Permanently Installed Liquid Ultrasonic Flowmeter

Designed for wall mounting or installation in 19" rack systems

Features

- Non-invasive measurement using clamp-on technology for precise, bi-directional, highly dynamic flow measurements
- FM Class 1 Div. 2 approved transducers for hazardous areas available
- Automatic loading of calibration data and transducer detection, reduces set-up times and provides precise, long-term stable results
- Transducers available for a wide range of inner pipe diameters (0.25 to 256 in) and fluid temperatures in the range of -40 to +752 °F, applications down to -276 °F possible
- Transducers resistant to dust and humidity
- HybridTrek mode automatically switches between transit time and NoiseTrek methods of measurement when high particulate flows are encountered
- User-friendly design

FLUXUS ADM 7407

FLUXUS ADM 7907

Applications

- Designed for the following industries
  - Chemical
  - Oil and gas
  - Pharmaceutical
  - Semiconductor
  - Mechanical engineering
  - Water and waste water

Table of Contents

Function

Measurement Principle

Transit Time Difference Principle

In order to measure the flow of a medium in a pipe, ultrasonic signals are used which employ the transit time difference principle. Ultrasonic signals are emitted by a transducer installed on one side of the pipe, reflected by the opposite pipe wall, and received by a second transducer. These signals are emitted alternately in the flow direction and then against it.

As the medium in which the signals propagate is flowing, the transit time of the ultrasonic signals in the flow direction is shorter than against the flow direction.

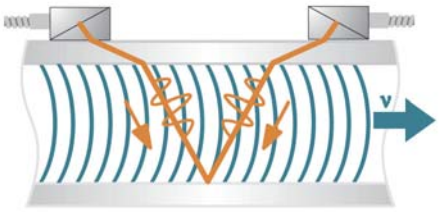
The transit time difference, Δt, is measured and allows the flowmeter to determine the average flow velocity along the propagation path of the ultrasonic signals. A flow profile correction is then performed in order to obtain the area averaged flow velocity, which is proportional to the volumetric flow rate.

Two integrated microprocessors control the entire measurement process. This allows the flowmeter to remove disturbance signals, and to check each received ultrasonic wave for its validity which reduces noise.

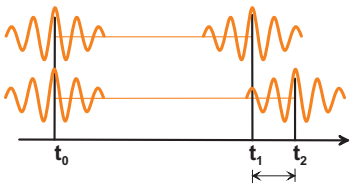
HybridTrek

If gaseous or solid content in the medium increases occasionally during measurement, a measurement with the transit time difference principle is no longer possible. NoiseTrek mode will then be selected by the flowmeter. This measurement method allows the flowmeter to achieve a stable measurement even with high gaseous or solid content.

The flowmeter can switch automatically between transit time and NoiseTrek modes without any changes to the measurement setup.



Path of the ultrasonic signal



Transit time difference Δt

Calculation of Volumetric Flow Rate

$Q = k_{Re} \cdot A \cdot k_{\alpha} \cdot \Delta t/(2 \cdot t_t)$

where:

Q = volumetric flow rate
k_{Re} = fluid mechanics correction factor
A = cross-sectional area of the pipe
k_{α} = flowmeter constant
Δt = transit time difference
t_t = transit time of the medium

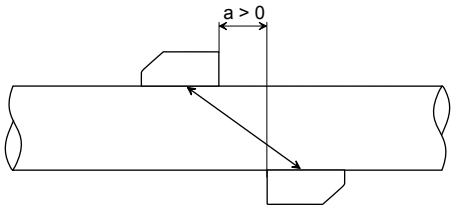
Number of Sound Paths

The number of sound paths is the number of transits of the ultrasonic signal through the medium in the pipe. Depending on the number of sound paths, the following methods of installation exist:

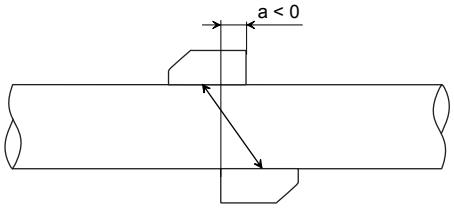
- **reflect mode**
  The number of sound paths is even. Both of the transducers are mounted on the same side of the pipe. Correct positioning of the transducers is easier.
- **diagonal mode**
  The number of sound paths is odd. Both of the transducers are mounted on opposite sides of the pipe.
- **direct mode**
  Diagonal mode with 1 sound path. This should be used in the case of high signal attenuation by the medium, pipe or coatings.

The preferred method of installation depends on the application. While increasing the number of sound paths increases the accuracy of the measurement, signal attenuation increases as well. The optimum number of sound paths for the parameters of the application can be detemined automatically by the flowmeter.

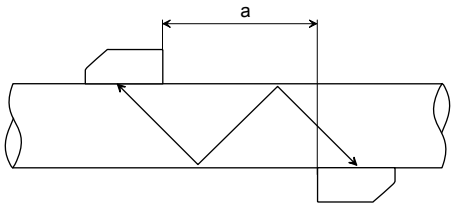
As the transducers can be mounted with the transducer mounting fixture (optional) in reflect or diagonal mode, the number of sound paths can be adjusted optimally for almost any application.



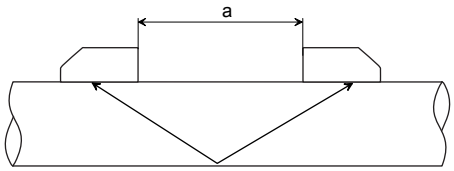
Direct mode, number of sound paths: 1



Direct mode, number of sound paths: 1,
negative transducer distance



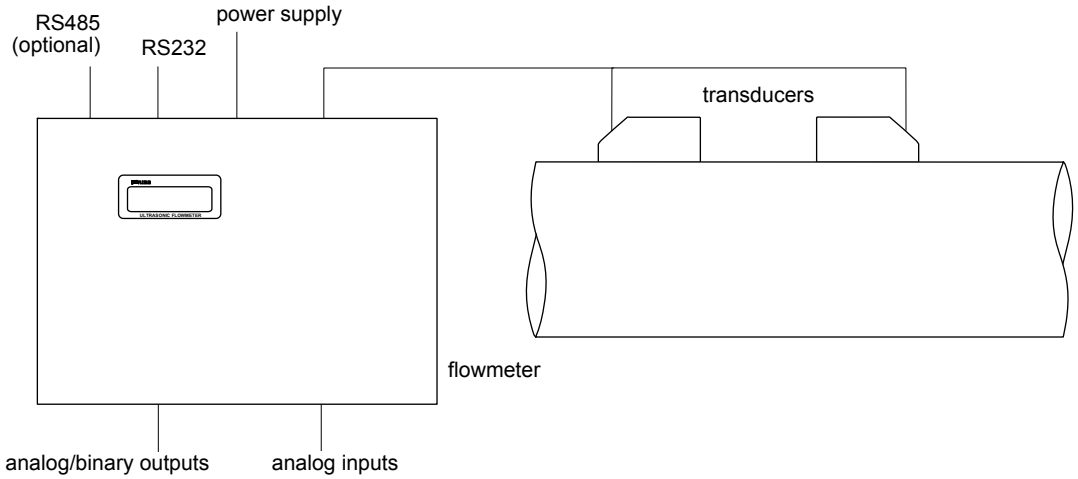
Diagonal mode, number of sound paths: 3



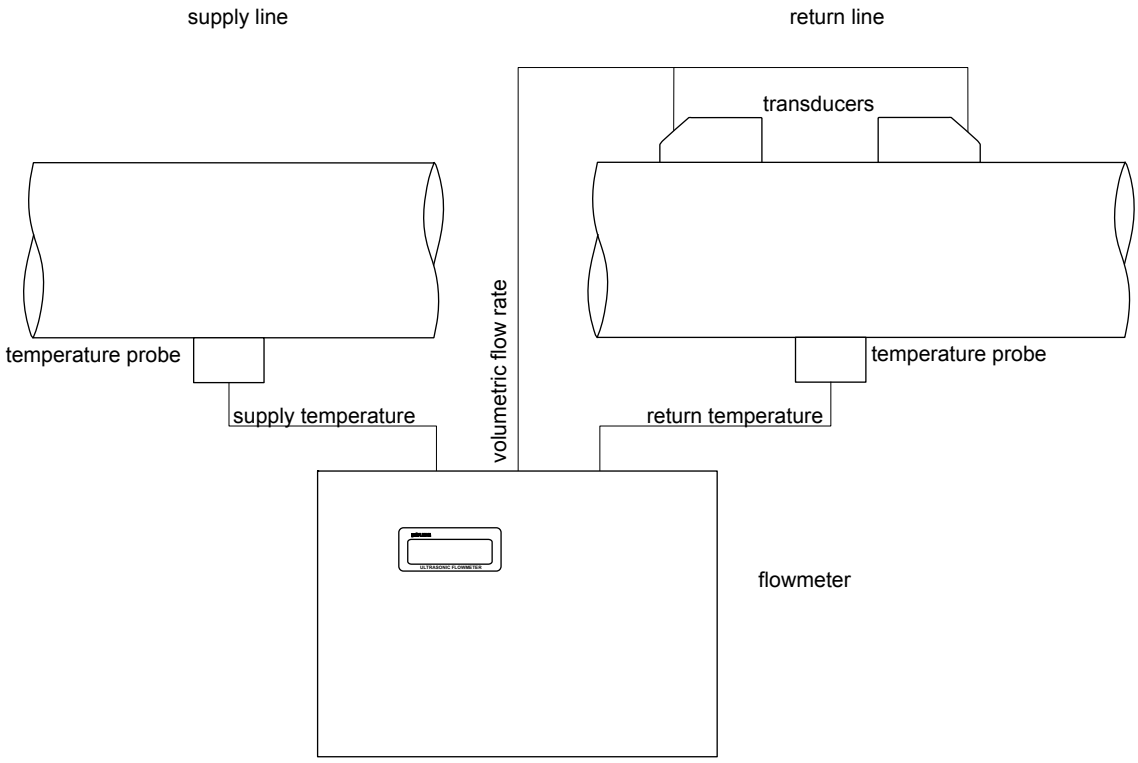
Reflect mode, number of sound paths: 2

a = transducer distance

Typical Measurement Setup



Example of a measurement setup in reflect mode



Example of a heat flow measurement

Flowmeter

Technical Data

FLUXUS	ADM 7407	ADM 7907
design	standard field device	19 " module
		
measurement		
measuring principle	transit time difference correlation principle, automatic NoiseTrek selection for measurements with high gaseous or solid content	
flow velocity	0.03 to 82 ft/s	
repeatability	0.15 % of reading ±0.03 ft/s	
accuracy[1]		
with standard calibration with extended calibration (optional) with field calibration[2]	±1.6 % of reading ±0.03 ft/s ±1.2 % of reading ±0.03 ft/s ±0.5 % of reading ±0.03 ft/s	
medium	all acoustically conductive liquids with < 10 % gaseous or solid content by volume (transit time difference principle)	
flowmeter		
power supply	100 to 240 V/50 to 60 Hz or 20 to 32 V DC	
power consumption	< 15 W	
number of flow measuring channels	1, optional: 2	
signal damping	0 to 100 s, adjustable	
measuring cycle (1 channel)	100 to 1000 Hz	
response time	1 s (1 channel), optional: 70 ms	
housing material	aluminum, powder coated	aluminum
degree of protection according to ANSI/IEC 60529	NEMA 4	NEMA 1
dimensions	see dimensional drawing	42TE x 3HE (without back panel) see dimensional drawing
weight	6.2 lb	3.8 lb
fixation	wall mounting, optional: 2 " pipe mounting	19 " rack mounting
operating temperature	-4 to +140 °F	
display	2 x 16 characters, dot matrix, backlit	
menu language	English, German, French, Dutch, Spanish	
explosion protection (optional)		
FM marking	NI/Cl. I,II,III/Div. 2/ GP. A,B,C,D,E,F,G/ T5 Ta = 60 °C	-
measuring functions		
physical quantities	volumetric flow rate, mass flow, flow velocity, heat flow (if temperature inputs are installed)	
totalizers	volume, mass, optional: heat quantity	
calculation functions	average, difference, sum	
data logger		
loggable values	all physical quantities and totalized values	
capacity	> 100 000 measured values	

[1] for transit time difference principle, reference conditions and v > 0.49 ft/s

[2] reference uncertainty < 0.2 %

FLUXUS	ADM 7407	ADM 7907
communication		
interface	- process integration: optional: RS485 (Modbus, sender) or HART - diagnosis: RS232	
serial data kit (optional)		
software (all Windows™ versions)	- FluxData: download of measured data, graphical presentation, conversion to other formats (e.g. for Excel™) - FluxKoeff: creating medium data sets	
cable	RS232	
adapter	RS232 - USB	
outputs (optional)		
	The outputs are galvanically isolated from the flowmeter.	
number	on request	
	current output	
current output - range - accuracy - active output - passive output	 0/4 to 20 mA 0.1 % of reading ±15 µA R_{ext} < 500 Ω U_{ext} = 4 to 24 V, dependent on R_{ext}, R_{ext} < 1 kΩ	
current output I1 in HART mode - range - passive output	 4 to 20 mA U_{ext} = 10 to 24 V	
	voltage output	
range accuracy internal resistance	0 to 1 V or 0 to 10 V 0 to 1 V: 0.1 % of reading ±1 mV 0 to 10 V: 0.1 % of reading ±10 mV R_i = 500 Ω	
	frequency output	
range open collector	0 to 1 kHz or 0 to 5 kHz 24 V/4 mA	
	binary output	
Reed relay open collector optorelay	- - 26 V/100 mA	48 V/0.25 A 24 V/4 mA -
binary output as alarm output - functions	 limit, change of flow direction or error	 limit, change of flow direction or error
binary output as pulse output - pulse value - pulse width	 0.01 to 1000 units 1 to 1000 ms	 0.01 to 1000 units 80 to 1000 ms
inputs (optional)		
	The inputs are galvanically isolated from the flowmeter.	
number	max. 4, on request	
	temperature input	
designation connection range resolution accuracy	Pt100/Pt1000 4-wire -238 to +1040 °F 0.01 K ±0.01 % of reading ±0.03 K	
	current input	
range accuracy active input passive input	active: 0 to 20 mA passive: -20 to +20 mA 0.1 % of reading ±10 µA U_i = 24 V, R_i = 50 Ω, P_i < 0.5 W, not short circuit proof R_i = 50 Ω, P_i < 0.3 W	
	voltage input	
range accuracy internal resistance	0 to 1 V 0.1 % of reading ±1 mV R_i = 1 MΩ	

Dimensions

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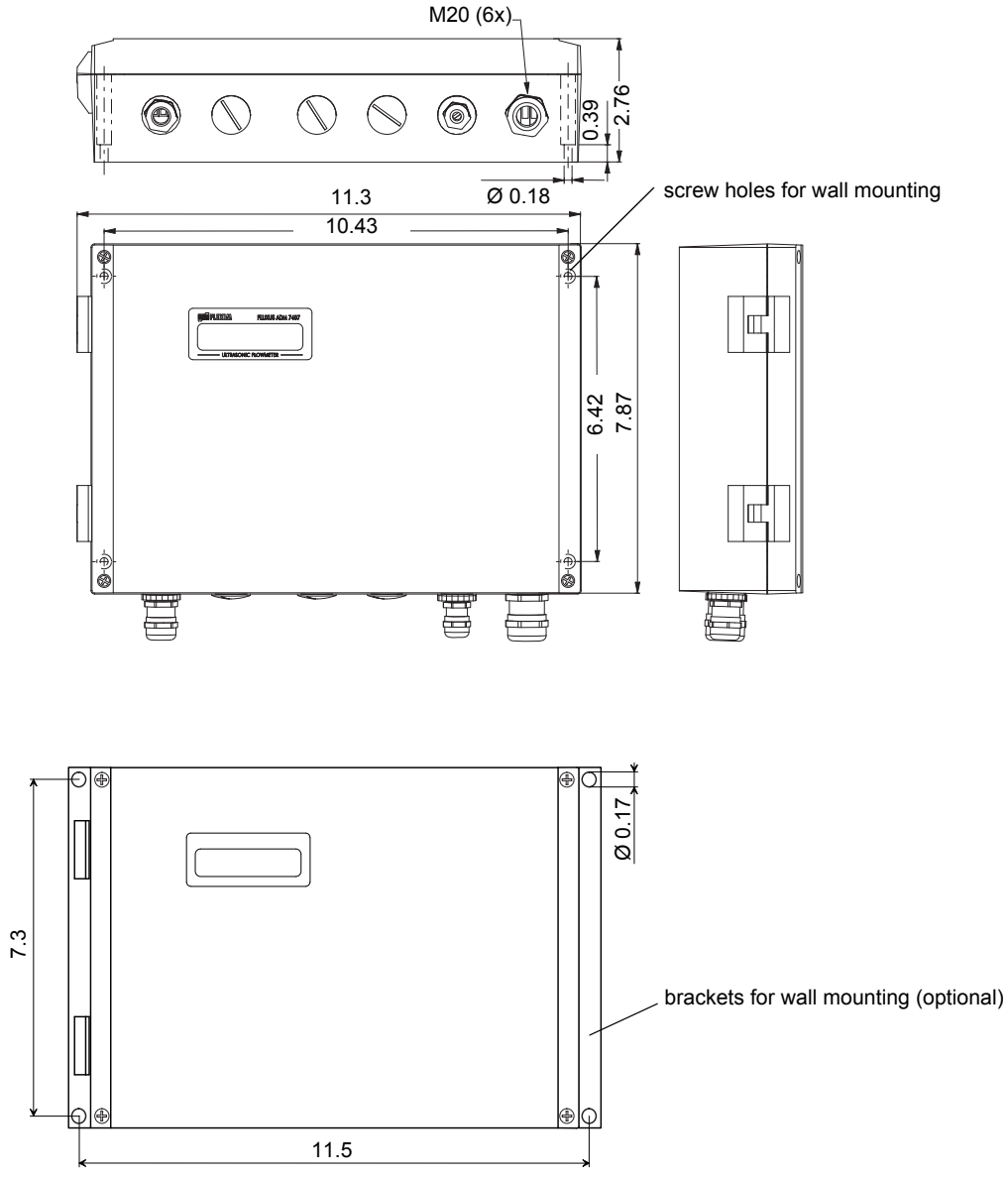
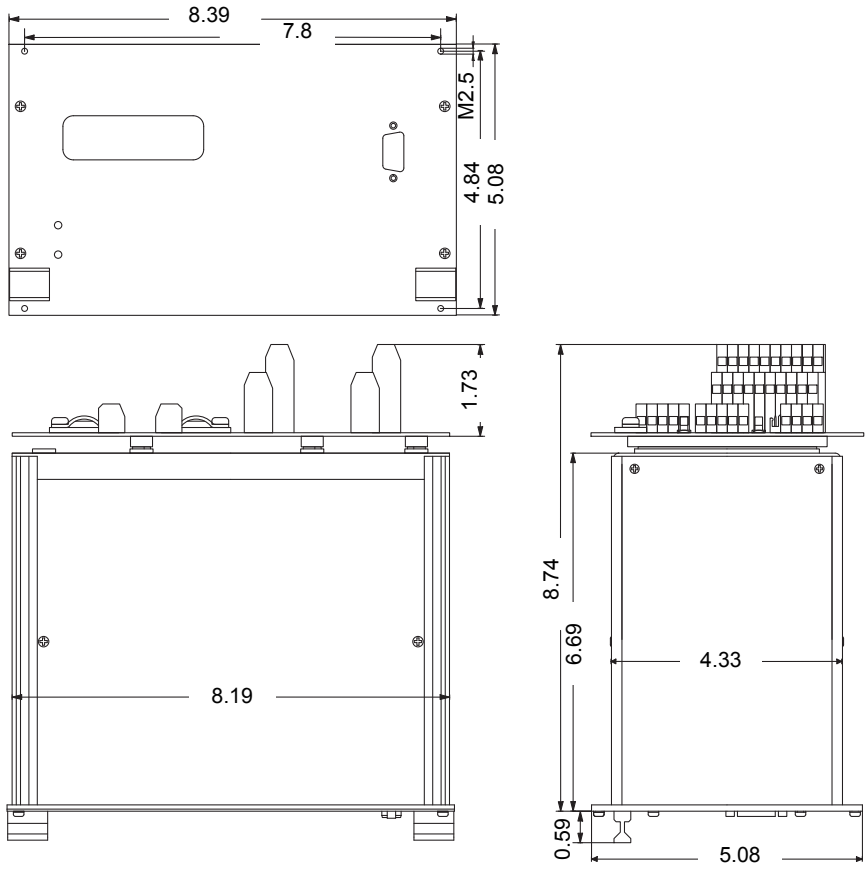


FLUXUS ADM 7907



in inch

2 " Pipe Mounting Kit (optional)

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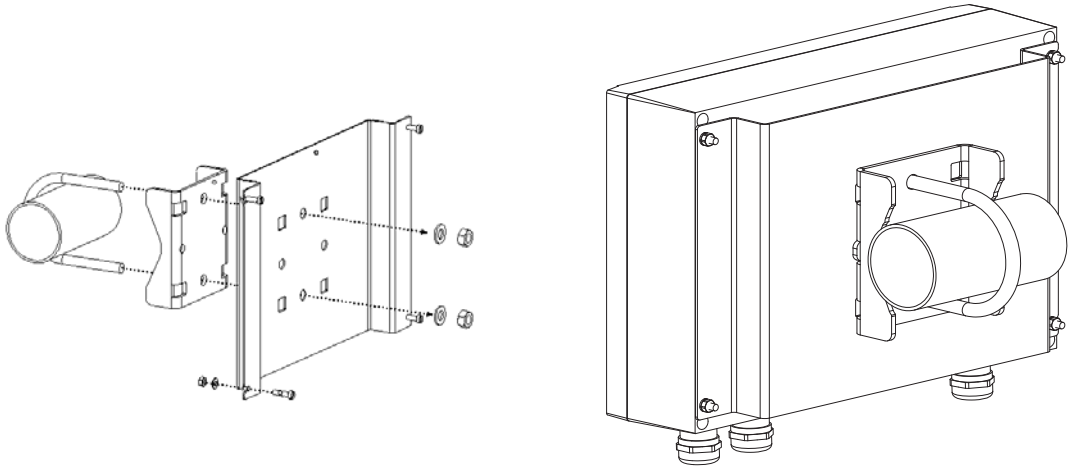

for vertical and horizontal pipes

Terminal Assignments

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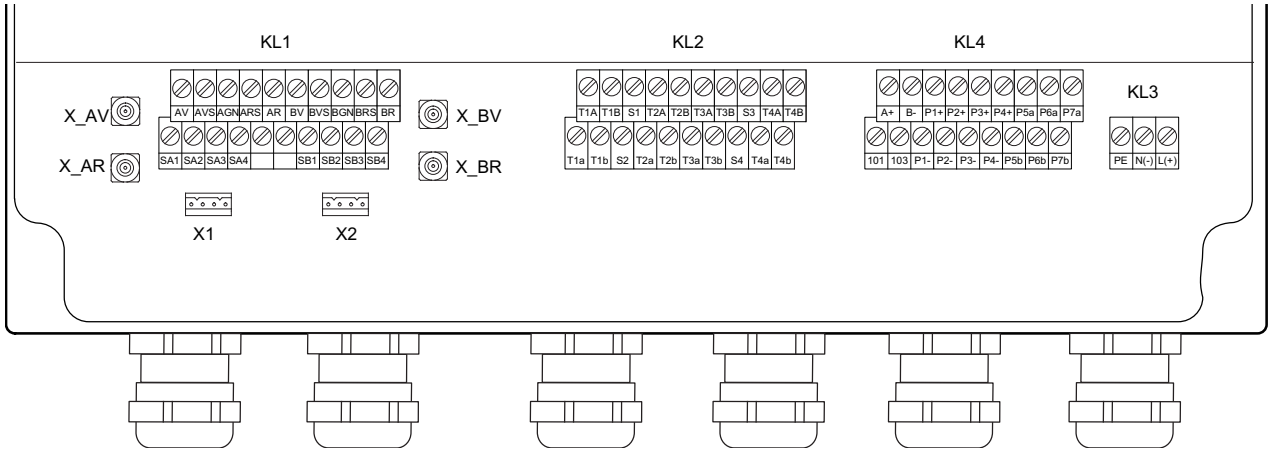

Power Supply

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		measuring channel B	
terminal	connection	terminal	connection
AV	signal	BV	signal
AVS	shield	BVS	shield
ARS	shield	BRS	shield
AR	signal	BR	signal

transducer cable		
measuring channel A	measuring channel B	
terminal		connection
X_AV	X_BV	SMB connector
X_AR	X_BR	SMB connector

Outputs[2]

terminal strip KL4

terminal	connection
P1+ to P4+, P1- to P4-	current output, voltage output, frequency output or binary output (optorelay)
P5a to P7a, P5b to P7b	binary output (optorelay)

RS485 (optional)

terminal strip KL4

terminal	connection
A+	signal +
B-	signal -
101	shield

Inputs[2]

terminal strip KL2

	temperature probe		passive current source	active current source
terminal	connection	connection with extension cable	connection	connection
T1a to T4a	red	red	not connected	not connected
T1A to T4A	red/blue	gray	-	+
T1b to T4b	white/blue	blue	+	not connected
T1B to T4B	white	white	not connected	-
S1 to S4	shield	shield	not connected	not connected

[2] The number, type and terminal assignment of the outputs and inputs will be customized.

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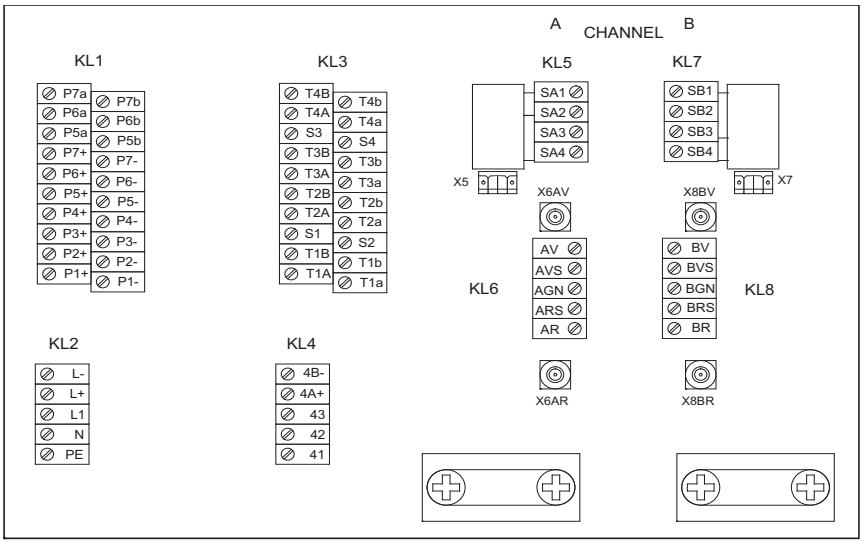


Transducers

terminal strip KL6, KL8

extension cable transducer cable			
measuring channel A		measuring channel B	
terminal	connection	terminal	connection
AV	signal	BV	signal
AVS	shield	BVS	shield
ARS	shield	BRS	shield
AR	signal	BR	signal

transducer cable		
measuring channel A	measuring channel B	
terminal		connection
X6AV	X8BV	SMB connector
X6AR	X8BR	SMB connector

Power Supply

terminal strip KL2

terminal	connection AC	terminal	connection DC
PE	earth	PE	earth
N	neutral	L-	DC-
L1	phase	L+	DC+

Outputs[2]

terminal strip KL1

terminal	connection
P1+ to P7+, P1- to P7-	current output, voltage output, frequency output or binary output (open collector)
P5a to P7a, P5b to P7b	binary output (Reed relay) герконовое реле

RS485 (optional)

terminal strip KL4

terminal	connection
4A+	signal +
4B-	signal -
43	shield

Inputs[2]

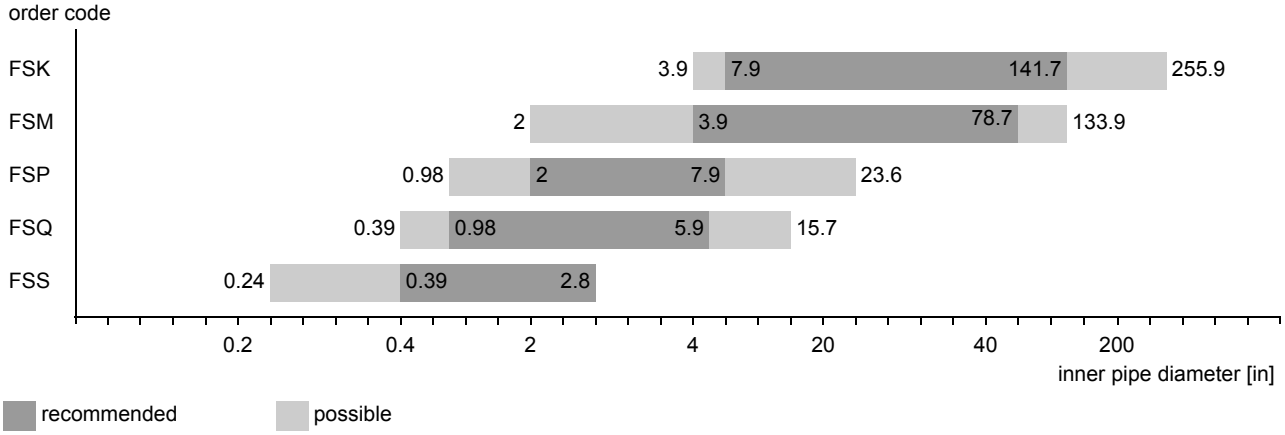
terminal strip KL3

	temperature probe		passive current source	active current source
terminal	connection	connection with extension cable	connection	connection
T1a to T4a	red	red	not connected	not connected
T1A to T4A	red/blue	gray	-	+
T1b to T4b	white/blue	blue	+	not connected
T1B to T4B	white	white	not connected	-
S1 to S4	shield	shield	not connected	not connected

[2] The number, type and terminal assignment of the outputs and inputs will be customized.

Transducers

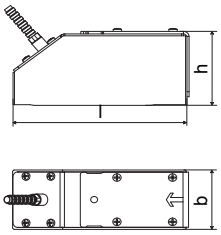
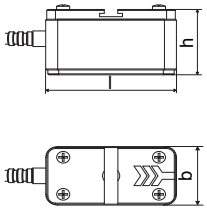
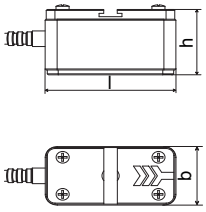
Transducer Selection



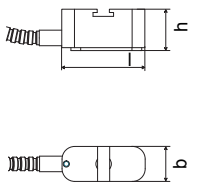
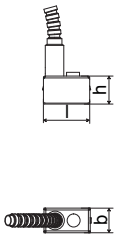
Order Code for Transducers

1, 2	3		4	5, 6	7, 8		9 to 11	no. of character
transducer	transducer frequency	-	temperature	explosion protection	connection system	-	extension cable	description
FS								set of ultrasonic flow transducers for liquids measurement, shear wave
	K							0.5 MHz
	M							1 MHz
	P							2 MHz
	Q							4 MHz
	S							8 MHz
			N					normal temperature range
			E					extended temperature range (shear wave transducers with transducer frequency M, P, Q)
				F2				FM Class I Div. 2 (ADM 7407 with connection system TS)
				NN				not explosion proof
					TS			direct connection or connection via junction box
							XXX	cable length in m, for max. length of extension cable see page 20 connection system TS: 0 m: without junction box > 0 m: with junction box JB03 or JBP3 (NEMA 6P transducers)
example								
FS	M	-	N	F2	TS	-	030	shear wave transducer 1 MHz, normal temperature range, FM Div. 2, connection system TS with junction box JB03 and 30 m (98 ft) extension cable
		-				-		

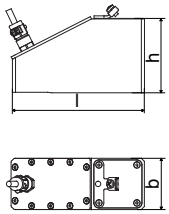
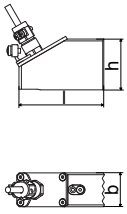
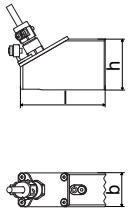
Shear Wave Transducers (FM or without explosion protection)

technical type		CDK1N52	CDM1N52	CDP1N52
order code		**FSK-NF2TS** **FSK-NNNTS**	**FSM-NF2TS** **FSM-NNNTS**	**FSP-NF2TS** **FSP-NNNTS**
transducer frequency	MHz	0.5	1	2
inner pipe diameter d				
min. extended	in	3.9	2	0.98
min. recommended	in	7.9	3.9	2
max. recommended	in	141.7	78.7	7.9
max. extended	in	255.9	133.9	23.6
pipe wall thickness				
min.	in	-	-	-
max.	in	-	-	-
material				
housing		PEEK with stainless steel cap 304	stainless steel 304	stainless steel 304
contact surface		PEEK	PEEK	PEEK
degree of protection according to ANSI/ IEC 60529		NEMA 6	NEMA 6	NEMA 6
transducer cable				
type		1699	1699	1699
length	ft	16	13	13
dimensions				
length l	in	4.98	2.36	2.36
width b	in	1.85	1.18	1.18
height h	in	2.2	1.32	1.32
dimensional drawing				
operating temperature				
min.	°F	-40	-40	-40
max.	°F	+266	+266	+266
explosion protection				
FM transducer		FSK-NF2TS	FSM-NF2TS	FSP-NF2TS
explosion protection temperature				
FM min.	°F	-40	-40	-40
FM max.	°F	+257	+257	+257
FM marking		NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860	NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860	NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860
FM type of protection		non incendive	non incendive	non incendive

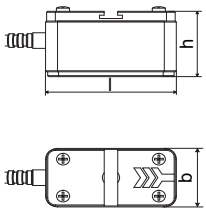
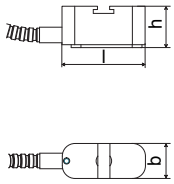
Shear Wave Transducers (FM or without explosion protection)

technical type		CDQ1N52	CDS1N52
order code		**FSQ-NF2TS** **FSQ-NNNTS**	**FSS-NF2TS** **FSS-NNNTS**
transducer frequency	MHz	4	8
inner pipe diameter d			
min. extended	in	0.39	0.24
min. recommended	in	0.98	0.39
max. recommended	in	5.9	2.8
max. extended	in	15.7	2.8
pipe wall thickness			
min.	in	-	-
max.	in	-	-
material			
housing contact surface		stainless steel 304 PEEK	stainless steel 304 PEI
degree of protection according to ANSI/ IEC 60529		NEMA 6	NEMA 4
transducer cable			
type length	 ft	1699 9	1699 6
dimensions			
length l	in	1.67	0.98
width b	in	0.71	0.51
height h	in	0.85	0.67
dimensional drawing			
operating temperature			
min.	°F	-40	-22
max.	°F	+266	+266
explosion protection			
FM transducer		FSQ-NF2TS	FSS-NF2TS
explosion protection temperature			
FM min.	°F	-40	-40
FM max.	°F	+257	+257
FM marking		NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860	NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860
FM type of protection		non incendive	non incendive

Shear Wave Transducers (without explosion protection, NEMA 6P)

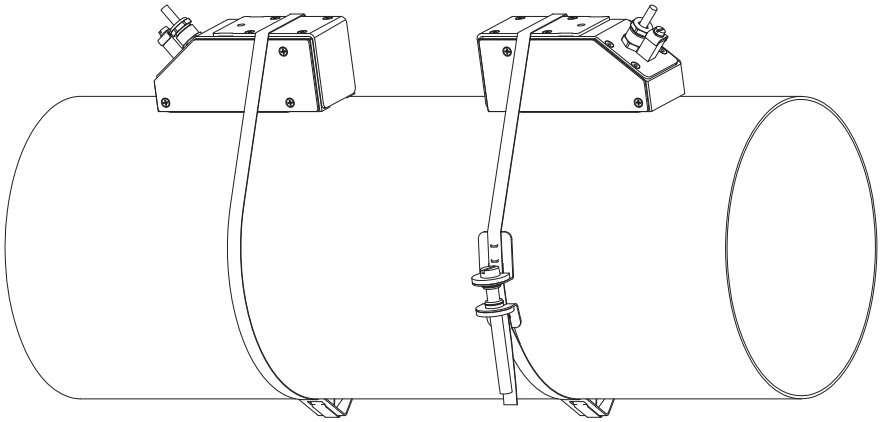
technical type		CDK1LI8	CDM2LI8	CDP2LI8
order code		**FSK-NNNTS/IP68**	**FSM-NNNTS/IP68**	**FSP-NNNTS/IP68**
transducer frequency	MHz	0.5	1	2
inner pipe diameter d				
min. extended	in	3.9	2	0.98
min. recommended	in	7.9	3.9	2
max. recommended	in	141.7	78.7	7.9
max. extended	in	255.9	133.9	23.6
pipe wall thickness				
min.	in	-	-	-
max.	in	-	-	-
material				
housing contact surface		PEEK with stainless steel cap 316Ti PEEK	PEEK with stainless steel cap 316Ti PEEK	PEEK with stainless steel cap 316Ti PEEK
degree of protection according to ANSI/ IEC 60529		NEMA 6P	NEMA 6P	NEMA 6P
transducer cable				
type		2550	2550	2550
length	ft	39	39	39
dimensions				
length l	in	5.06	2.76	2.76
width b	in	1.97	1.1	1.1
height h	in	2.83	1.65	1.65
dimensional drawing				
operating temperature				
min.	°F	-40	-40	-40
max.	°F	+212	+212	+212

Shear Wave Transducers (extended temperature range, FM or without explosion protection)

technical type		CDM1E52	CDP1E52	CDQ1E52
order code		**FSM-EF2TS** **FSM-ENNTS**	**FSP-EF2TS** **FSP-ENNTS**	**FSQ-EF2TS** **FSQ-ENNTS**
transducer frequency	MHz	1	2	4
inner pipe diameter d				
min. extended	in	2	0.98	0.39
min. recommended	in	3.9	2	0.98
max. recommended	in	78.7	7.9	5.9
max. extended	in	133.9	23.6	15.7
pipe wall thickness				
min.	in	-	-	-
max.	in	-	-	-
material				
housing contact surface		stainless steel 304 Sintimid	stainless steel 304 Sintimid	stainless steel 304 Sintimid
degree of protection according to ANSI/ IEC 60529		NEMA 4	NEMA 4	NEMA 4
transducer cable				
type		1699	1699	1699
length	ft	13	13	9
dimensions				
length l	in	2.36	2.36	1.67
width b	in	1.18	1.18	0.71
height h	in	1.32	1.32	0.85
dimensional drawing				
operating temperature				
min.	°F	-22	-22	-22
max.	°F	+392	+392	+392
explosion protection				
FM transducer		FSM-EF2TS	FSP-EF2TS	FSQ-EF2TS
explosion protection temperature				
min.	°F	-40	-40	-40
max.	°F	+374	+374	+374
marking		NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860	NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860	NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860
type of protection		non incendive	non incendive	non incendive

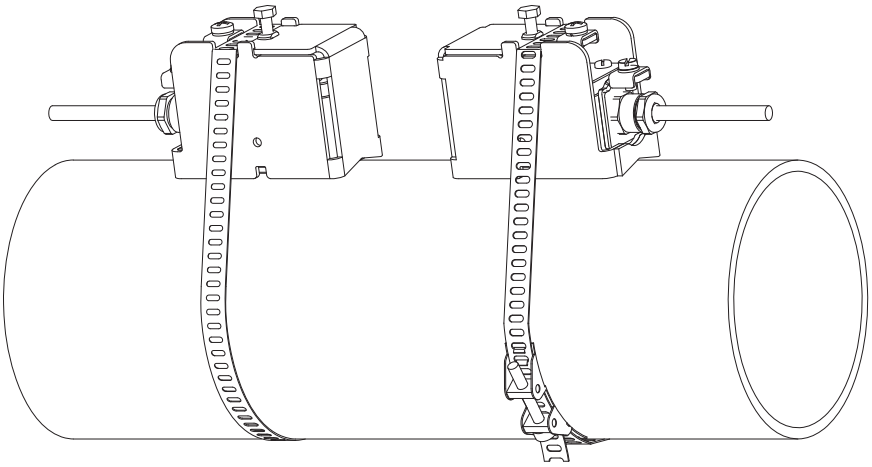
Transducer Mounting Fixtures

Tension Straps and Clasps



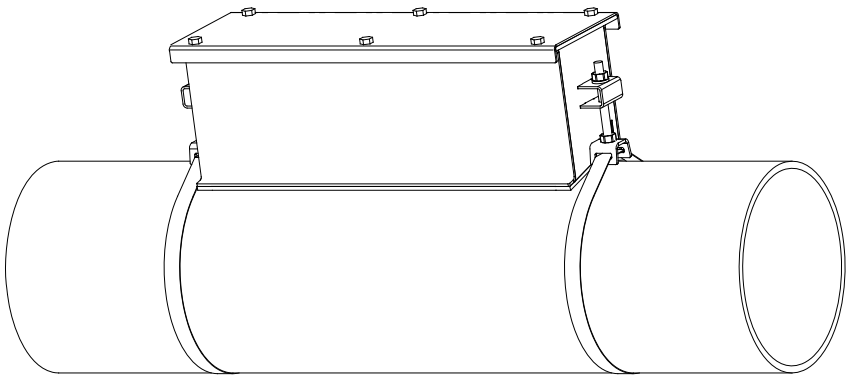
material: stainless steel 304, 303
length: 32/65 ft

Tension Straps, Clasps and Mounting Shoes



material: stainless steel 304, 303
length: 32/65 ft

PermaLok



Coupling Materials for Transducers

		normal temperature range (4th character of transducer order code = N)		**extended temperature range (4th character of transducer order code = E)**		**WaveInjector WI-400**	
		< 212 °F	212 to 338 °F	< 302 °F	302 to 392 °F	< 536 °F	536 to 752 °F
< 2 h		coupling compound type N	coupling compound type E	coupling compound type E	coupling compound type E or H	coupling foil type A	coupling foil type B
< 24 h		coupling compound type N	coupling compound type E	coupling compound type E	coupling foil type VT	coupling foil type A	coupling foil type B
long time measurement	indoor	coupling compound type N	coupling compound type E	coupling foil type VT[1]	coupling foil type VT[2]	coupling foil type A	coupling foil type B
	outdoor	coupling foil type VT	coupling foil type VT	coupling foil type VT[1]	coupling foil type VT[2]	coupling foil type A	coupling foil type B

[1] < 5 years

[2] < 6 months

Technical Data

type	**order code**	**temperature** °F	**material**	**remark**
coupling compound type N	990739-1	-22 to +266	mineral grease paste	
coupling compound type E	990739-2	-22 to +392	silicone paste	
coupling compound type H	990739-3	-22 to +482	fluoropolymer paste	
coupling foil type A	990739-7	max. 536	Pb	
coupling foil type B	990739-8	> 536 to 752	Ag	
coupling foil type VT	990739-0	14 to 302, peak max. 392	fluoroelastomer	for transducers with transducer frequency G, H, K
	990739-6			for transducers with transducer frequency M, P
	990739-5			for transducers with transducer frequency Q
	990739-10			for transducers with transducer frequency S

Connection Systems

Connection System TS

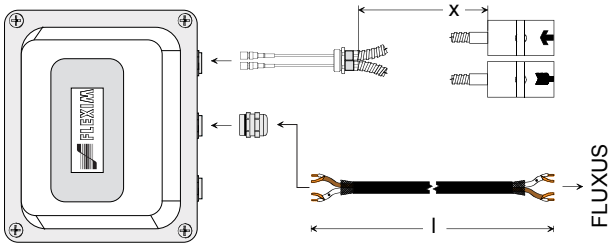
transducer frequency (3rd character of transducer order code)		G, H, K		M, P		Q		S	
		x	l	x	l	x	l	x	l
cable length	ft	16	≤ 984	13	≤ 984	9	≤ 295	6	≤ 131

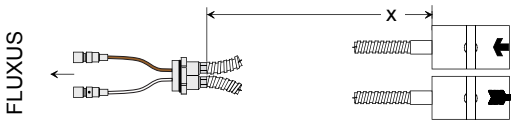
connection via junction box

direct connection
(only ADM 7407)

FM, without explosion protection

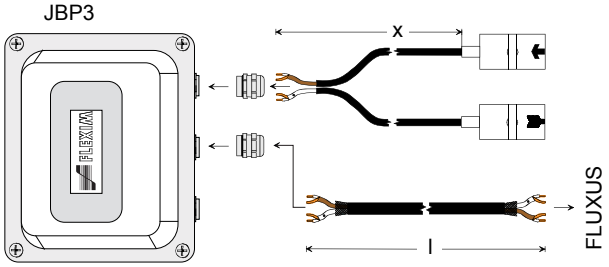
JB03

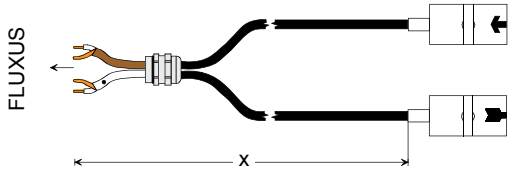




without explosion protection (order code ***-NNNTS/IP68)

JBP3





x, y = transducer cable length
l = max. length of extension cable

Transducer Cables

Technical Data

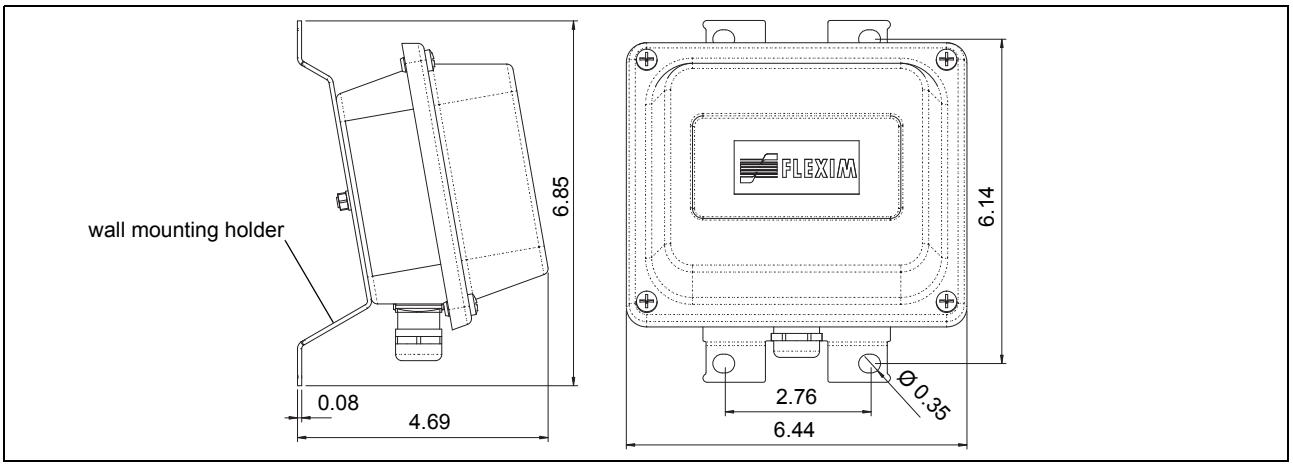
		transducer cable		extension cable
item number		1699	2550	2615
standard length	ft	see table above	39	-
max. length	ft	-	-	see table above
temperature	°F	-67 to +392	-40 to +212	-40 to +158
properties			longitudinal water tight	halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2
sheath				
material		stainless steel 304	-	-
outer diameter	in	0.31	-	-
cable jacket				
material		PTFE	PUR	PUR
outer diameter	in	0.11	0.2 ±0.01	0.47
thickness	in	0.01	0.04	0.08
color		brown	gray	black
shield		x	x	x

Junction Box

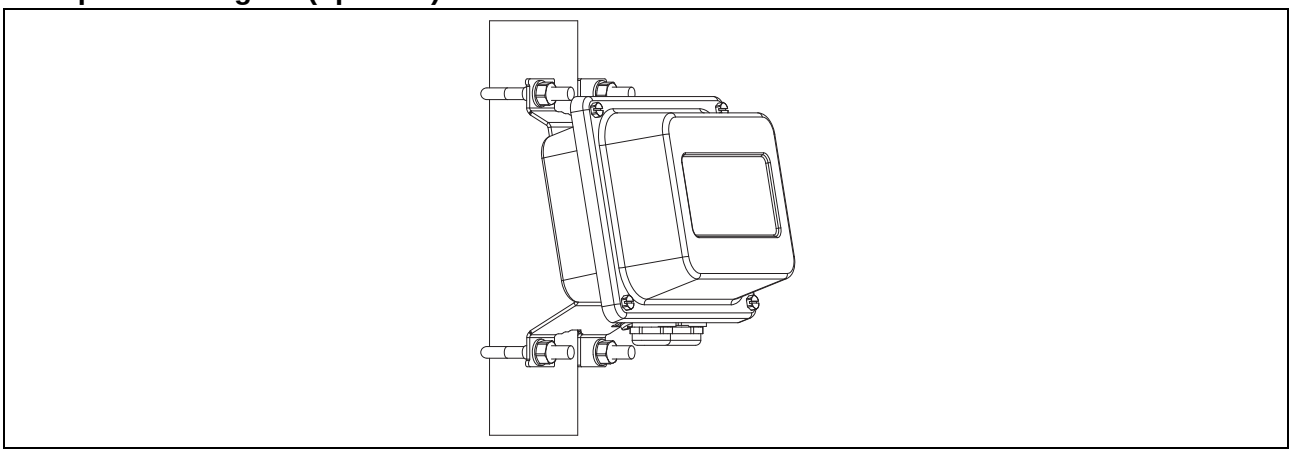
Technical Data

technical type		JB03	JBP3
dimensions		see dimensional drawing	see dimensional drawing
fixation		wall mounting optional: 2 " pipe mounting	wall mounting optional: 2 " pipe mounting
material			
housing		stainless steel 304	stainless steel 316L
gasket		silicone	silicone
degree of protection according to ANSI/IEC 60529		NEMA 6	NEMA 6
cable gland		1/2 NPT	1/2 NPT
operating temperature			
min.	°F	-40	-40
max.	°F	+176	+176

Dimensions

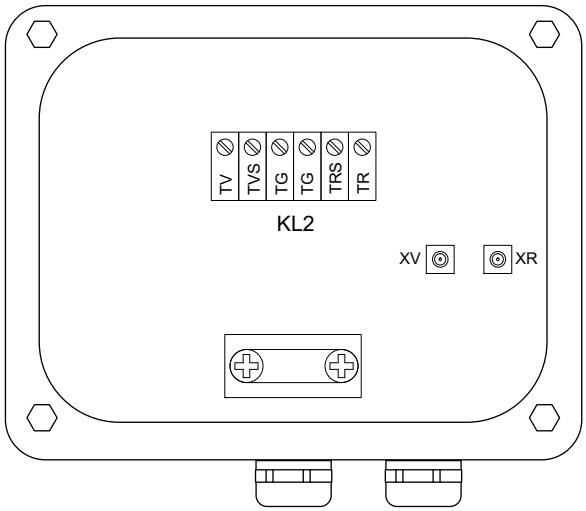


2 " Pipe Mounting Kit (optional)



Terminal Assignments

JB03



Transducers

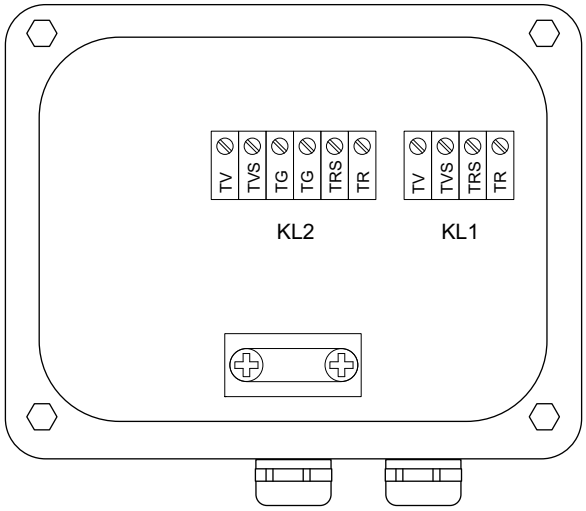
terminal	connection
XV	SMB connector
XR	SMB connector

Extension Cable (Flowmeter)

terminal strip KL2

terminal	connection
TV	signal
TVS	shield
TRS	shield
TR	signal

JBP3



Transducers

terminal strip KL1

terminal	connection
TV	signal
TVS	shield
TRS	shield
TR	signal

Extension Cable (Flowmeter)

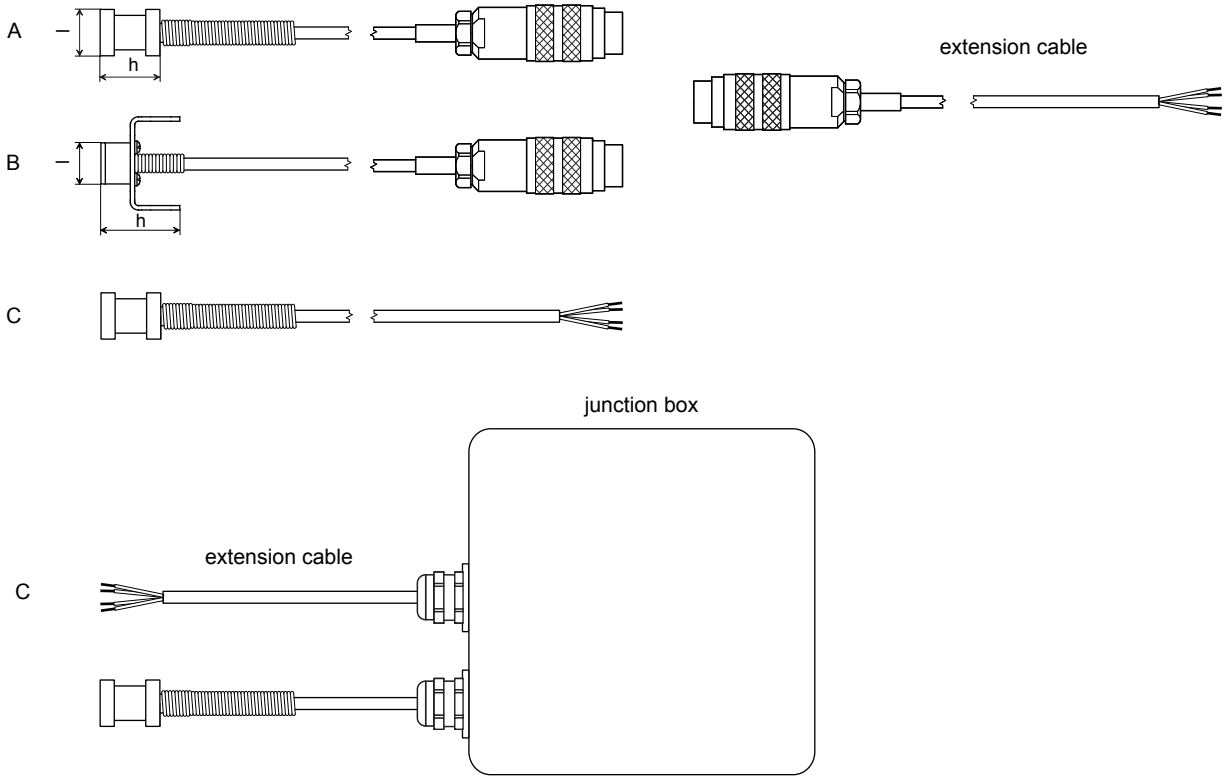
terminal strip KL2

terminal	connection
TV	signal
TVS	shield
TRS	shield
TR	signal

Temperature Probes (optional)

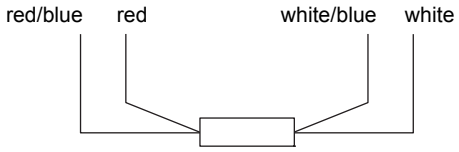
Technical Data

order code		**670413-1 770413-1**	**670412-1 770413-1**	**670413-2**	**670412-2**
type		Pt1000	Pt1000 matched according to DIN 1434-1	Pt1000	Pt1000 matched according to DIN 1434-1
design		4-wire		4-wire	
measuring range	°F	-22 to +482		-58 to +482	
accuracy T		±(0.27 °F + 2 · 10^{-3} · T), class A		±(0.27 °F + 2 · 10^{-3} · T), class A	
accuracy ΔT		-	≤ 0.1 K (3K < ΔT < 6 K), more corresponding to EN 1434-1	-	≤ 0.1 K (3K < ΔT < 6 K), more corresponding to EN 1434-1
response time	s	50		8	
housing		aluminum		PEEK, stainless steel 304, Cu	
degree of protection according to ANSI/IEC 60529		NEMA 4		NEMA 4	
weight (without connector)	lb	0.6	1.1	0.7	1.4
fixation		clamp-on		clamp-on	
accessories		-		plastic protection plate, isolation foam	
dimensions					
length l	in	0.59		0.55	
width b	in	0.59		1.18	
height h	in	0.79		1.06	
dimensional drawing		670413-1: A 770413-1: C	670412-1: A 770412-1: C	B	



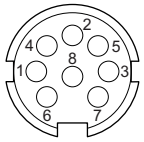
Connection

Temperature Probe



Connector

pin	cable of temperature probe	extension cable
1	white/blue	blue
2	red/blue	gray
3, 4, 5	not connected	
6	red	red
7	white	white
8	not connected	



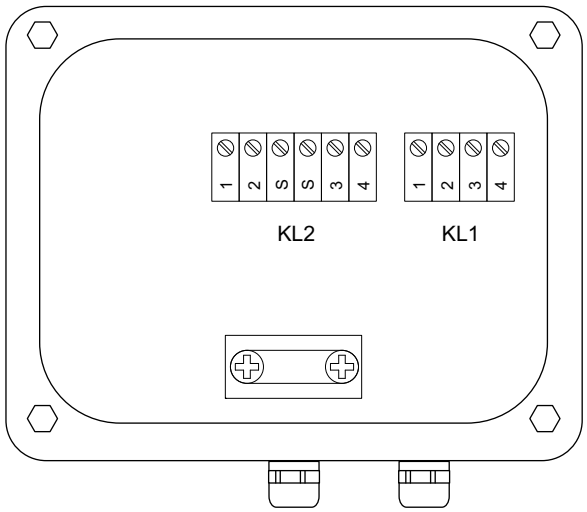
Cables

		cable of temperature probe	extension cable
type		4 x 0.25 mm^2 black or white	LIYCY 8 x 0.14 mm^2 gray
standard length	ft	9	16/32/82
max. length	ft	-	656
cable jacket		PTFE	PVC

Junction Box

technical type		JBT3
dimensions		see dimensional drawing
fixation		wall mounting optional: 2 " pipe mounting
material		
housing gasket		stainless steel 316L silicone
degree of protection according to ANSI/IEC 60529		NEMA 6
cable gland		1/2 NPT
operating temperature		
min. max.	°F °F	-40 +176

JBT3



Transducers

terminal strip KL1

terminal	connection
1	red
2	red/blue
3	white
4	white/blue

Extension Cable (Flowmeter)

terminal strip KL2

terminal	connection
1	red
2	gray
3	white
4	blue

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