

## Ultrasonic Measurement of Water Flow

Portable instrument for non-intrusive, quick ultrasonic water flow measurement

### Features

- Non-intrusive flow measurement with high measuring accuracy for portable use
- Precise bi-directional, highly dynamic flow measurement
- Water-tight transducers (IP68) are characterised by their high robustness
- User-friendly menu navigation - the firmware is specifically adapted to the needs of the water industry
- For inner pipe diameters of 1 to 120 in and for flow velocities of 0.03 to 82 ft/s
- Digital signal processor (DSP) and signal processing ensure stable and reliable results even under difficult measurement conditions
- High measuring accuracy, even at low flow velocities
- Adherence to AWWA manual M36



FLUXUS F401 H<sub>2</sub>O

### Applications

- Water and wastewater applications
- Clean measurement process for drinking water systems
- Leak detection
- Water loss balancing
- Verification of sewage lift station performance
- Temporary monitoring of distribution and collection systems
- Verification of pump and valve performance



FLUXUS F401 H<sub>2</sub>O with transducers

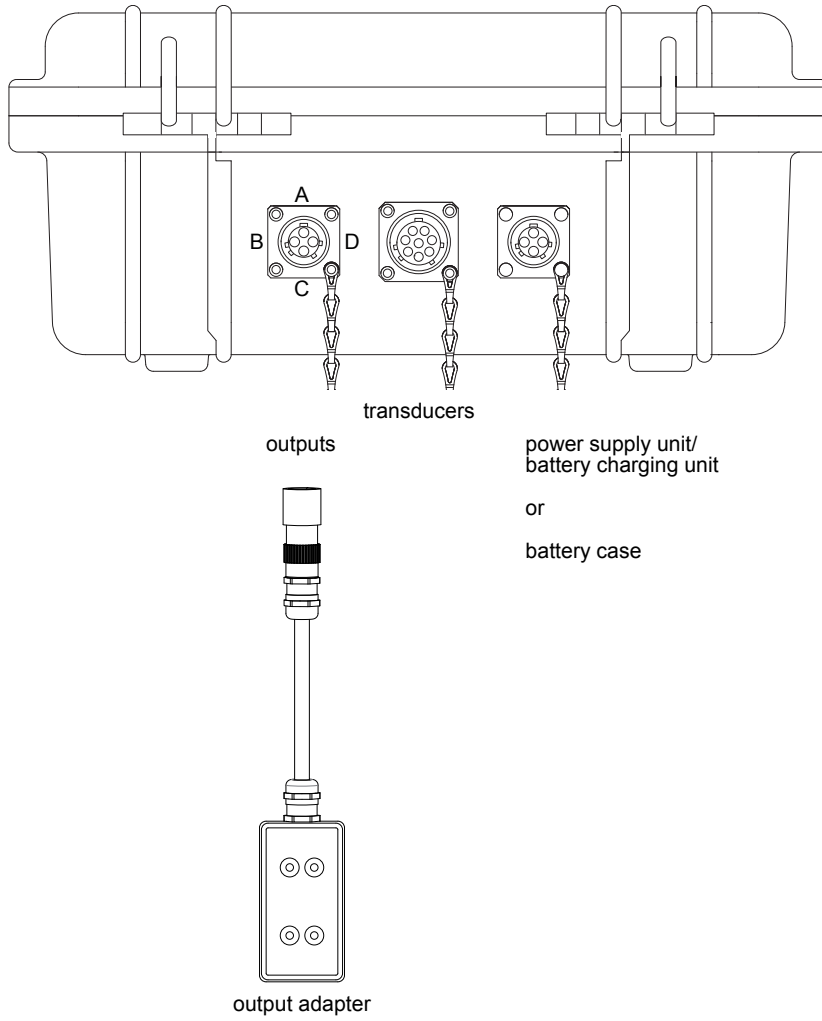
# Flow Transmitter

## Technical Data

FLUXUS	F401
<b>measurement</b>	
measurement principle	transit time difference correlation principle
flow velocity	0.03 to 82 ft/s
resolution	$8.2 \cdot 10^{-4}$ ft/s
repeatability	0.25 % of reading $\pm 0.03$ ft/s
medium	water and acoustically similar liquids with < 6 % gaseous or solid content by volume
accuracy <sup>1</sup>	
- volumetric flow rate	$\pm 2$ % of reading $\pm 0.03$ ft/s
<b>flow transmitter</b>	
power supply	100 to 240 V/50 to 60 Hz (power supply unit), 12 V DC (socket at transmitter), integrated battery, battery case (optional) 12 V DC, 26 Ah
battery	Li-Ion operating time (without outputs and backlight): > 20 h
power consumption	< 6 W
number of flow measuring channels	1
signal attenuation	0 to 100 s, adjustable
measuring cycle	10 Hz
response time	1 s
housing material	PP
degree of protection	NEMA 6 (housing cover closed) NEMA 4 (housing cover open)
dimensions	10.75 x 9.72 x 5 in
weight	6.4 lb
ambient temperature	14 to +122 °F
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>data logger</b>	
loggable values	all physical quantities and totalized values
capacity	> 100 000 measured values
<b>communication</b>	
interface	- process integration (optional, without outputs): RS485 (emitter) or Modbus RTU or BACnet MS/TP - diagnosis: RS232/USB
<b>accessories</b>	
serial data kit	
- software (all Windows™ versions)	- FluxData: download of measurement data, graphical presentation, conversion to other formats (e.g. for Excel™)
- cable	- RS232
- adapter	- RS232 - USB
output adapter	optional
process interface adapter	optional
<b>outputs (optional)</b>	
	The outputs are galvanically isolated from the transmitter.
<b>current output</b>	
number	1
range	0/4 to 20 mA
accuracy	0.1 % of reading $\pm 15$ $\mu$ A
active output	$R_{ext} < 500 \Omega$
<b>binary output</b>	
number	1
optorelay	32 V/200 mA
binary output as alarm output	
- functions	limit or error
binary output as pulse output	
- pulse value	0.01 to 1000 units
- pulse width	80 to 1000 ms

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

## Connection

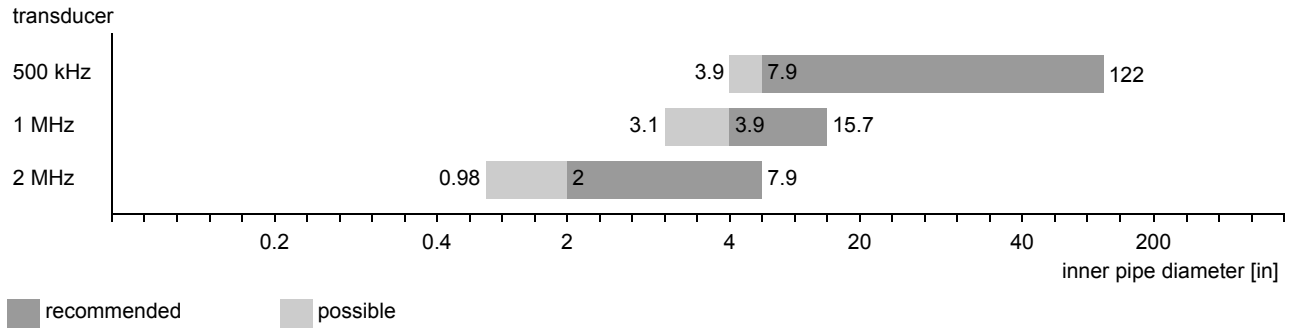


### outputs

pin	outputs	RS485, Modbus, BACnet
A	binary output (+)	A (+)
B	binary output (-)	B (-)
C	current output (+)	shield
D	current output (-)	-

## Transducers

### Transducer Selection



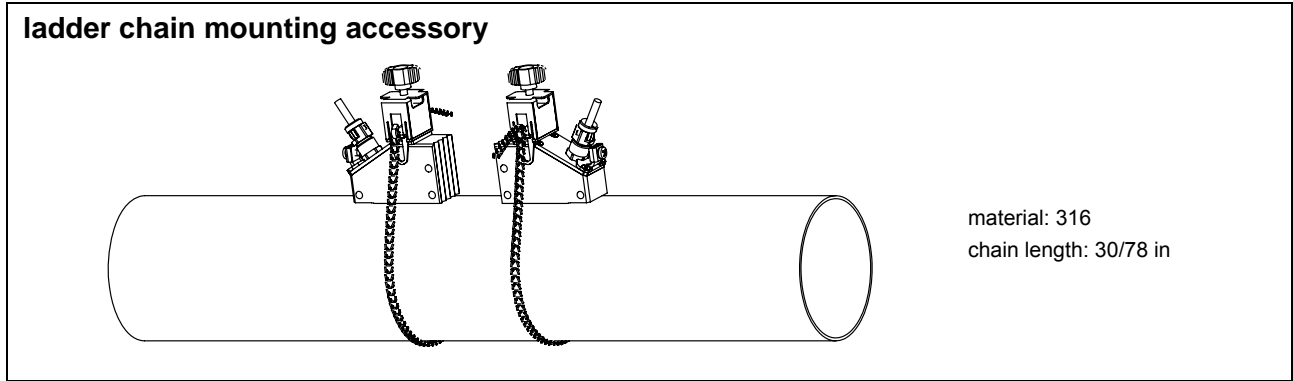
### Technical Data

transducer		500 kHz		1 MHz		2 MHz	
transducer frequency	MHz	0.5		1		2	
<b>inner pipe diameter d<sup>2</sup></b>							
min. extended	in	3.9		3.1		0.98	
min. recommended	in	7.9		3.9		2	
max. recommended	in	122		15.7		7.9	
<b>pipe wall thickness</b>							
min.	in	-		-		-	
max.	in	-		-		-	
<b>material</b>							
housing		PEEK with stainless steel cap 316Ti		PEEK with stainless steel cap 316Ti		PEEK with stainless steel cap 316Ti	
contact surface		PEEK		PEEK		PEEK	
degree of protection		NEMA 6P		NEMA 6P		NEMA 6P	
<b>transducer cable</b>							
type		2550		2550		2550	
length	ft	39		39		39	
<b>dimensions</b>							
length l	in	5.12		2.76		2.76	
width b	in	2.13		1.26		1.26	
height h	in	3.29		1.81		1.81	
dimensional drawing							
<b>ambient temperature</b>							
min.	°F	-40		-40		-40	
max.	°F	+212		+212		+212	

### Transducer Cable

type		2550
ambient temperature	°F	-40 to +212
properties		longitudinal water tight
<b>cable jacket</b>		
material		PUR
outer diameter	in	0.2 ±0.01
thickness	in	0.04
color		gray
shield		x

**Transducer Mounting Fixture**



**Coupling Materials for Transducers**

type	order code	ambient temperature °F	material	transducer
coupling compound type N	990739-1	-22 to +266	mineral grease paste	
coupling pad type VT	990739-0	14 to +392	fluoroelastomer	500 kHz
	990739-14			1, MHz, 2 MHz



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