Ultrasonic Measurement of Water Flow

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

Features

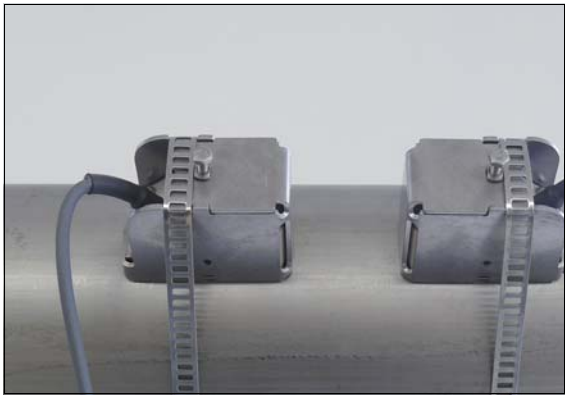
- Non-invasive flow measurement with high measuring accuracy for stationary use
- Precise bi-directional, highly dynamic flow measurement
- Water-tight transducers (IP67) are characterised by their high robustness
- Simple retrofitting of measurements in existing networks and systems without interrupting the supply or the need for pipe work
- User-friendly menu navigation - the firmware is specifically adapted to the needs of the water industry
- For nominal diameters of 0.39...98. in)
- 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
- High measuring accuracy, even at low flow velocities
- Cost-efficient for large rated diameters

Applications

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

FLUXUS ADM 5107

FLUXUS ADM 5207



Flow transducers in transducer shoe, mounted with tension strap

Flow Transmitter

Technical Data

FLUXUS	ADM 5107	ADM 5207
design	field device with 1 measuring channel	field device with 2 measuring channels
measurement		
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 ±0.03 ft/s	
medium	water and acoustically similar liquids with < 6 % gaseous or solid content by volume	
accuracy[1] - volumetric flow rate	±2 % of reading ±0.03 ft/s	
flow transmitter		
power supply	100 to 240 V/50 to 60 Hz or 20 to 32 V DC	
power consumption	< 10 W	
number of flow measuring channels[2]	1	2 (for transducers of the same type)
signal attenuation	0 to 100 s, adjustable	
measuring cycle (1 channel)	10 Hz	
response time	1 s	1 s (1 channel)
housing material	aluminum, powder coated	
degree of protection	NEMA 4	
dimensions	see dimensional drawing	
weight	3.3 lb	3.7 lb
fixation	wall mounting, optional: 2 " pipe mounting	
operating temperature	14 to +140 °F	
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	
calculation functions	-	average, difference, sum
outputs		
	The outputs are galvanically isolated from the transmitter.	
	current output	
number	1	2
range	0/4 to 20 mA	0/4 to 20 mA
accuracy	0.1 % of reading ±15 µA	0.1 % of reading ±15 µA
active output	R_{ext} < 500 Ω	R_{ext} < 500 Ω
	binary output	
number	2	
Reed relay	48 V/0.25 A	
binary output as alarm output - functions	limit, change of flow direction or error	
binary output as pulse output - pulse value - pulse width	0.01 to 1000 units 80 to 1000 ms	

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

[2] only connection of the supplied transducer type possible

Dimensions

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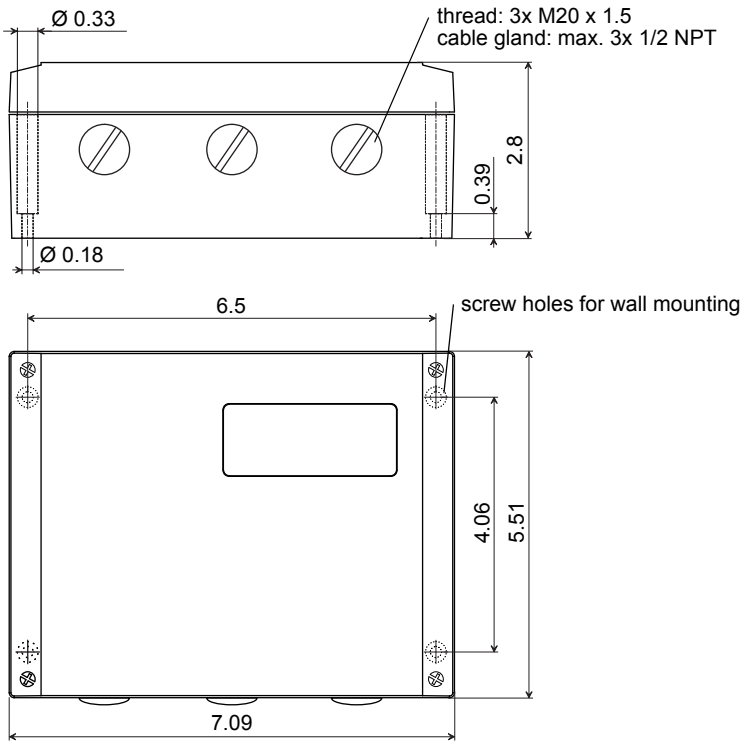
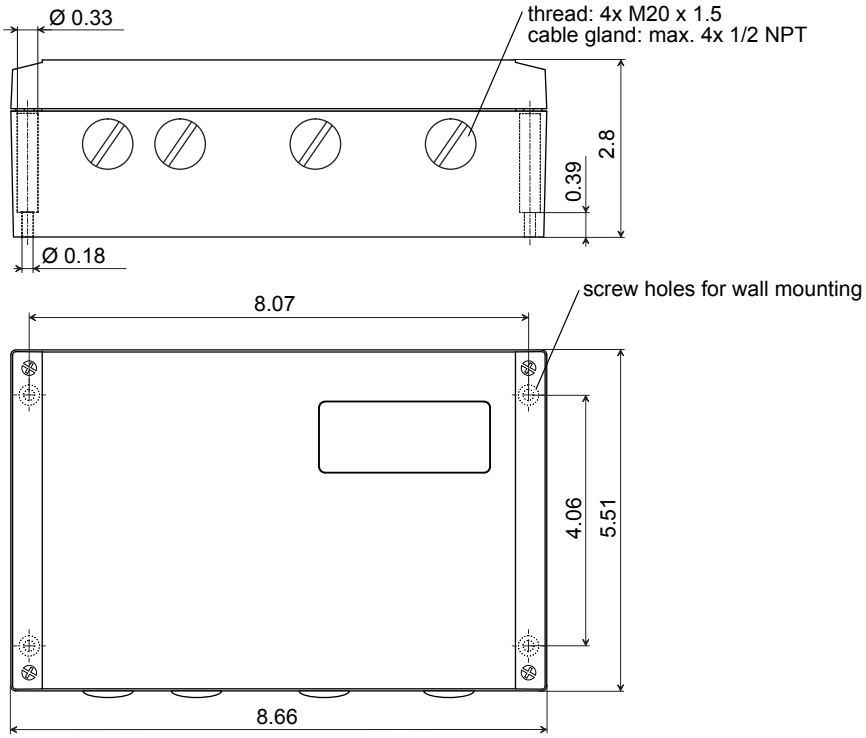
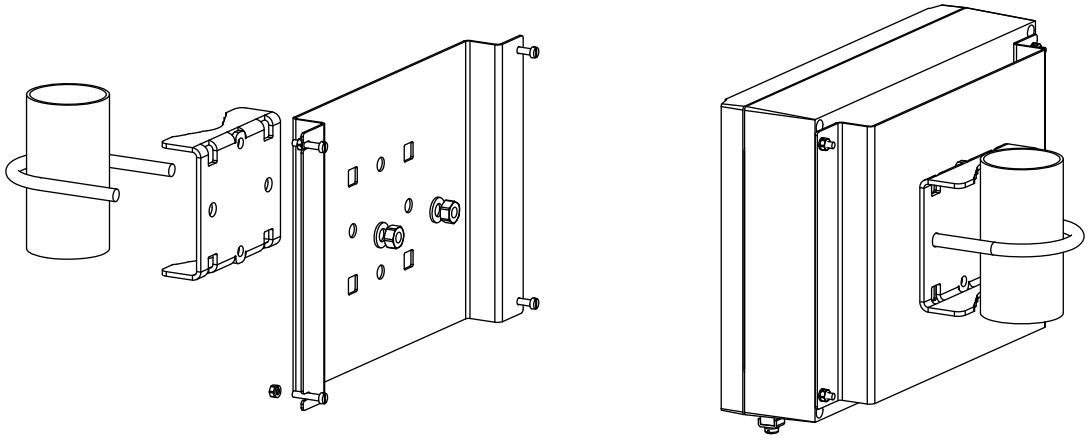


FLUXUS ADM 5207



in inch

2 " Pipe Mounting Kit (optional)



for vertical and horizontal pipes

Terminal Assignment

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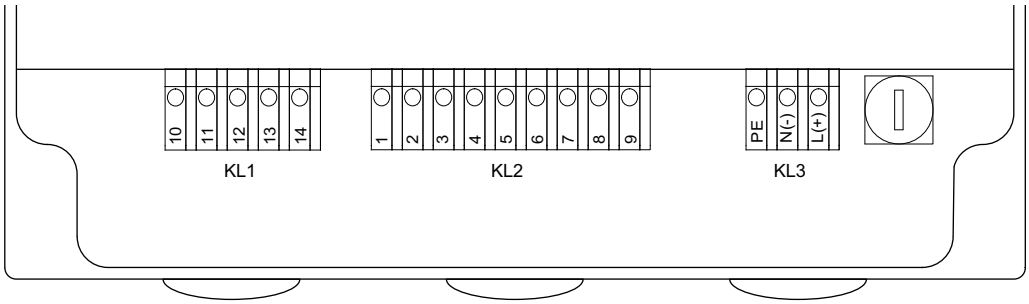


power supply

terminal strip KL3

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

transducers

terminal strip KL1

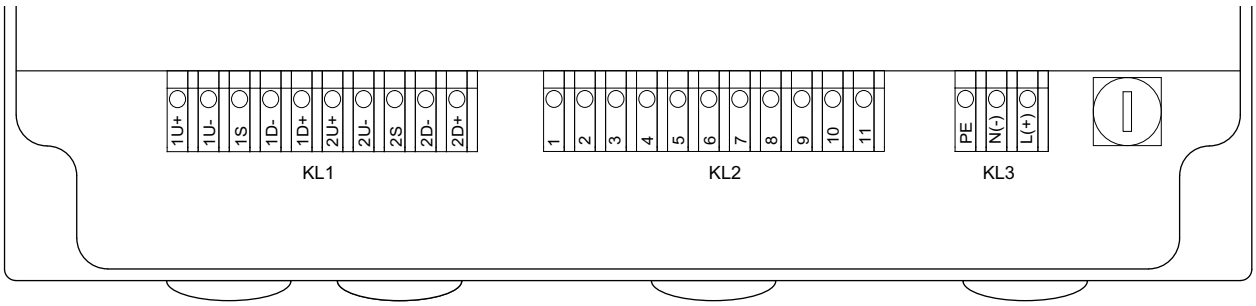
extension cable, transducer cable	
measuring channel A	
terminal	connection
10	transducer ↑, signal
11	transducer ↑, internal shield
13	transducer ⇈, internal shield
14	transducer ⇈, signal
cable gland	external shield

outputs

terminal strip KL2

terminal	connection
1(-), 2(+)	binary output B1 (Reed relay)
3(-), 4(+)	binary output B2 (Reed relay)
5(-), 6(+)	current output I1

FLUXUS ADM 5207



power supply

terminal strip KL3

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

transducers

terminal strip KL1

extension cable, transducer cable			
measuring channel A		measuring channel B	
terminal	connection	terminal	connection
1U+	transducer ↑, signal	2U+	transducer ↑, signal
1U-	transducer ↑, internal shield	2U-	transducer ↑, internal shield
1D-	transducer ⇈, internal shield	2D-	transducer ⇈, internal shield
1D+	transducer ⇈, signal	2D+	transducer ⇈, signal
cable gland	external shield	cable gland	external shield

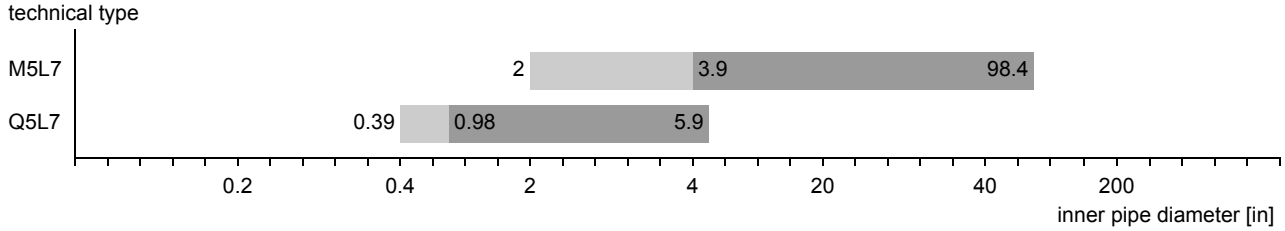
outputs

terminal strip KL2

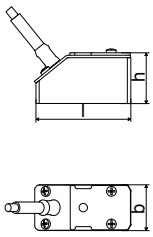
terminal	connection
1(-), 2(+)	binary output (Reed relay)
3(-), 4(+)	binary output (Reed relay)
5(-), 6(+)	current output I1
7(-), 8(+)	current output I2

Transducers

Transducer Selection

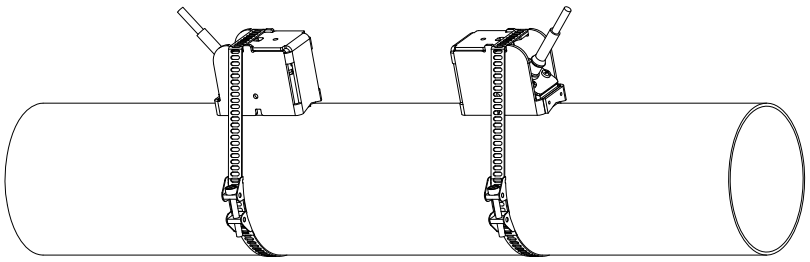


Technical Data

technical type		M5L7	Q5L7
transducer frequency	MHz	1	4
inner pipe diameter d			
min. extended	in	2	0.39
min. recommended	in	3.9	0.98
max.	in	98.4	5.9
material			
housing		PEEK with stainless steel cap 304	PEEK with stainless steel cap 304
contact surface		PEEK	PEEK
degree of protection		NEMA 6	NEMA 6
transducer cable			
type		2606	2606
length	ft	32	32
dimensions			
length l	in	2.32	1.38
width b	in	1.1	0.71
height h	in	1.16	0.83
dimensional drawing			
operating temperature			
min.	°F	-40	-40
max.	°F	+212	+212

Transducer Mounting Fixture

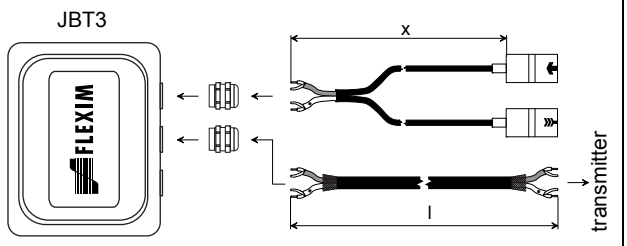
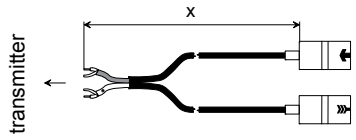
tension straps, clasps and transducer shoes



material: stainless steel 304, 303

tension strap length:
ADM 5107: 32 ft
ADM 5207: 65 ft

Connection Systems

connection with extension cable	direct connection
	

x = transducer cable length

l = max. length of extension cable

Transducer Cable

Technical Data

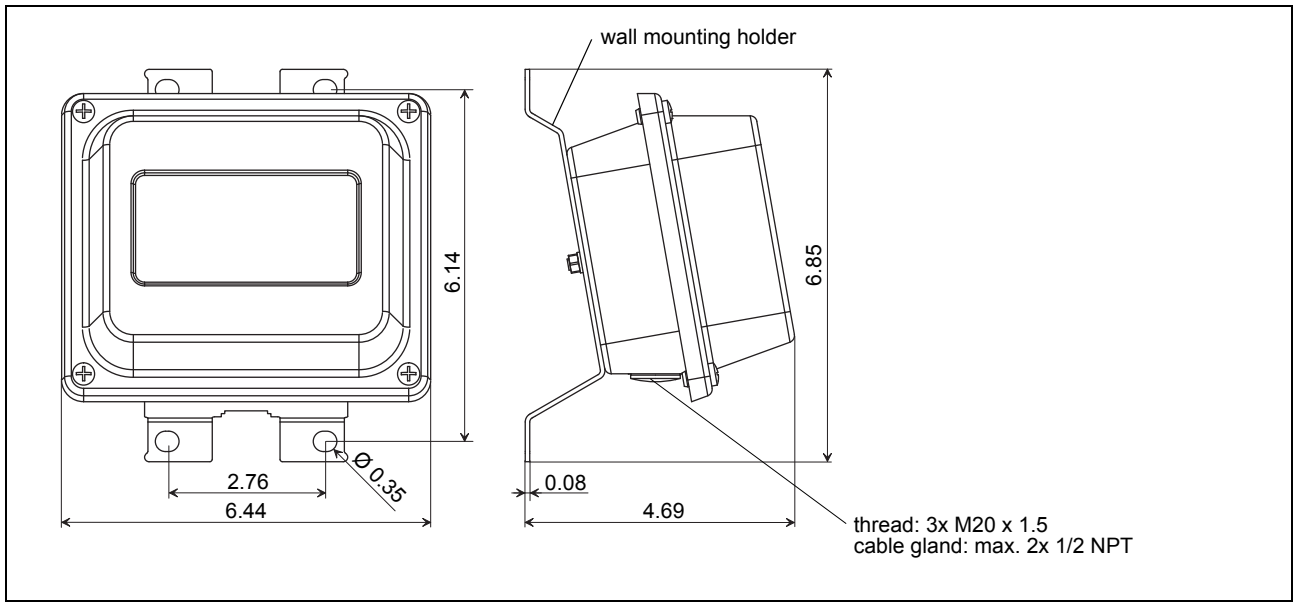
		transducer cable	extension cable	
type		2606	2552	2615
standard length x	ft	32	-	-
max. length l	ft	-	M5L7: 984 Q5L7: 295	M5L7: 984 Q5L7: 295
operating temperature	°F	-22 to +212	-13 to +176	-40 to +158
properties				halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2
cable jacket				
material		PUR	TPV	PUR
outer diameter	in	0.2	0.47	0.47
thickness	in			0.08
color		gray	black	black
shield		x	x	x

Junction Box

Technical Data

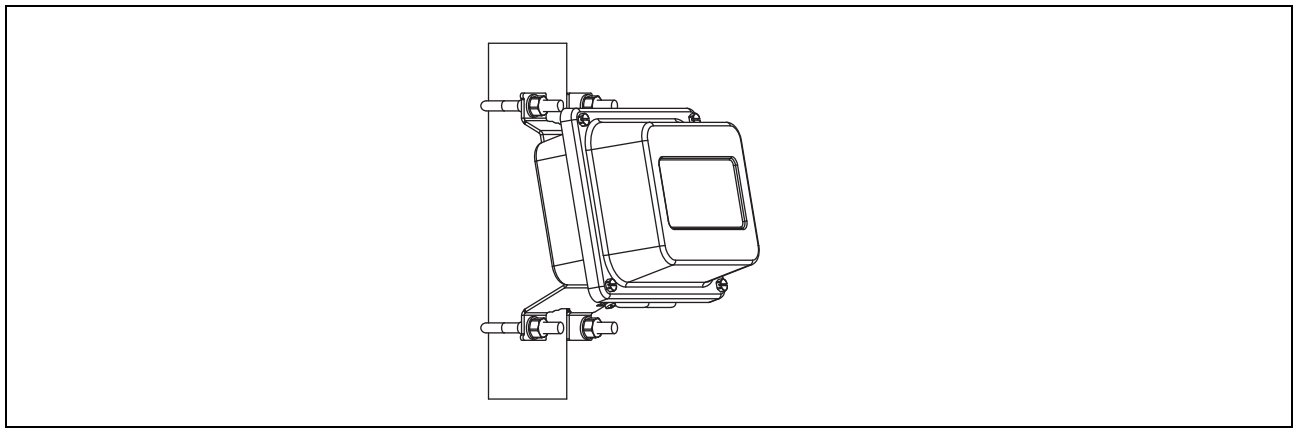
technical type		JBT3
dimensions		see dimensional drawing
fixation		wall mounting, optional: 2 " pipe mounting
material		
housing gasket		stainless steel 304 silicone
degree of protection		NEMA 6
cable gland		1/2 NPT
operating temperature		
min. max.	°F °F	-40 +176

Dimensions



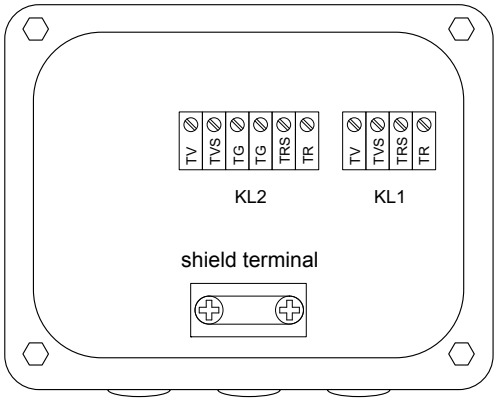
in inch

2 " Pipe Mounting Kit (optional)



Terminal Assignment

JBT3



transducers

terminal strip KL1

terminal	connection
TV	transducer ↑, signal
TVS	transducer ↑, internal shield
TRS	transducer ⅄, internal shield
TR	transducer ⅄, signal
cable gland	external shield

extension cable

terminal strip KL2

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

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