

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	
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
measurement uncertainty (volumetric flow rate) ¹		±2 % of reading ±0.01 m/s
transmitter		
power supply		<ul style="list-style-type: none"> • 100...230 V/50...60 Hz (power supply unit) • 10.5...15 V DC (socket at transmitter) • integrated battery
integrated battery • operating time		<p>Li-Ion</p> <p>without outputs and backlight, inner pipe diameter max. 1 400 mm:²</p> <ul style="list-style-type: none"> • continuous measurement: > 48 h • low power mode: <ul style="list-style-type: none"> – > 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: <ul style="list-style-type: none"> – > 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		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • RS232 • USB (with adapter)
accessories		
serial data kit • cable • adapter		optional RS232 RS232 - USB
software		<ul style="list-style-type: none"> • 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

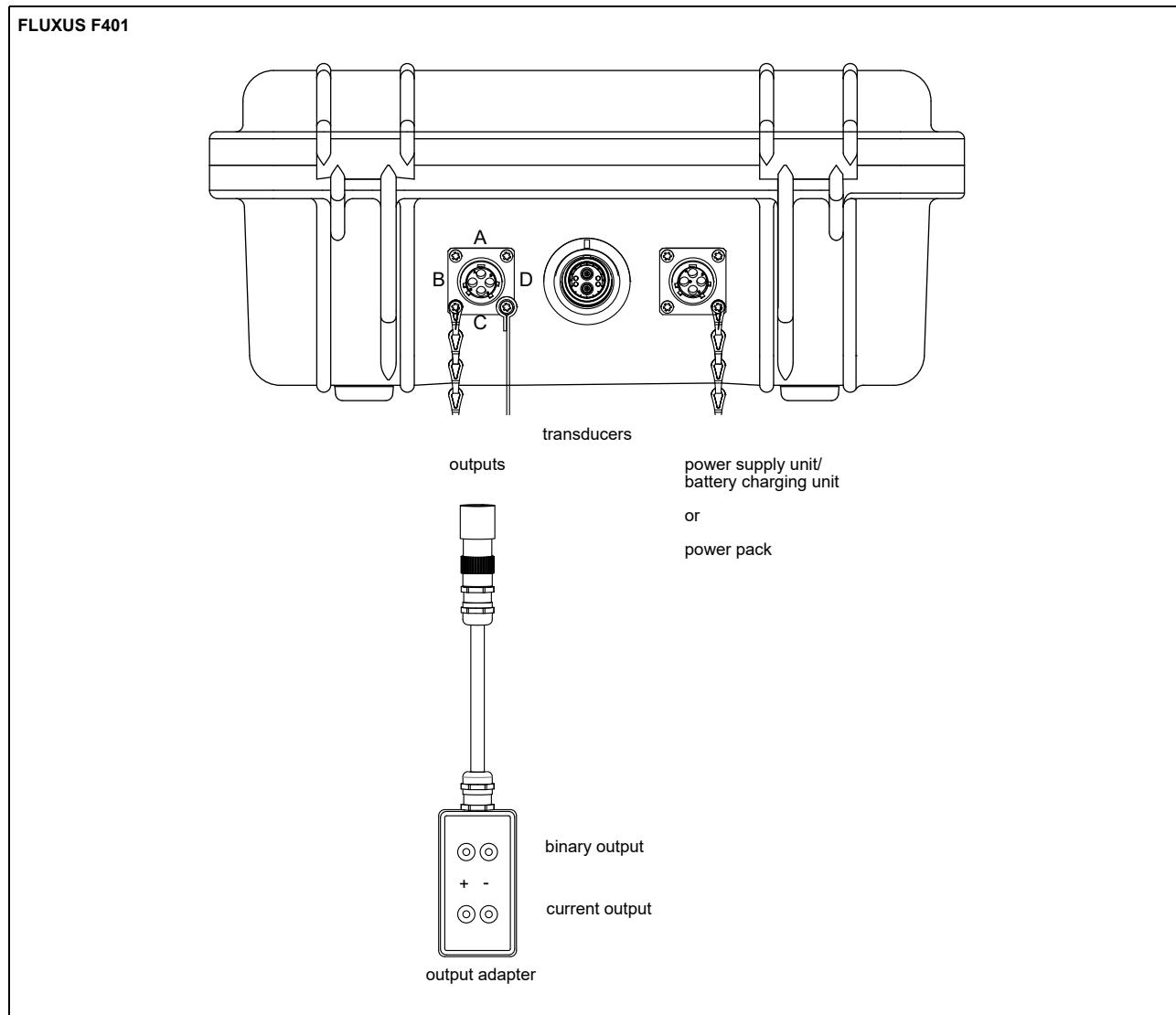
² operating time extension using the power pack PP026NN (optional)

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 $\pm 15 \mu\text{A}$	
passive output	$U_{\text{ext}} = 4...24 \text{ V}$, depending on R_{ext} ($R_{\text{ext}} < 1 \text{ k}\Omega$ 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 $v > 0.25 \text{ m/s}$

² 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

plastic pipes (e.g. PE, HDPE, PVC)

steel pipes, stainless steel pipes, copper pipes without coating

flow velocity: max. 3 m/s

transducer

CDK1LI7

200 500 3000 4700

CDM2LI7

100 150 500 2300

CDP2LI7

40 60 150 1100

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

cast iron pipes with cement mortar liner and coating

flow velocity: max. 3 m/s

transducer

CDK1LI7

200 1000

CDM2LI7

100 200 900

CDP2LI7

40 60 100 500

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

steel pipes with cement mortar liner and PE coating

flow velocity: max. 3 m/s

transducer

CDK1LI7

200 1500

CDM2LI7

100 200 900

CDP2LI7

40 60 100 500

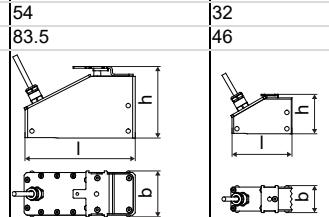
5 10 50 100 500 1000 5000 inner pipe diameter [mm]

recommended

possible

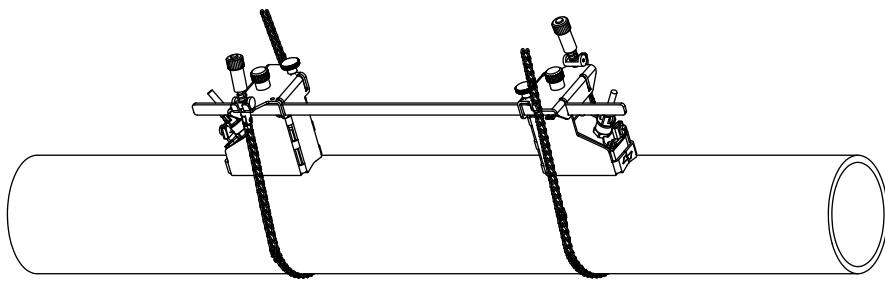
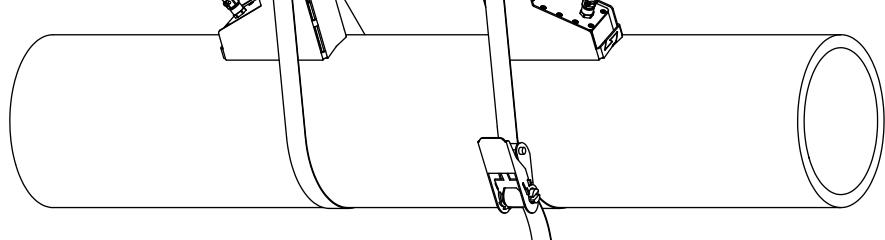
For other pipe materials and higher flow velocities please contact FLEXIM.

Technical data

order code	FSK-LNNN-**KL/H68	FSM-LNNN-**KL/H68	FSP-LNNN-**KL/H68
technical type	CDK1L17	CDM2L17	CDP2L17
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	
pipe surface temperature	°C -40...+100		
ambient temperature	°C -40...+100		

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

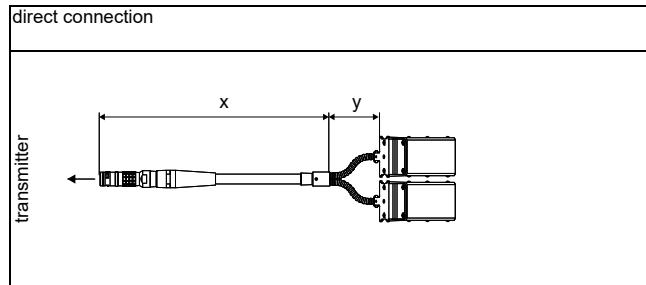
Transducer mounting fixture

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
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
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
connector		
type		Lemo 3K



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