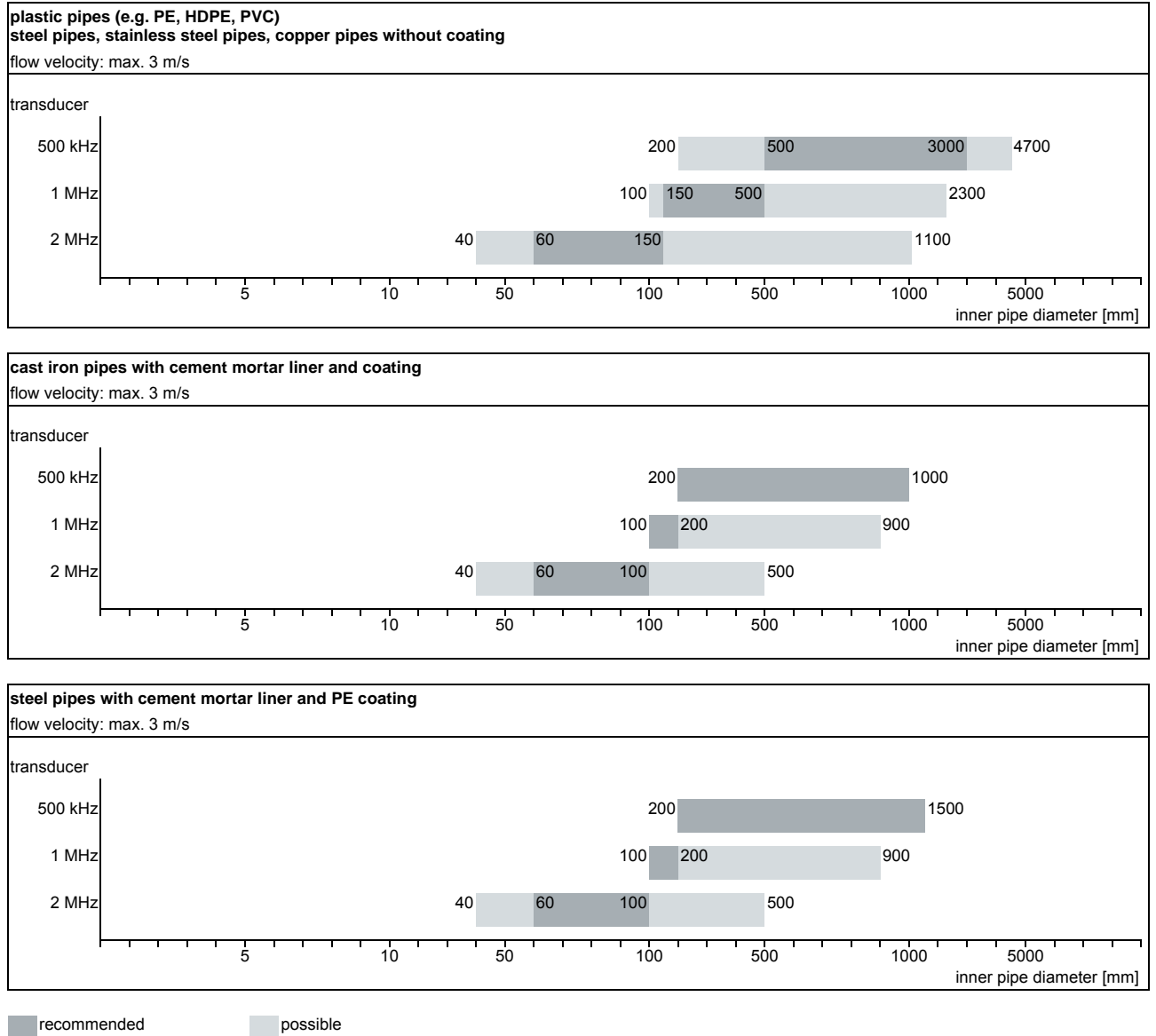[2] operating time extension using the power pack PP0026NN (optional)

Connection

FLUXUS F401

transducers

outputs

power supply unit/
battery charging unit

or

power pack

binary output

current output

output adapter

Output adapter

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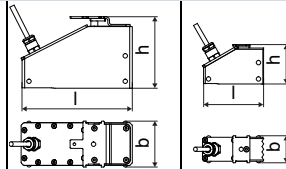
Transducers

Transducer recommendation for typical water pipe materials

plastic pipes (e.g. PE, HDPE, PVC)
steel pipes, stainless steel pipes, copper pipes without coating
flow velocity: max. 3 m/s

transducer

500 kHz	200 500 3000 4700
1 MHz	100 150 500 2300
2 MHz	40 60 150 1100

inner pipe diameter [mm]
5   10   50   100   500   1000   5000

cast iron pipes with cement mortar liner and coating
flow velocity: max. 3 m/s

transducer

500 kHz	200 1000
1 MHz	100 200 900
2 MHz	40 60 100 500

inner pipe diameter [mm]
5   10   50   100   500   1000   5000

steel pipes with cement mortar liner and PE coating
flow velocity: max. 3 m/s

transducer

500 kHz	200 1500
1 MHz	100 200 900
2 MHz	40 60 100 500

inner pipe diameter [mm]
5   10   50   100   500   1000   5000
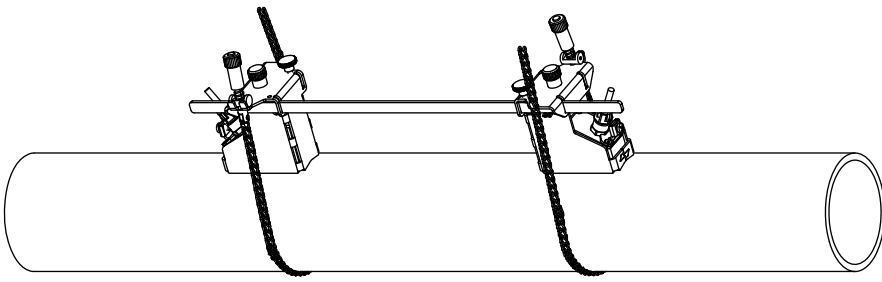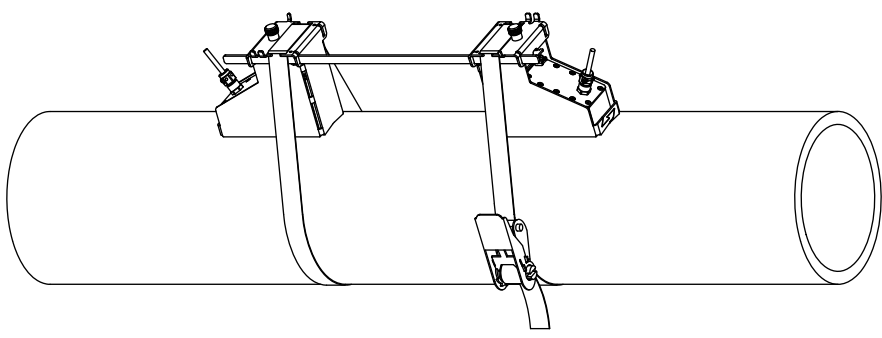
recommended   possible

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		
pipe wall thickness				
min.	mm	5	2.5	1.2
material				
housing		PEEK with stainless steel cap 316Ti (1.4571)		
contact surface		PEEK		
degree of protection		IP68[1]		
transducer cable				
type		7819		
length	m	6		
dimensions				
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	
ambient temperature				
min.	°C	-40		
max.	°C	+100		

[1] test conditions: 3 months/2 bar (20 m)/20 °C

Transducer mounting fixture

chains and transducer shoes	
	material: stainless steel 316Ti (1.4571), 316L (1.4404), 304 (1.4301) chain length: 1/2 m
tension belts TB	
	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

Coupling materials for transducers

type	ambient temperature °C	material
coupling foil type VT	-10...+200	fluoroelastomer

Connection systems

direct connection
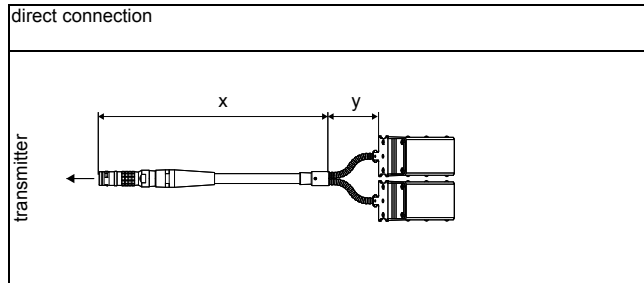
Cable

transducer cable		
type		7819
ambient temperature	°C	-40...+100
cable jacket		
material		PUR
outer diameter	mm	5.2 ±0.2
thickness	mm	0.9
colour		grey
shield		x
sheath x		
material		PUR
outer diameter	mm	13 ±0.4
colour		grey
sheath y		
material		stainless steel 316Ti (1.4571)
outer diameter		8

2018-12-20, TSFLUXUS_F401V2-2-2EN_Leu