

Reliable fluid detection with non-invasive ultrasonic measurement

Permanently installed ultrasonic measuring system for the non-invasive detection of one of 2...5 fluids during filling and transferring operations

A safe fluid detection can avoid filling with wrong fluids and thus the formation of dangerous fluid mixtures.

Features

- Safe fluid detection based on the sound speed of the fluid
- Detection of unsafe operating statuses
- Measuring rate of 1 s
- Generally recognized state of the art according to TRGS 509
- Ideally suited for aggressive and toxic fluids
- One measuring channel, one temperature input available
- Current output and binary output available

Applications


- Food industry
- Chemical industry
- Electroplating plants
- Pharmaceutical industry
- Power plants
- Mechanical engineering



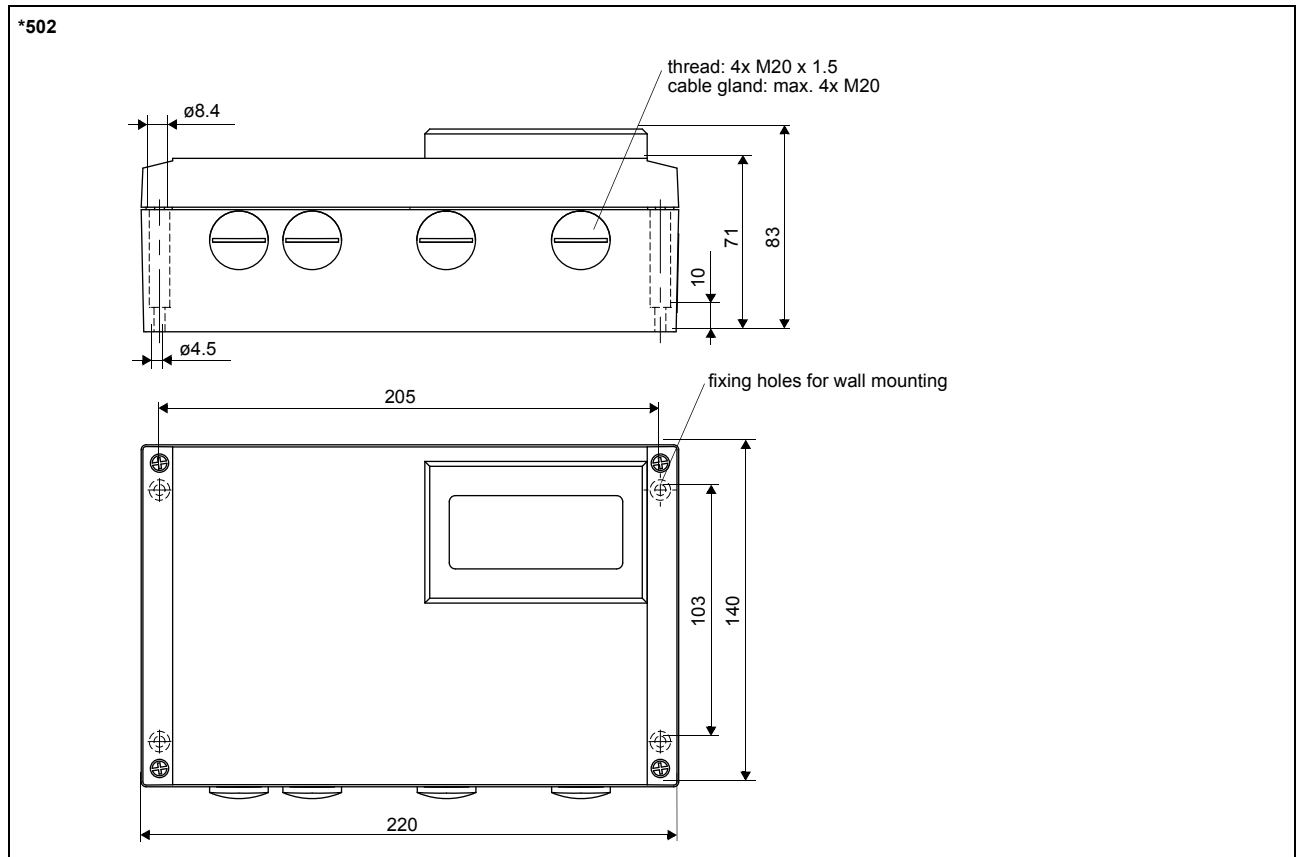
PIOX S502ID

Transmitter

Technical data

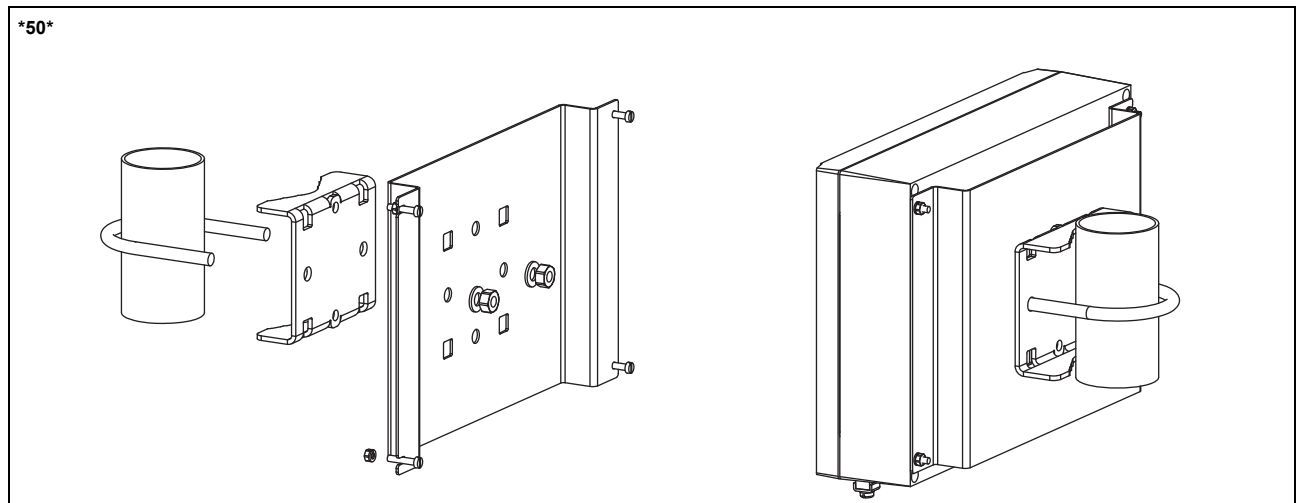
PIOX S502ID	
	
design	field device with 1 measuring channel
application	fluid detection
pipe	
pipe diameter	DN25, DN 32, DN40, DN50, DN 65
material	SS, PVC, PE
measurement	
measurement principle	measurement of sound speed
fluid	NaClO/HCl, NaClO/HNO ₃ , NaClO/H ₂ SO ₄ , NaOH/HCl, NaOH/HNO ₃ , NaOH/H ₂ SO ₄ , H ₂ SO ₄ /HCl, others on request where <ul style="list-style-type: none"> • NaClO (sodium hypochlorite) 12...16 % • NaOH (caustic soda solution) 30...50 % • H₂SO₄ (sulfuric acid) 93...100 % • HCl (hydrochloric acid) 15...37 % • HNO₃ (nitric acid) 50...65 %
fluid temperature	°C 0...40
transmitter	
power supply	<ul style="list-style-type: none"> • 100...230 V/50...60 Hz or • 20...32 V DC
power consumption	W < 10
number of measuring channels	1
measuring cycle	Hz 10
response time	s 1
housing material	aluminum, powder coated
degree of protection	IP66
dimensions	mm see dimensional drawing
weight	kg 1.9
fixation	wall mounting, optional: 2" pipe mounting
ambient temperature	°C -10...+60
display	2 x 16 characters, dot matrix, backlight
menu language	English, German
outputs	
The outputs are galvanically isolated from the transmitter.	
• current output	
number	1 (status output)
range	mA 0, 4, 20
active output	R _{ext} < 500 Ω
• binary output	
number	2 (status output)
optorelay	28 V/100 mA
inputs	
The inputs are galvanically isolated from the transmitter.	
• temperature input	
number	1
type	Pt100
connection	4-wire
range	°C -150...+560
resolution	K 0.01
accuracy	±0.01 % of reading ±0.03 K

Dimensions

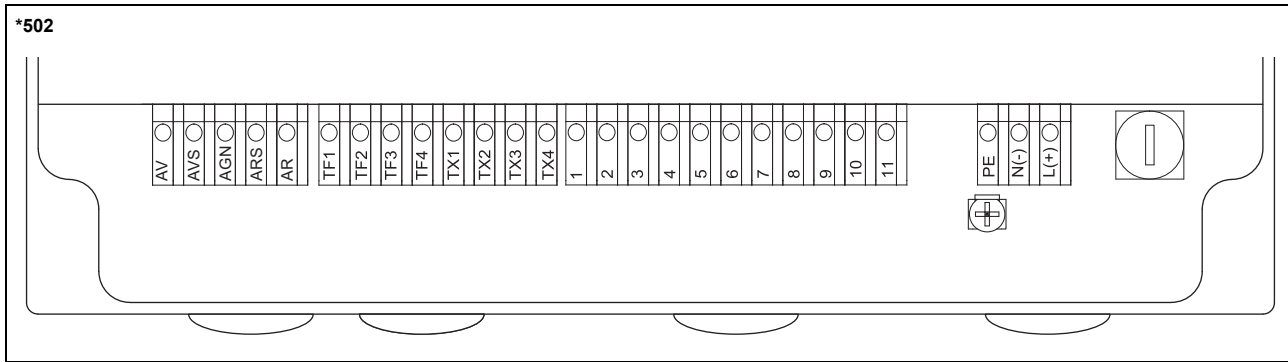


in mm

2" pipe mounting kit



Terminal assignment



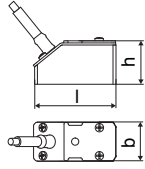
power supply ¹		
terminal	connection (AC)	connection (DC)
PE	earth	earth
N(-)	neutral	-
L(+)	phase	+
transducers, extension cable		
terminal	connection	transducer
AV	signal	↑
AVS	internal shield	
ARS	internal shield	⌋
AR	signal	
cable gland	external shield	↑ ⌋
outputs ¹		
terminal	connection	
1(-), 2(+)	binary output B1	
5(-), 6(+)	current output I1	
inputs ¹		
terminal	temperature probe	
	direct connection	connection with extension cable
TF1	red	red
TF2	red/blue	grey
TF3	white/blue	blue
TF4	white	white

¹ cable (by customer): lead cross sectional area: 0.25...2.5 mm²

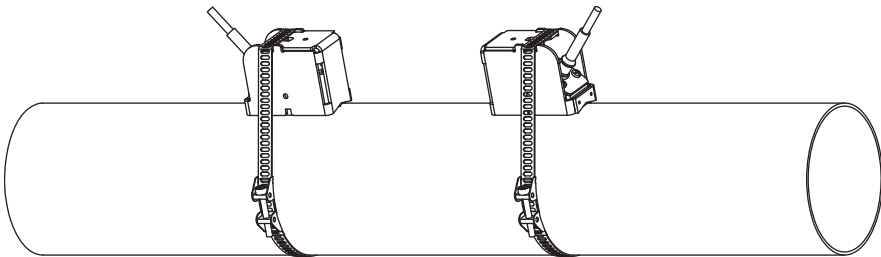
Transducers

Technical data

Shear wave transducers

technical type		CDM2LZ7	CDP2LZ7	CDQ2LZ7
transducer frequency	MHz	1	2	4
material				
housing		PEEK with stainless steel cap 316Ti (1.4571)		
contact surface		PEEK		
degree of protection		IP67		
transducer cable				
type		2606		
length	m	10		
dimensions				
length l	mm	59		36
width b	mm	28		18
height h	mm	31		21
dimensional drawing				
weight (without cable)	kg	0.066		0.024
ambient temperature				
min.	°C	-40		
max.	°C	+100		

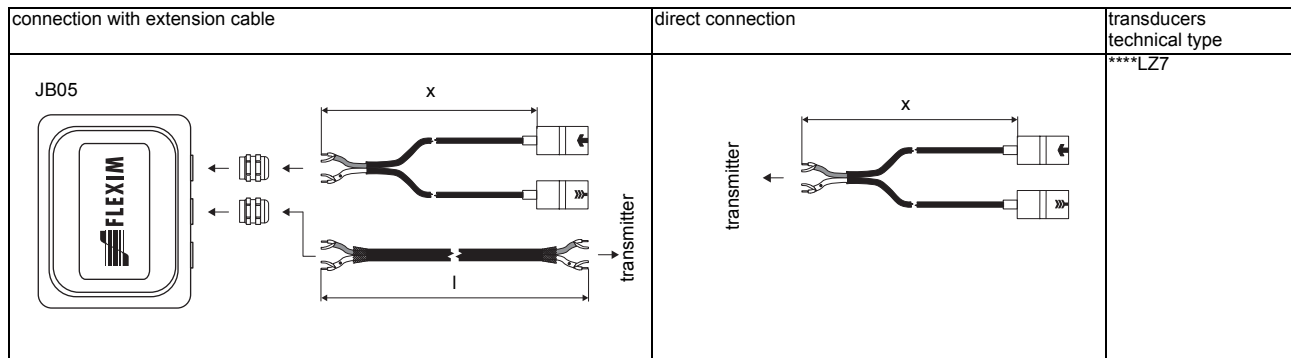
Transducer mounting fixture

<p>tension straps, clasps and transducer shoes</p> 	<p>material: stainless steel 304 (1.4301), 303 (1.4305) tension strap length: 10 m transducers: CD*2LZ7</p>
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Coupling materials for transducers

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

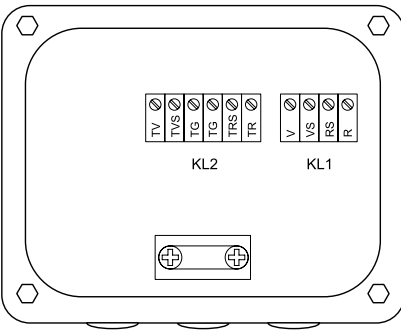
Cable

transducer cable		
type		2606
weight	kg/m	0.033
ambient temperature	°C	-40...+100
cable jacket		
material		PUR
outer diameter	mm	5
thickness	mm	
colour		grey
shield		x

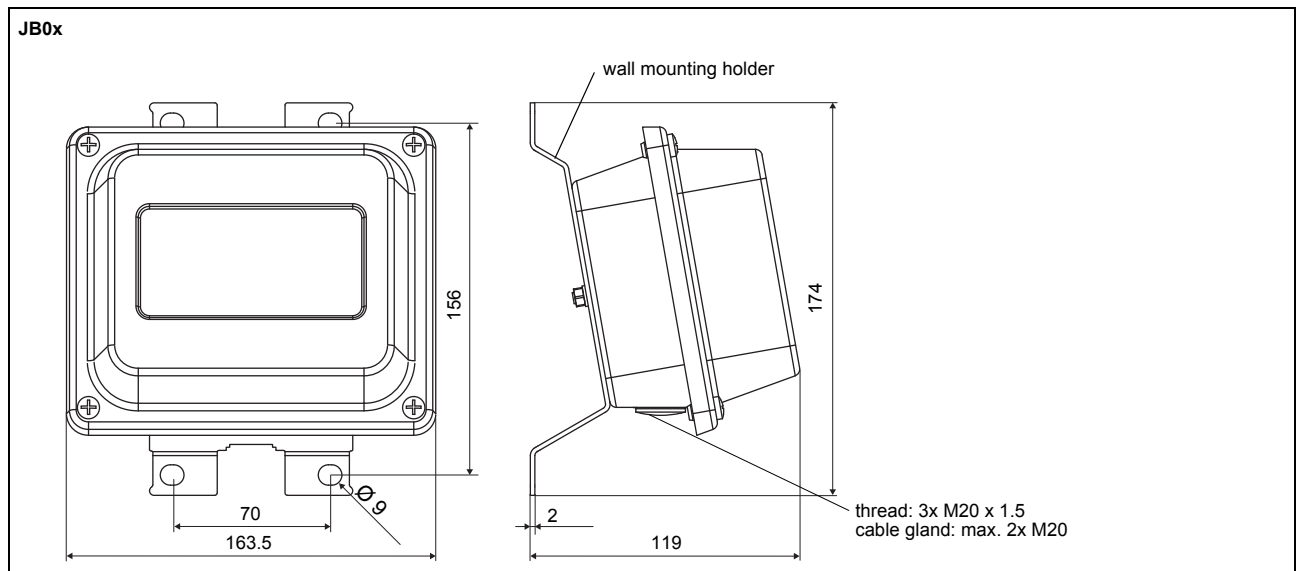
extension cable		
type		2615
max. length l	m	90
weight	kg/m	0.18
ambient temperature	°C	-30...+70
properties		halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2
cable jacket		
material		PUR
outer diameter	mm	12
thickness	mm	2
colour		black
shield		x

Junction box

Technical data

JB05																															
weight	kg	1.2 kg																													
fixation		wall mounting optional: 2" pipe mounting																													
material																															
housing		stainless steel 316L (1.4404)																													
gasket		silicone																													
degree of protection		IP67																													
ambient temperature																															
min.	°C	-40																													
max.	°C	+80																													
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>connection</p>  </div> <div style="width: 45%;"> <p>transducers</p> <table border="1"> <thead> <tr> <th>terminal strip</th> <th>terminal</th> <th>connection</th> <th>transducer</th> </tr> </thead> <tbody> <tr> <td rowspan="4">KL1</td> <td>V</td> <td>signal</td> <td>↑</td> </tr> <tr> <td>VS</td> <td>internal shield</td> <td></td> </tr> <tr> <td>RS</td> <td>internal shield</td> <td>↕</td> </tr> <tr> <td>R</td> <td>signal</td> <td></td> </tr> </tbody> </table> <p>extension cable</p> <table border="1"> <thead> <tr> <th>terminal strip</th> <th>terminal</th> <th>connection</th> </tr> </thead> <tbody> <tr> <td rowspan="4">KL2</td> <td>TV</td> <td>signal</td> </tr> <tr> <td>TVS</td> <td>internal shield</td> </tr> <tr> <td>TRS</td> <td>internal shield</td> </tr> <tr> <td>TR</td> <td>signal</td> </tr> </tbody> </table> </div> </div>			terminal strip	terminal	connection	transducer	KL1	V	signal	↑	VS	internal shield		RS	internal shield	↕	R	signal		terminal strip	terminal	connection	KL2	TV	signal	TVS	internal shield	TRS	internal shield	TR	signal
terminal strip	terminal	connection	transducer																												
KL1	V	signal	↑																												
	VS	internal shield																													
	RS	internal shield	↕																												
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terminal strip	terminal	connection																													
KL2	TV	signal																													
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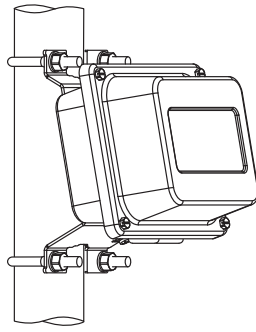
Dimensions



in mm

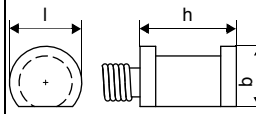
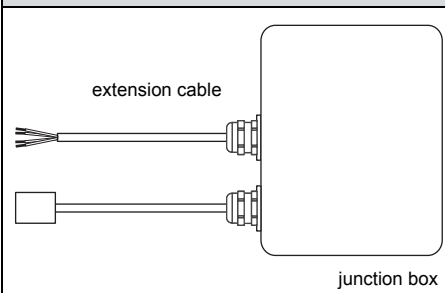
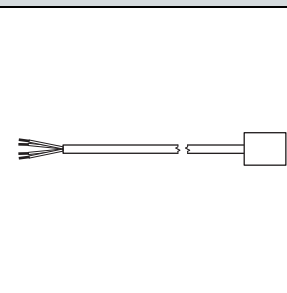
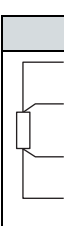
2" pipe mounting kit

JBxx

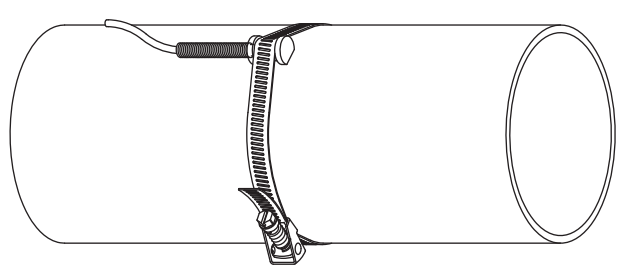


Clamp-on temperature probe (optional)

Technical data

PT12N		
type	Pt100	
connection	4-wire	
measuring range	°C -30...+250	
accuracy T	$\pm(0.15 \text{ °C} + 2 \cdot 10^{-3} \cdot T \text{ [°C]})$ class A	
response time	s 50	
housing	aluminum	
degree of protection	IP66	
dimensions		
length l	mm 15	
width b	mm 13	
height h	mm 20	
dimensional drawing		
weight	kg 0.25	
accessories		
thermal conductivity foil 250 °C	x	
connection system		
connection with extension cable	direct connection	
		
connection		
	temperature probe	
	red	
	red/blue	
	white/blue	
	white	
cable		
	temperature probe	extension cable
type	4 x 0.25 mm ² black	LIYCY 8 x 0.14 mm ² grey
standard length	m 15	5/10/25
cable jacket	PTFE	PVC

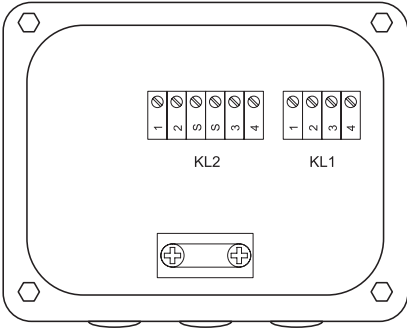
Fixation

tension strap PT12N	
	material: stainless steel 301 (1.4310), 410 (1.4006)

Junction box

JBT3		
weight	kg	1.2 kg
fixation		wall mounting optional: 2" pipe mounting
material		
housing		stainless steel 316L (1.4404)
gasket		silicone
degree of protection		IP67
ambient temperature		
min.	°C	-40
max.	°C	+80

connection



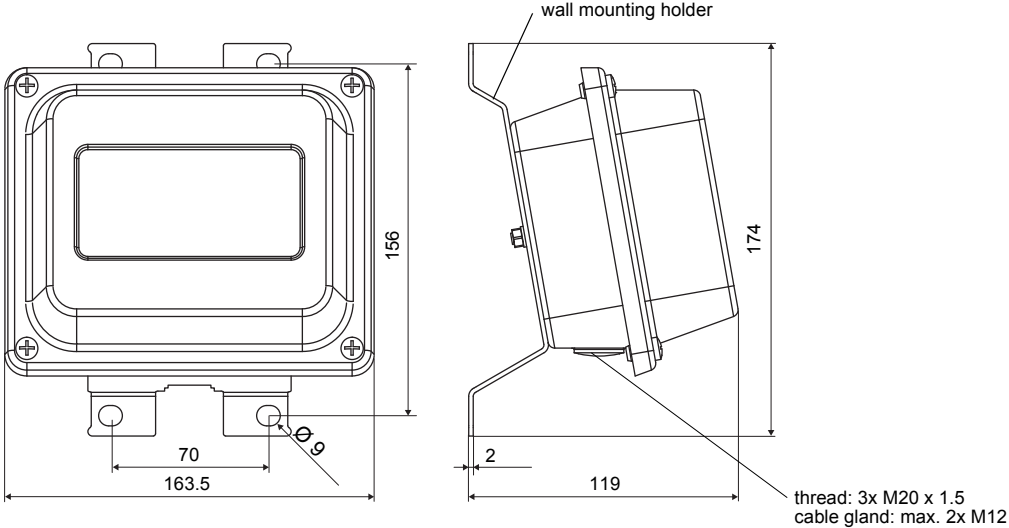
The diagram shows a square junction box with four mounting holes at the corners. Inside, there are two terminal blocks labeled KL2 and KL1. KL2 has four terminals with symbols for AC voltage and polarity. KL1 has four terminals with symbols for AC voltage and polarity. Below the terminal blocks is a temperature probe connection with two terminals marked with a plus sign.

temperature probe		
terminal strip	terminal	connection
KL1	1	red
	2	red/blue
	3	white
	4	white/blue

extension cable		
terminal strip	terminal	connection
KL2	1	red
	2	grey
	3	white
	4	blue

Dimensions

JBTx

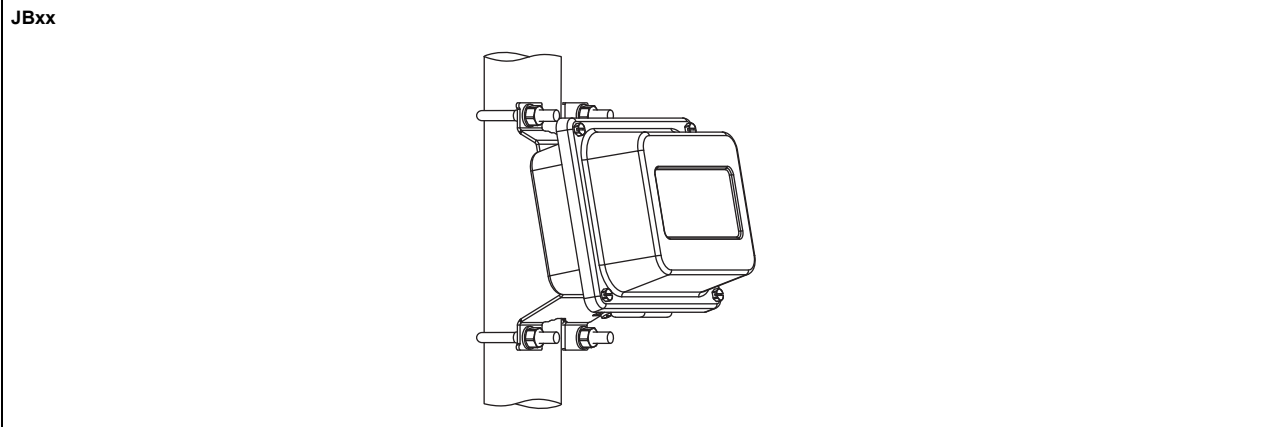


The front view shows a square junction box with a height of 156 mm and a width of 163.5 mm. The distance between the two terminal blocks is 70 mm. A hole diameter of 9 mm is indicated. The side view shows the junction box mounted on a wall using a wall mounting holder. The height of the junction box is 174 mm, and the distance from the wall to the center of the terminal blocks is 119 mm. A 2 mm gap is shown between the wall and the junction box. The thread for the wall mounting holder is 3x M20 x 1.5, and the cable gland has a maximum diameter of 2x M12.

thread: 3x M20 x 1.5
cable gland: max. 2x M12

in mm

2" pipe mounting kit



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