

Ultrasonic measurement of water flow

Permanently installed ultrasonic clamp-on system for flow measurement of water

Features

- Non-invasive flow measurement with high measuring accuracy for stationary use
- Precise bi-directional, highly dynamic flow measurement
- Water-tight transducers (IP67) are characterised by their high robustness
- Simple retrofitting of measurements in existing networks and systems without interrupting the supply or the need for pipe work
- High measuring accuracy, even at low flow velocities
- Cost-efficient for large rated diameters
- Installation and commissioning can be carried out during operation
- Digital signal processor (DSP) and signal processing ensure stable and reliable results even under difficult measurement conditions
- User-friendly menu navigation - the firmware is specifically adapted to the needs of the water industry

Applications

- Water and wastewater industry
- Clean measurement process for drinking water systems
- Leakage detection
- Hydroelectric power plants (reservoirs)
- Reservoirs



FLUXUS F501



Flow transducers in transducer shoe,
mounted with tension strap

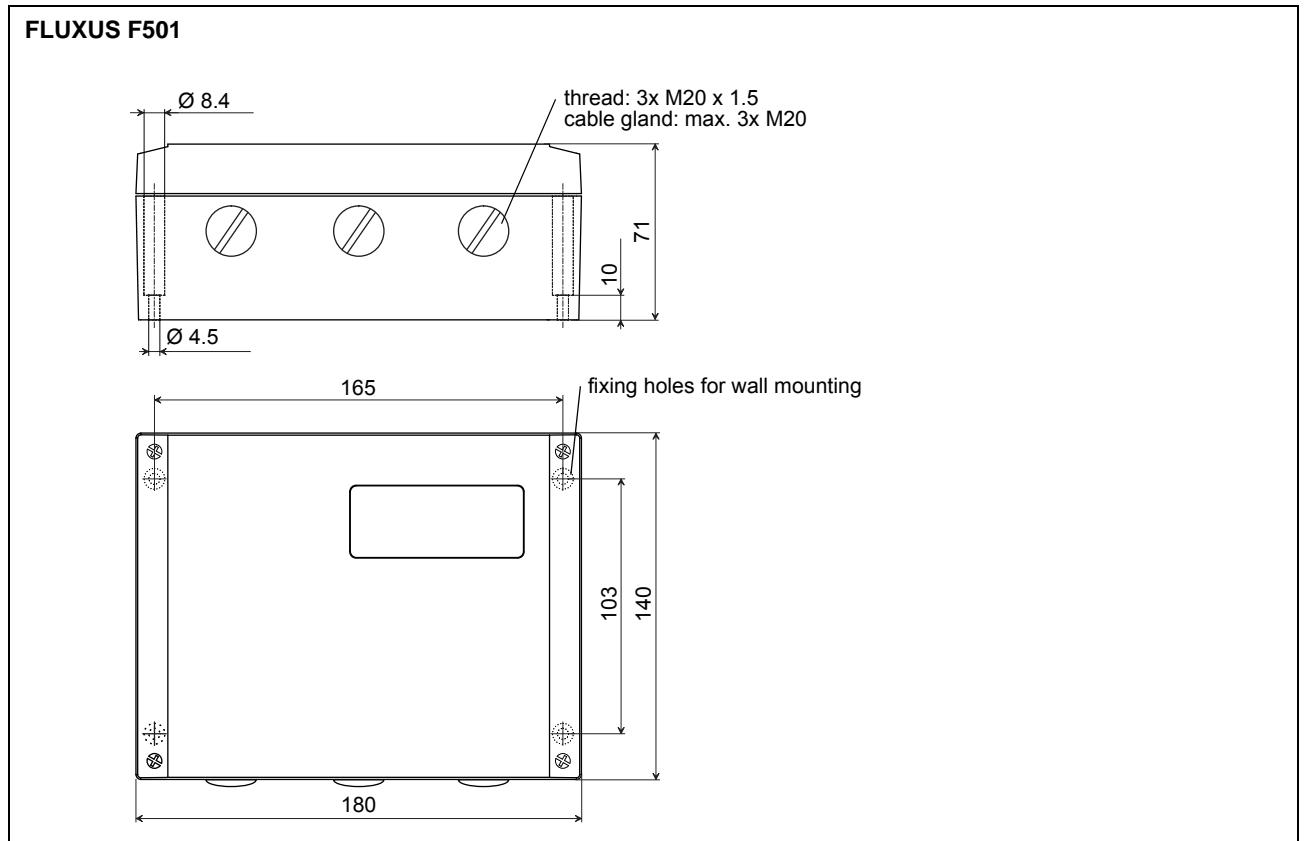
Flow transmitter

Technical data

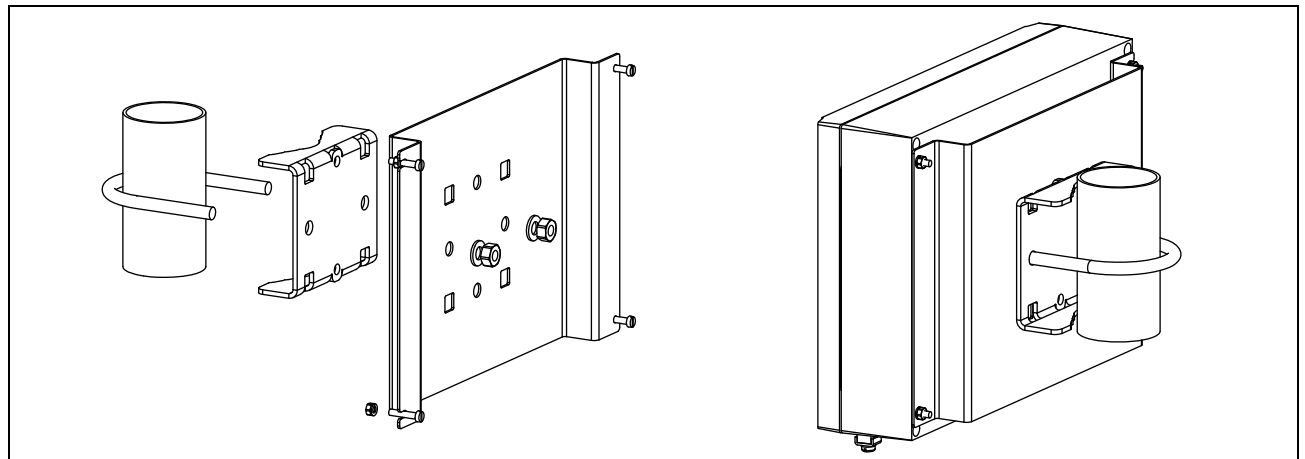
FLUXUS	F501MQ F501PK
design	field device with 1 measuring channel
transducers	F501MQ: CDM2LZ7, CDP2LZ7, CDQ2LZ7 F501PK: CDK1LZ7, CDM2LZ7, CDP2LZ7
measurement	
measurement principle	transit time difference correlation principle
flow velocity	0.01...25 m/s
repeatability	0.25 % of reading ± 0.01 m/s
fluid	- water - glycol/H ₂ O: 20 %, 30 %, 40 %, 50 %
accuracy ¹ - volumetric flow rate	± 2 % of reading ± 0.01 m/s
flow transmitter	
power supply	100...230 V/50...60 Hz or 20...32 V DC or 11...16 V DC
power consumption	< 10 W
number of flow measuring channels	1
damping	0...100 s, adjustable
measuring cycle (1 channel)	10 Hz
response time	1 s
housing material	aluminum, powder coated
degree of protection according to IEC/EN 60529	IP66
dimensions	see dimensional drawing
weight	1.5 kg
fixation	wall mounting, optional: 2 " pipe mounting
ambient temperature	-10...+60 °C
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
data logger (optional)	
loggable values	all physical quantities and totalized values
capacity	> 100 000 measured values
communication	
interface	optional: RS485 (sender) or Modbus RTU or BACnet MS/TP or M-Bus
outputs (optional)	
	The outputs are galvanically isolated from the transmitter.
current output	
number	1
range	0/4...20 mA
accuracy	0.1 % of reading ± 15 μ A
active output	$R_{ext} < 500 \Omega$
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	mainly for totalizing
- pulse value	0.01...1000 units
- pulse width	80...1000 ms

¹ for reference conditions and $v > 0.25$ m/s

Dimensions

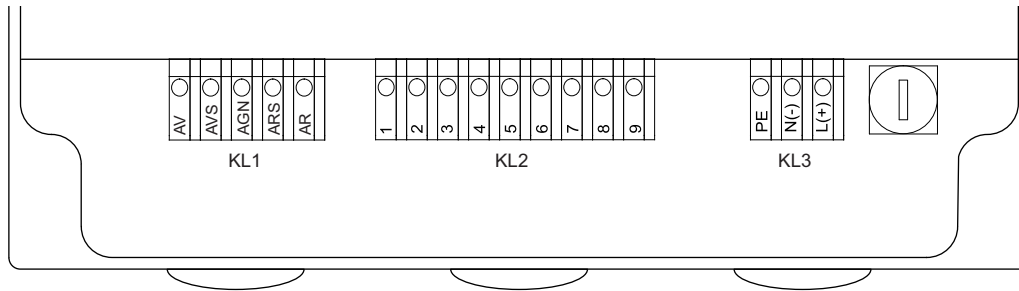


2 " pipe mounting kit (optional)



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

extension cable, 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

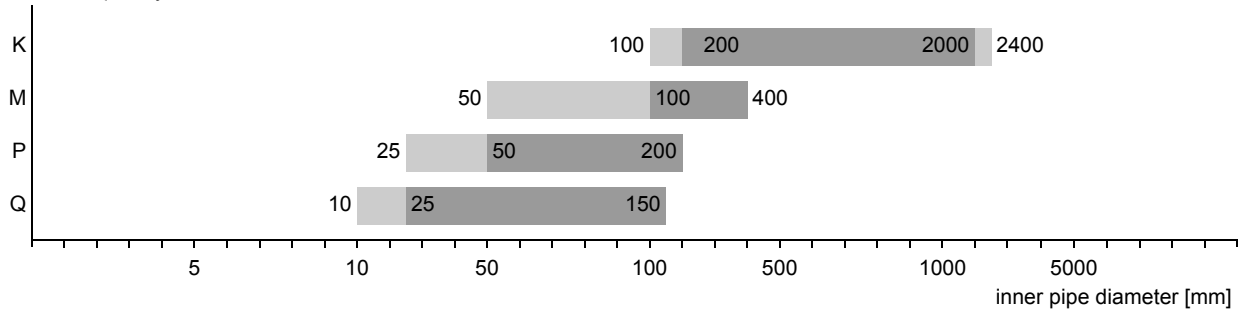
terminal strip KL2

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

transducer frequency



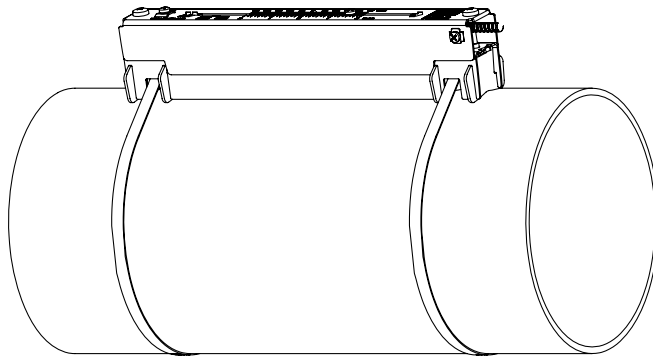
■ recommended ■ possible

Technical data

technical type		CDK1LZ7	CDM2LZ7	CDP2LZ7	CDQ2LZ7
transducer frequency	MHz	0.5	1	2	4
inner pipe diameter d					
min. extended	mm	100	50	25	10
min. recommended	mm	200	100	50	25
max. recommended	mm	2000	400	200	150
max. extended	mm	2400	-	-	-
pipe wall thickness					
min.	mm	5	2	1	0.6
material					
housing		PEEK with stainless steel cap 316Ti (1.4571)	PEEK with stainless steel cap 316Ti (1.4571)	PEEK with stainless steel cap 316Ti (1.4571)	PEEK with stainless steel cap 316Ti (1.4571)
contact surface		PEEK	PEEK	PEEK	PEEK
degree of protection according to IEC/EN 60529		IP67	IP67	IP67	IP67
transducer cable					
type		2606	2606	2606	2606
length	m	10	10	10	10
dimensions					
length l	mm	126.5	59	59	36
width b	mm	51	28	28	18
height h	mm	67.5	31	31	21
dimensional drawing					
ambient temperature					
min.	°C	-40	-40	-40	-40
max.	°C	+100	+100	+100	+100

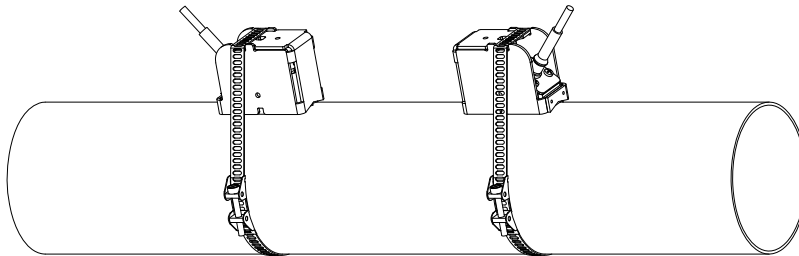
Transducer mounting fixture

Variofix L (VLK)



material: 316 (1.4571), 316L (1.4404), 17-7PH (1.4568)
 inner length:
VLK: 348 mm
 dimensions:
VLK: 423 x 90 x 93 mm

tension straps, clasps and transducer shoes



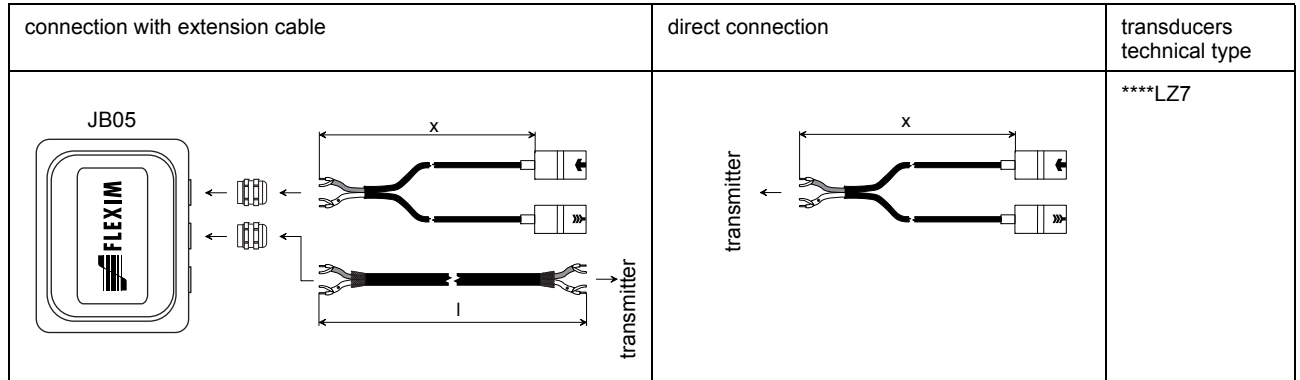
material: stainless steel 304 (1.4301), 303 (1.4305)
 tension strap length: 10 m

Coupling materials for transducers

Technical data

type	ambient temperature °C	material
coupling compound type N	-30...+130	mineral grease paste
coupling foil type VT	-10...+200	fluoroelastomer

Connection systems



x - transducer cable length
 l - max. length of extension cable

Transducer cable

Technical data

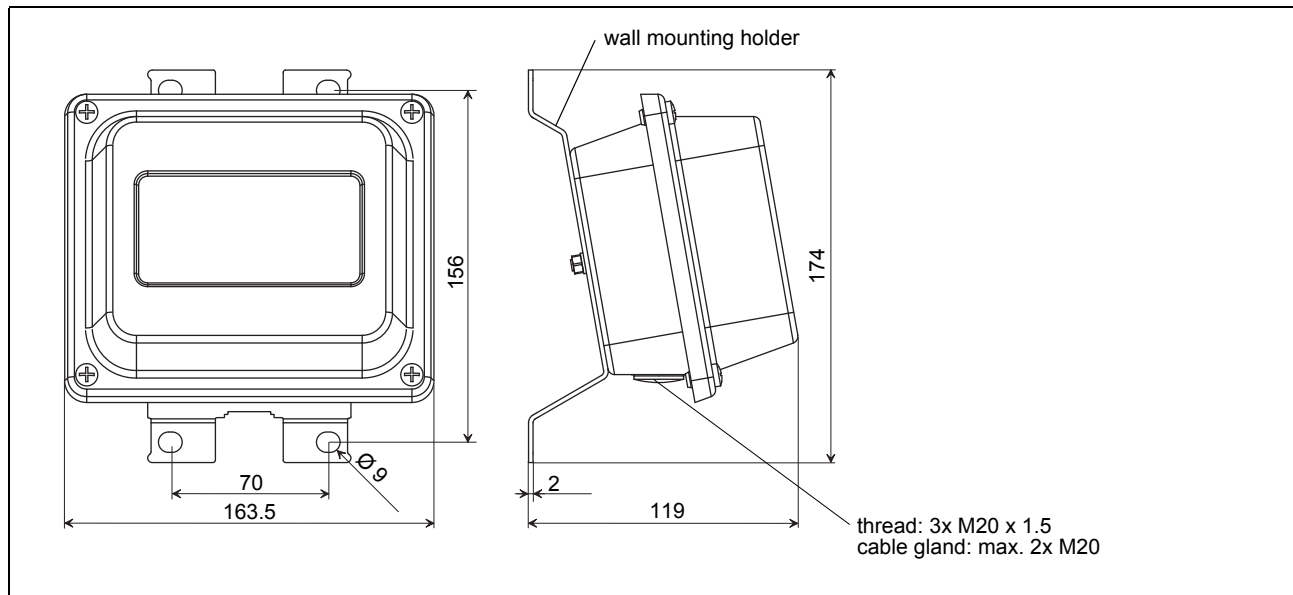
		transducer cable		extension cable	
type		2606	2552	2615	
standard length x	m	10	-	-	
max. length l	m	-	**K****, **M****, **P****: 300 **Q****: 90		
ambient temperature	°C	-40...+100	-25...+80	-40...+70	
properties				halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2	
cable jacket					
material		PUR	TPV	PUR	
outer diameter	mm	5	12	12	
thickness	mm			2	
colour		grey	black	black	
shield		x	x	x	

Junction box

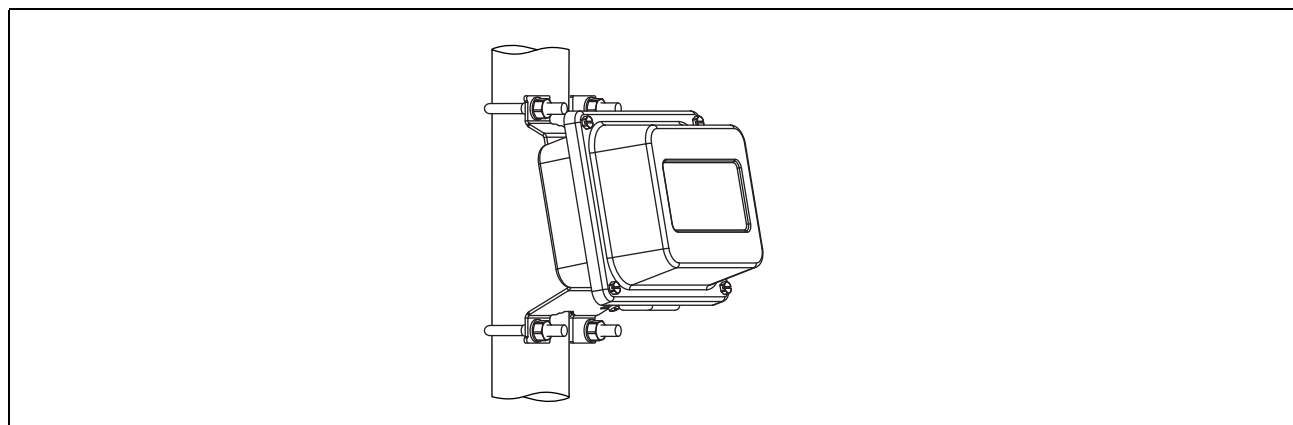
Technical data

technical type		JB05
dimensions		see dimensional drawing
weight	kg	1.2 kg
fixation		wall mounting, optional: 2 " pipe mounting
material		
housing		stainless steel 316L (1.4404)
gasket		silicone
degree of protection according to IEC/ EN 60529		IP67
ambient temperature		
min.	°C	-40
max.	°C	+80

Dimensions

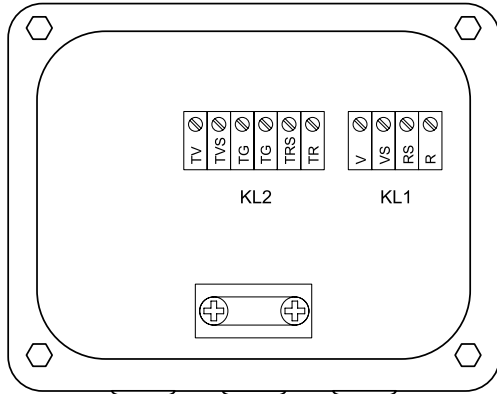


2 " pipe mounting kit (optional)



Terminal assignment

JB05



transducers

terminal strip KL1

terminal	connection
V	transducer ↗, signal
VS	transducer ↗, internal shield
RS	transducer ↘, internal shield
R	transducer ↘, signal

extension cable

terminal strip KL2

terminal	connection
TV	signal
TVS	internal shield
TRS	internal shield
TR	signal



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