Non-invasive ultrasonic flow measurement on buried pipes

Permanently installed clamp-on ultrasonic flow measurement system for buried water and wastewater pipes

Features

- Watertight IP68 transducers housed inside the rugged stainless steel (316Ti) Variofix C mounting fixtures, providing a highly reliable and long term durable solution for measuring at subsurface buried pipelines or at applications where the measurement point can be flooded.
- Precise bi-directional, highly dynamic flow measurement, excellent zero-point stability and high reproducibility of measuring results
- Accurate and reliable flow measurement even at pipes with up to 6 % of solids or gaseous contents by volume (e.g. wastewater applications)
- Simple retrofitting solution for existing water networks without interrupting the supply or the need for costly shaft and pipe works
- Power supply selectable: 230 V AC or 12/24 V DC (for remote power supply via e.g. solar panels)
- Transmission of measurement data from the data logger via RS232 serial interface
- Analog output 4 to 20 mA and 2 binary outputs (optorelay) available
- Modbus, BACnet and RS485 as communication protocols available

FLUXUS F501IP

Measurement with transducers mounted with PermaLok

Applications

- Flow measurement at subsurface buried water and wastewater pipelines
- Flow measurement at water and wastewater pipelines that can be flooded

Measurement with transducers mounted with PermaRail

Flow transmitter

Technical data

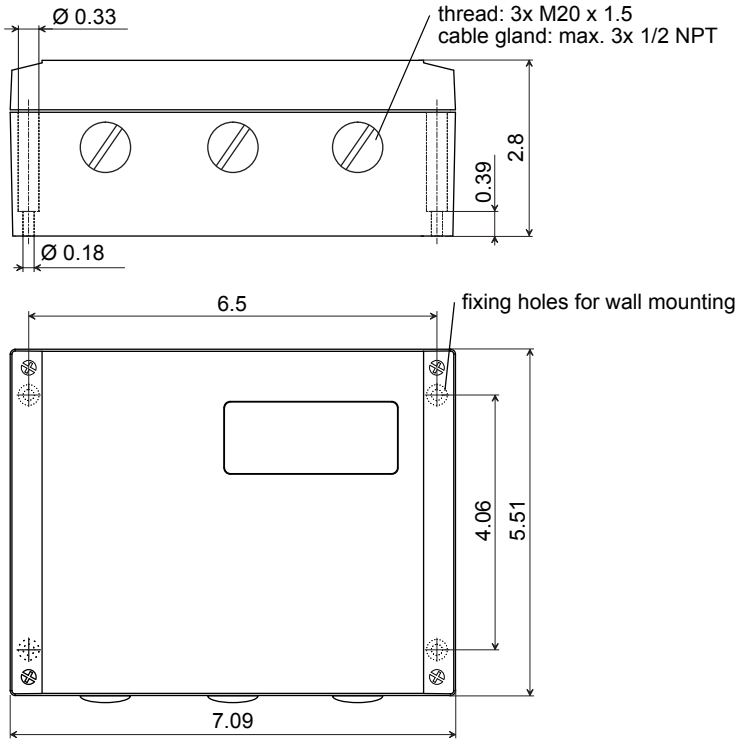
FLUXUS	**F501IP**
design	field device with 1 measuring channel
application	monitoring of water networks, leakage detection
measurement	
measurement principle	transit time difference correlation principle
flow velocity	0.03 to 82 ft/s
repeatability	0.25 % of reading ±0.03 ft/s
fluid	- water - glycol/H_2O: 20 %, 30 %, 40 %, 50 %
accuracy[1]	±1.5 % of reading ±0.03 ft/s
flow transmitter	
power supply	100 to 230 V/50 to 60 Hz or 20 to 32 V DC or 11 to 16 V DC
power consumption	< 10 W
number of flow measuring channels[2]	1
damping	0 to 100 s, adjustable
measuring cycle (1 channel)	10 Hz
response time	1 s
housing material	aluminum, powder coated
degree of protection	NEMA 4
dimensions	see dimensional drawing
weight	3.3 lb
fixation	wall mounting, optional: 2 " pipe mounting
ambient temperature	14 to +140 °F
display	2 x 16 characters, dot matrix backlight (only 100 to 230 V/50 to 60 Hz)
menu language	English, German, French, Dutch, Spanish
measuring functions	
physical quantities	volumetric flow rate, mass flow rate, flow velocity
totalizer	volume, mass
data logger	
loggable values	all physical quantities and totalized values
capacity	> 100 000 measured values
communication	
interface	- process integration (optional): RS485 (sender) or Modbus RTU or BACnet MS/TP - diagnosis: RS232
serial data kit (optional)	
software (all Windows™ versions)	- FluxData: download of measurement data, graphical presentation, conversion to other formats (e.g. for Excel™) - FluxDiag (optional): online diagnostics and report generation - FluxSubstanceLoader: upload of fluid data sets
cable	RS232
adapter	RS232 - USB
outputs	
	The outputs are galvanically isolated from the transmitter.
	current output
number	1
range	0/4 to 20 mA
accuracy	0.1 % of reading ±15 µA
active output	R_{ext} < 500 Ω
	binary output
number	2
optorelay	28 V/100 mA
binary output as alarm output - functions	 limit, change of flow direction or error
binary output as pulse output - pulse value - pulse width	mainly for totalizing 0.01 to 1000 units 80 to 1000 ms

[1] for reference conditions and v > 0.82 ft/s

[2] only connection of one transducer type possible

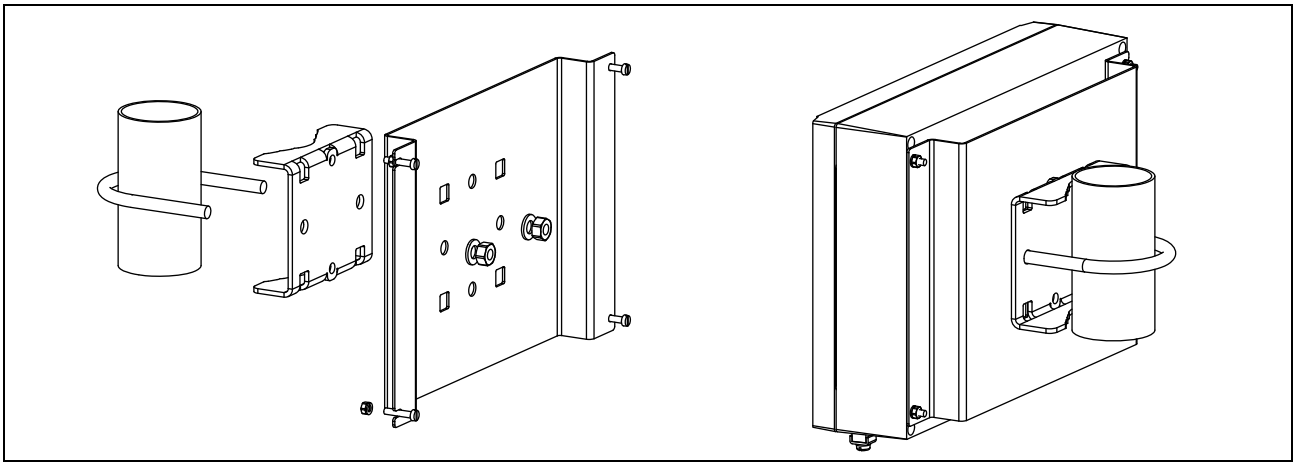
Dimensions

FLUXUS F501



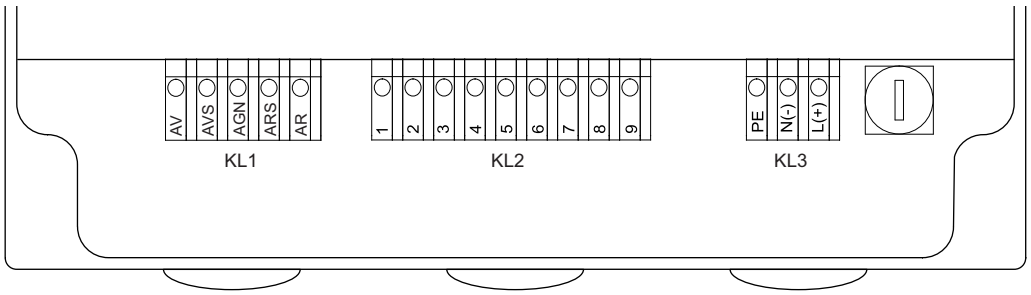
in inch

2 " pipe mounting kit (optional)



Terminal assignment

FLUXUS F501



power supply

terminal strip KL3

terminal	connection (AC)	connection (DC)
PE	earth	earth
N(-)	neutral	-
L(+)	phase	+

transducers

terminal strip KL1

transducer cable	
measuring channel A	
terminal	connection
AV	transducer ↑, signal
AVS	transducer ↑, internal shield
ARS	transducer ⇈, internal shield
AR	transducer ⇈, signal
cable gland	external shield

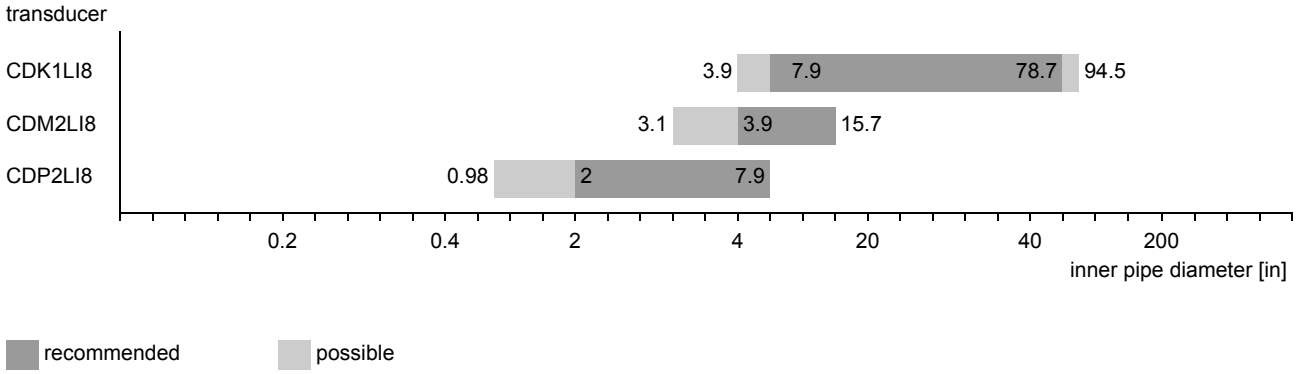
outputs

terminal strip KL2

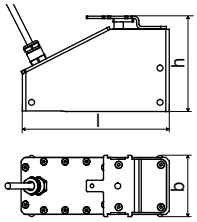
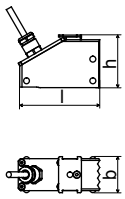
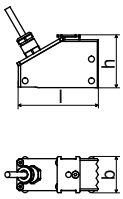
terminal	connection
1(-), 2(+)	binary output B1
3(-), 4(+)	binary output B2
5(-), 6(+)	current output I1
7(-), 8(+), 9 (shield)	RS485 (optional)

Transducers

Transducer selection

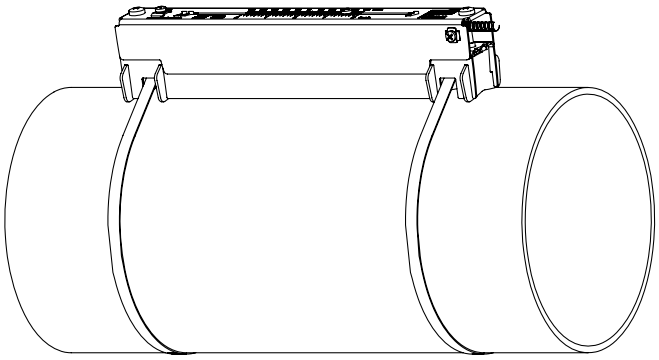


Technical data

technical type		CDK1LI8	CDM2LI8	CDP2LI8
transducer frequency	MHz	0.5	1	2
inner pipe diameter d				
min. extended	in	3.9	3.1	0.98
min. recommended	in	7.9	3.9	2
max. recommended	in	78.7	15.7	7.9
max. extended	in	94.5	-	-
pipe wall thickness				
min.	in	0.2	0.08	0.04
material				
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
transducer cable				
type		2550	2550	2550
length	ft	39	39	39
dimensions				
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				
ambient temperature				
min.	°F	-40	-40	-40
max.	°F	+212	+212	+212

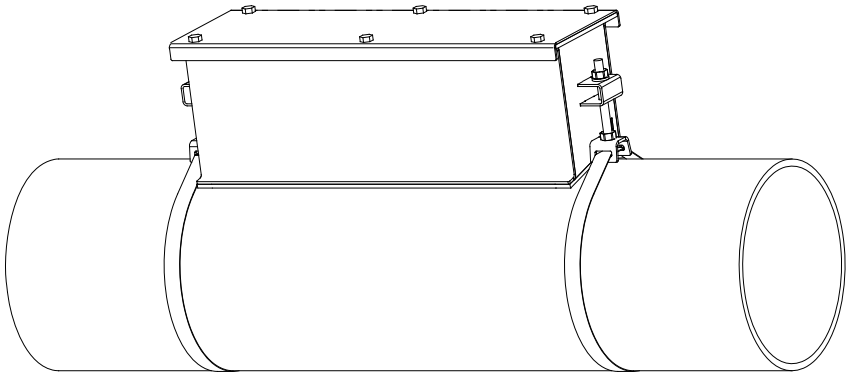
Transducer mounting fixture

PermaRail



transducer: CDK1LI8
material: 316, 316L, 17-7PH
inner length:
14.5 in
dimensions:
17.44 x 3.7 x 4.13 in

PermaLok



transducers:
CDM2LI8, CDP2LI8
material: stainless steel 316

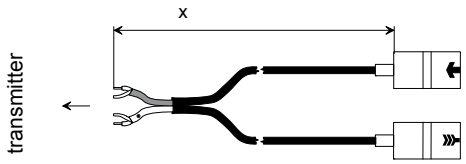
Coupling materials for transducers

Technical data

type	ambient temperature °F	material	transducer
coupling pad type VT	14 to +392	fluoroelastomer	CDK1LI8
			CDM2LI8, CDP2LI8

Connection systems

direct connection



x = transducer cable length

Transducer cable

Technical data

		transducer cable
type		2550
standard length x	ft	39
ambient temperature	°F	-40 to +212
properties		longitudinal water tight
cable jacket		
material		PUR
outer diameter	in	0.2 ±0.01
thickness	in	0.04
color		gray
shield		x

FLEXIM AMERICAS Corporation
Edgewood, NY 11717
USA
Tel.: (631) 492-2300
Fax: (631) 492-2117

internet: www.flexim.com
e-mail: usinfo@flexim.com
1-888-852-7473

TSFLUXUS_F501IPV2-1-1US_Lus, 2018-01-31