FLEXIM

Technical specification

FLUXUS G722ST-LT

Steam ultrasonic flowmeter for permanent installation

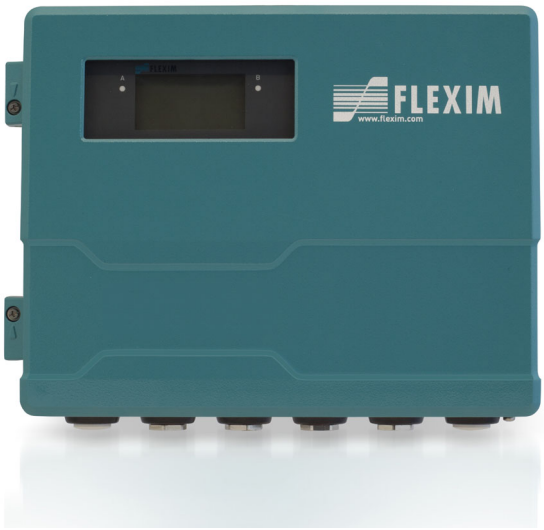
Transmitter for permanent outdoor wall or pipe mounting

Features

- Exact and highly reliable measurement of saturated and superheated steam for temperatures up to max. 180 °C by means of the clamp-on principle
- Synchronized channel averaging to reduce turbulence-related fluctuations of the measured value
- Physical quantities volumetric flow rate and mass flow rate available in a transmitter without additional steam calculator
- Installation and start-up do not require any pipe work and are carried out without any process interruptions and cooling down of the steam system
- Non-invasive, wear-free and pressure constant measurement
- Maintenance-free acoustic coupling using permanent coupling foil
- High measurement accuracy even at very low as well and high flow rates and independent of the flow direction (bidirectional)
- Automatic loading of calibration data and transducer recognition
- Bidirectional communication and support of common bus technologies (Modbus, Profibus PA, Foundation Fieldbus, BACnet)
- Advanced self-diagnosis and possibilities for event-based triggering of data recording for the supervision and control of critical processes
- Transmitter and transducers for use in hazardous areas are available
- Transmitter and transducers are separately calibrated (traceable to national standards)
- The measurement is zero point stable and drift free

Applications

- Food and beverage industry
- Pharmaceutical industry
- Chemical industry
- Manufacturing industries



FLUXUS G722ST-LT (aluminum housing)

FLUXUS G722ST-LT (stainless steel housing)

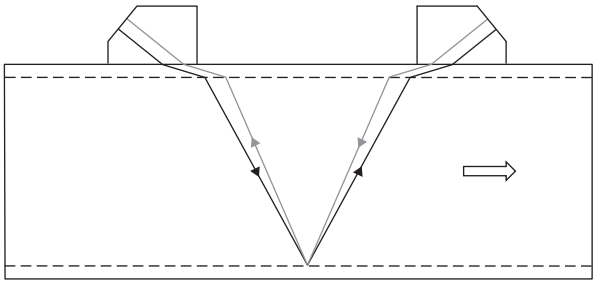
Variofix L

Function

Measurement principle

The transducers are mounted on the pipe which is completely filled with the fluid. The ultrasonic signals are emitted alternately by a transducer and received by the other. The physical quantities are determined from the transit times of the ultrasonic signals.

Path of the ultrasonic signal in the flowing fluid

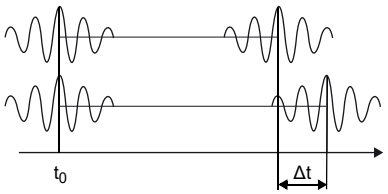


As the fluid where the ultrasound propagates is flowing, the transit time of the ultrasonic signal in flow direction is shorter than the one against the flow direction.

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.

The integrated microprocessors control the entire measuring cycle. The received ultrasonic signals are checked for measurement usability and evaluated for their reliability. Noise signals are eliminated.

Transit time difference Δt



Calculation of volumetric flow rate

$$\dot{V} = k_{Re} \cdot A \cdot k_a \cdot \frac{\Delta t}{2 \cdot t_\gamma}$$

where

- $\dot{V}$ - volumetric flow rate
- k_{Re} - fluid mechanics calibration factor
- A - cross-sectional pipe area
- k_a - acoustical calibration factor
- Δt - transit time difference
- t_γ - average of transit times in the fluid

Calculation of mass flow rate

The mass flow rate is calculated from the operating density and the volumetric flow rate:

$\dot{m} = \rho \cdot \dot{V}$

The operating density of the fluid is calculated as the function of pressure and temperature of the fluid:

$\rho = f(p, T)$

where

- ρ - operating density
- p - fluid pressure
- T - fluid temperature
- $\dot{m}$ - mass flow rate
- $\dot{V}$ - volumetric flow rate

Number of sound paths

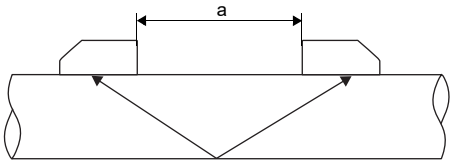
The number of sound paths is the number of transits of the ultrasonic signal through the fluid in the pipe. Depending on the number of sound paths, the following methods of installation exist:

- **reflection arrangement**
  The number of sound paths is even. The transducers are mounted on the same side of the pipe. Correct positioning of the transducers is easy.
- **diagonal arrangement**
  The number of sound paths is odd. The transducers are mounted on opposite sides of the pipe. In the case of a high signal attenuation by the fluid, pipe and coatings, diagonal arrangement with 1 sound path will be used.

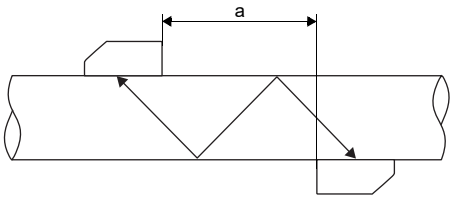
The preferred method of installation depends on the application. While increasing the number of sound paths increases the accuracy of the measurement, signal attenuation increases as well. The optimum number of sound paths for the parameters of the application will be determined automatically by the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

As the transducers can be mounted with the transducer mounting fixture in reflection arrangement or diagonal arrangement, the number of sound paths can be adjusted optimally for the application.

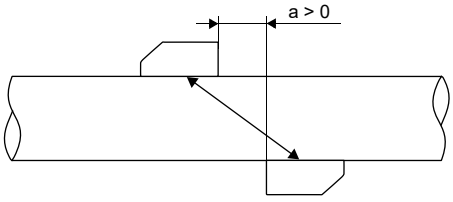
Reflection arrangement, number of sound paths: 2



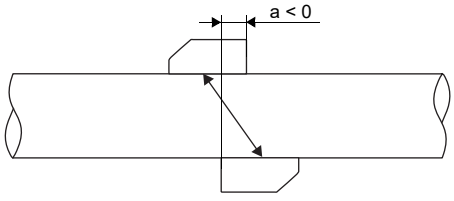
Diagonal arrangement, number of sound paths: 3



Diagonal arrangement, number of sound paths: 1



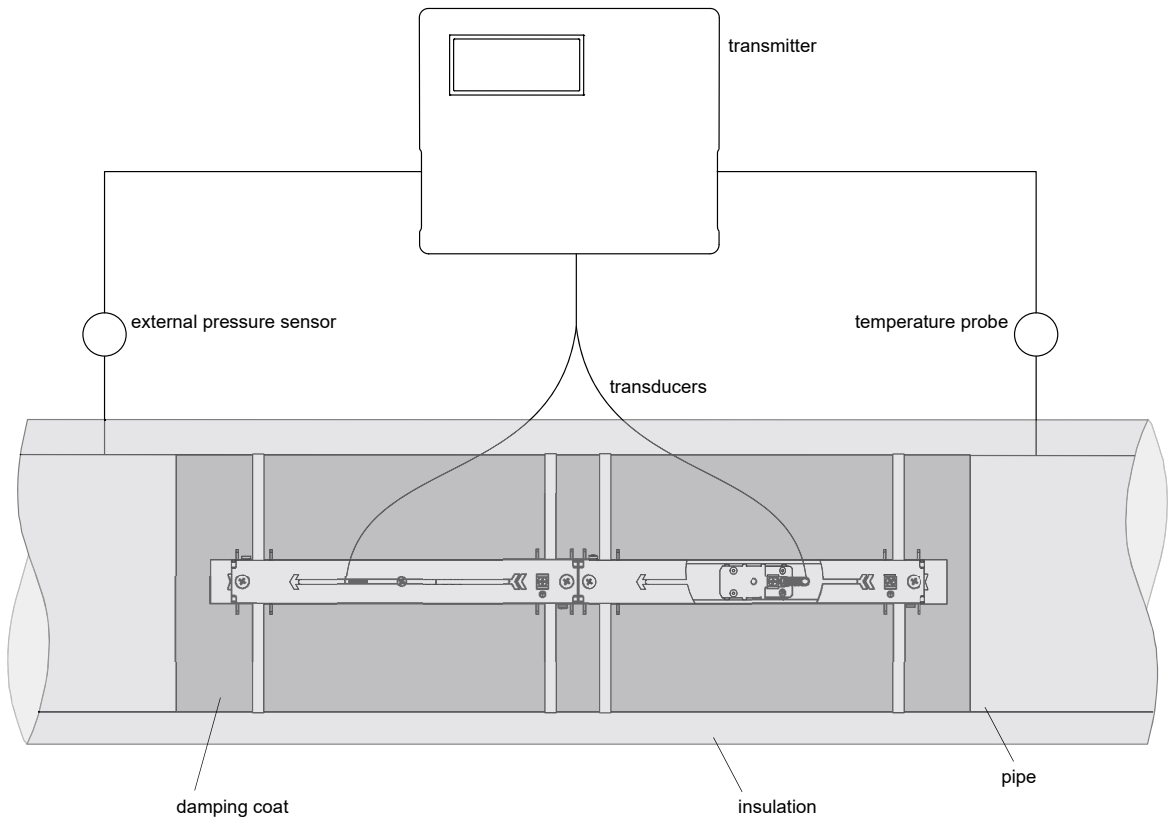
Diagonal arrangement, number of sound paths: 1, negative transducer distance



a - transducer distance

Typical measurement setup

Example of a reflection arrangement



Transmitter

Technical data

		FLUXUS G722ST-NN0*A G722ST-NN0*S	FLUXUS G722ST-A20*A G722ST-A20*S	FLUXUS G722ST-F20*A G722ST-F20*S
		 		
design		standard field device	standard field device zone 2	standard field device FM Class I Div. 2
application		steam measurement[2]		
measurement				
measurement principle		transit time difference correlation principle		
synchronised channel averaging		x (2 measuring channels necessary)		
flow velocity	m/s	depending on pipe diameter and transducer, see diagrams		
repeatability		0.15 % MV ±0.005 m/s		
fluid		saturated steam, superheated steam		
fluid pressure	bar (a)	3...10		
fluid temperature	°C	135...180	135...155 (see pipe surface temperature (Ex) of selected transducer)	135...165
temperature compensation		corresponding to the recommendations in ANSI/ASME MFC-5.1-2011		
measurement uncertainty (volumetric flow rate)				
measurement uncertainty of the measuring system[1]		±0.3 % MV ±0.005 m/s		
measurement uncertainty at the measuring point		±1...3 % MV ±0.005 m/s, depending on the application		
transmitter				
power supply		• 100...230 V/50...60 Hz or • 20...32 V DC or • 11...16 V DC		
power consumption	W	< 15		
number of measuring channels		1, optional: 2		
damping	s	0...100 (adjustable)		
measuring cycle	Hz	100...1000 (1 channel)		
response time	s	1 (1 channel), option: 0.02		
housing material		aluminum, powder coated or stainless steel 316L (1.4404)		
degree of protection		IP66		aluminum housing: IP66/NEMA 4X stainless steel housing: IP65
dimensions	mm	see dimensional drawing		
weight	kg	aluminum housing: 5.4 stainless steel housing: 5.1		
fixation		wall mounting, optional: 2" pipe mounting		
ambient temperature	°C	-40…+60 (< -20 °C without operation of the display)		aluminum housing: -40…+55/60 (< -20 °C without operation of the display) stainless steel housing: -20...+55/60
display		128 x 64 pixels, backlight		
menu language		English, German, French, Spanish, Dutch, Russian, Polish, Turkish, Italian		
explosion protection				
• ATEX/IECEx				
marking		-	CE 0637 Ex II3G II2D Ex nA nC ic IIC T4 Gc Ex tb IIIC T120 °C Db T_a -40...+60 °C	-
certification ATEX		-	IBExU11ATEX1015	-
certification IECEx		-	IECEx IBE 11.0008	-
• FM				
marking		-	-	G721**-F20*S2, G721**-F20*S3: FM APPROVED NI/Cl. I,II,III/Div. 2/ GP. A,B,C,D,E,F,G/ T5 G721**-F20*S1: FM APPROVED NI/Cl. I,II,III/Div. 2/ GP. A,B,C,D,E,F,G/ T4A

[1] with aperture calibration of the transducers

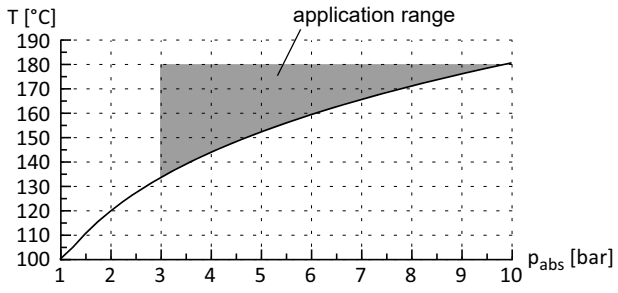
[2] test measurement to validate the application required in advance

		FLUXUS G722ST-NN0*A G722ST-NN0*S	FLUXUS G722ST-A20*A G722ST-A20*S	FLUXUS G722ST-F20*A G722ST-F20*S
measuring functions				
physical quantities		operating volumetric flow rate, mass flow rate, flow velocity		
totaliser		volume, mass		
calculation functions		average, difference, sum (2 measuring channels necessary)		
diagnostic functions		sound speed, signal amplitude, SNR, SCNR, standard deviation of amplitudes and transit times		
communication interfaces				
service interfaces		measured value transmission, parametrisation of the transmitter: • USB • LAN		
process interfaces		max. 1 option: • RS485 (ASCII sender) • Modbus RTU • BACnet MS/TP • Profibus PA • FF H1 • Modbus TCP • BACnet IP		
accessories				
data transmission kit		USB cable		
software		• FluxDiagReader: reading of measured values and parameters, graphical presentation • FluxDiag (optional): reading of measurement data, graphical presentation, report generation, parametrisation of the transmitter		
data logger				
loggable values		all physical quantities, totalised physical quantities and diagnostic values		
capacity		max. 800 000 measured values		
outputs				
		The outputs are galvanically isolated from the transmitter.		
• switchable current output				
		All switchable current outputs are jointly switched to active or passive.		
number		2 (1 measuring channel), optional: 4 (2 measuring channels)		
range	mA	4...20 (3.2...22)		
accuracy		0.04 % MV ±3 µA		
active output		R_{ext} < 350 Ω		
passive output		U_{ext} = 8...30 V, depending on R_{ext} (R_{ext} < 1 kΩ at 30 V)		
• digital output				
functions		• frequency output • binary output • pulse output		
number		3		
operating parameters		5...30 V/< 100 mA		
frequency output				
• range	kHz	0...5		
binary output				
• binary output as alarm output		limit, change of flow direction or error		
pulse output				
• functions		mainly for totalising		
• pulse value	units	0.01...1000		
• pulse width	ms	0.05...1000		
inputs				
		The inputs are galvanically isolated from the transmitter.		
• temperature input				
number		1 (1 measuring channel), optional: 2 (2 measuring channels)		
type		Pt100/Pt1000		
connection		4-wire		
range	°C	-150...+560		
resolution	K	0.01		
accuracy		±0.01 % MV ±0.03 K		
• current input				
number		1 (1 measuring channel), optional: 2 (2 measuring channels)		
accuracy		0.1 % MV ±10 µA		
active input		U_{int} = 24 V, R_{int} = 50 Ω, P_{int} < 0.5 W, not short-circuit proof		
• range	mA	0...20		
passive input		R_{int} = 50 Ω, P_{int} < 0.3 W		
• range	mA	-20...+20		

[1] with aperture calibration of the transducers

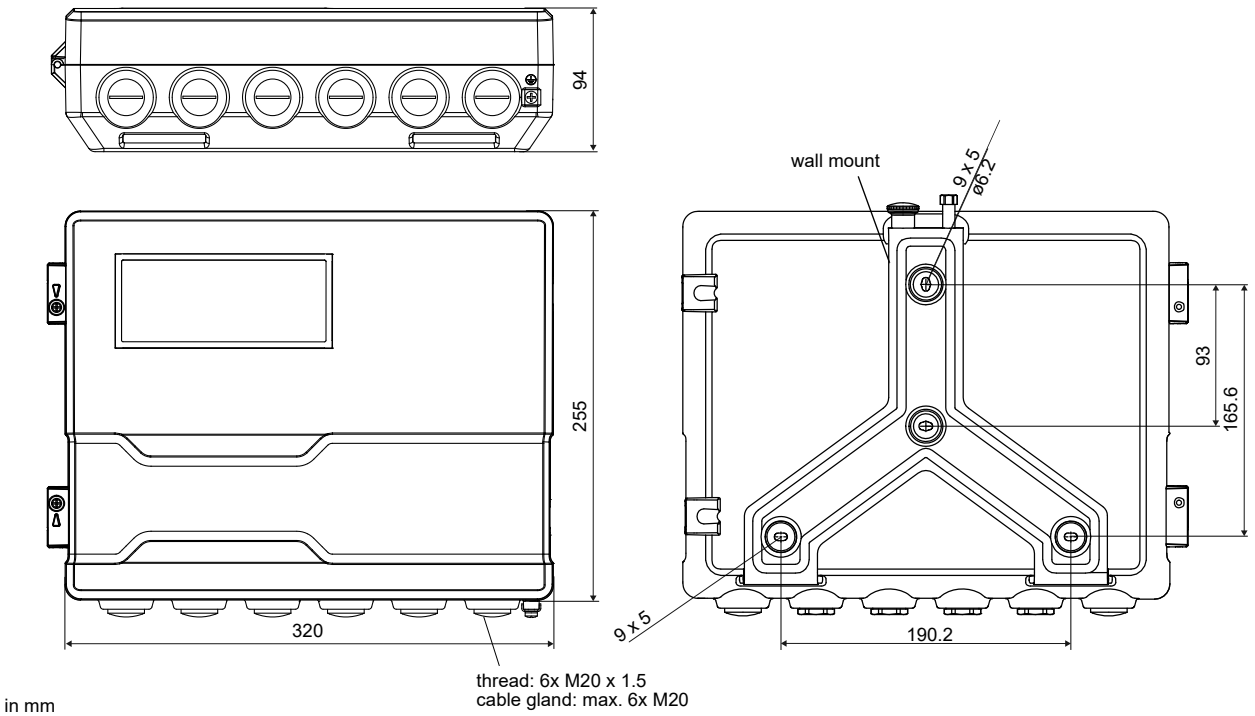
[2] test measurement to validate the application required in advance

Saturated steam pressure curve



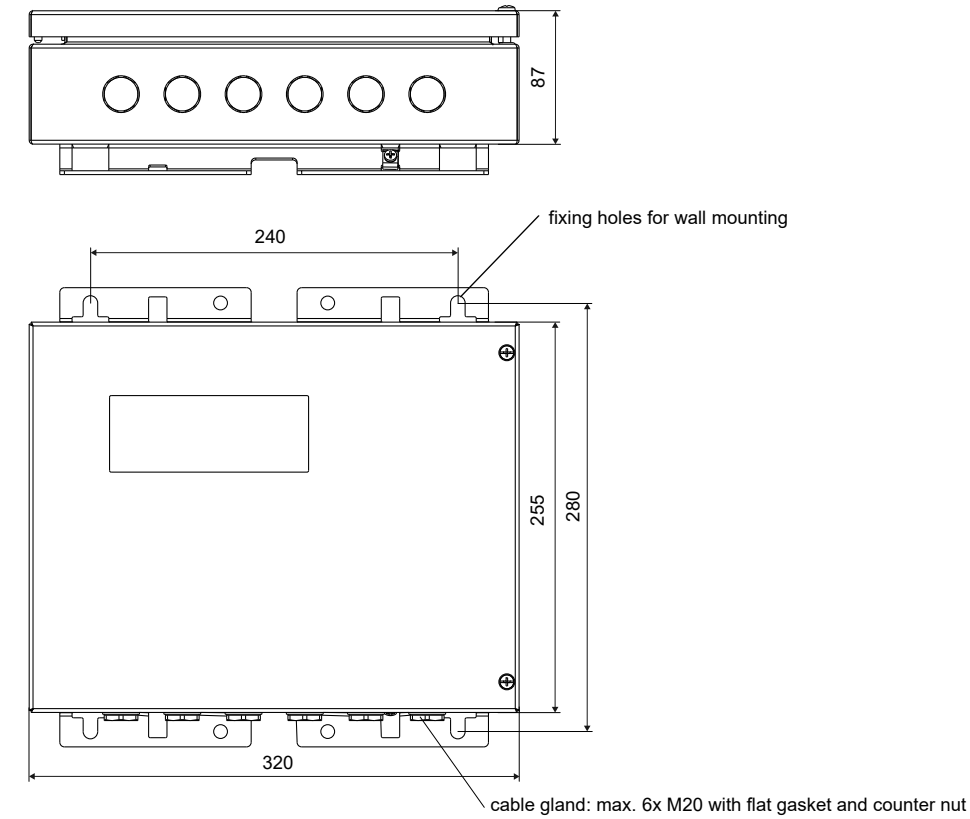
Dimensions

72-****A**



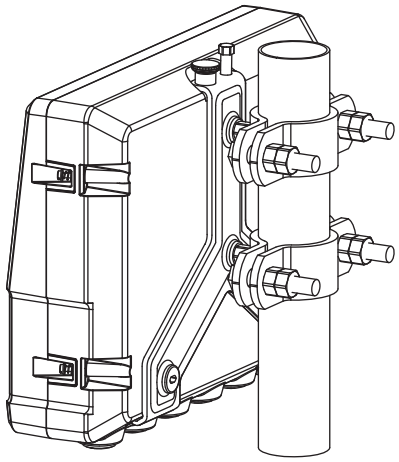
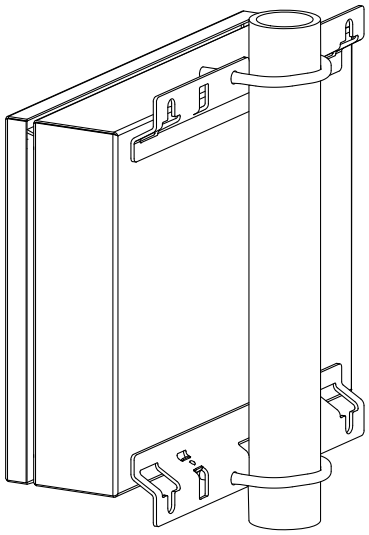
in mm

72-****S**

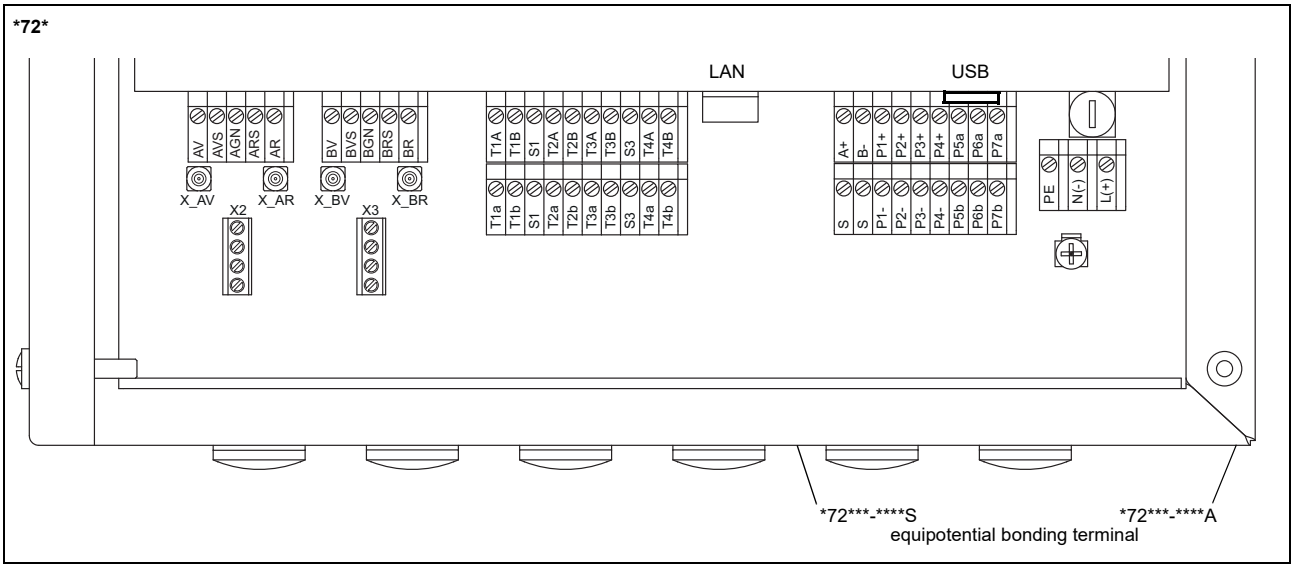


in mm

2" pipe mounting kit

72-****A** 	order code: ACC-PE-*721-/PMK4
72-****S** 	order code: ACC-PE-*721-/PMK6

Terminal assignment



power supply[1]		
terminal	**connection (AC)**	**connection (DC)**
PE	earth	earth
N(-)	neutral	-
L(+)	phase	+

transducers

transducer cable (transducers *****8*), extension cable					transducer cable (transducers *****52)		
measuring channel A		**measuring channel B**			**measuring channel A**	**measuring channel B**	
terminal	**connection**	**terminal**	**connection**	**transducer**	**terminal**		**connection**
AV	signal	BV	signal		X_AV	X_BV	SMB connector
AVS	shield	BVS	shield				
ARS	shield	BRS	shield		X_AR	X_BR	SMB connector
AR	signal	BR	signal				

outputs[1]

terminal	**connection**
P1+...P4+ P1-...P4-	current output
P5a...P7a P5b...P7b	digital output

terminal	**connection**	**communication interface**
A+	signal +	• RS485[1] • Modbus RTU[1] • BACnet MS/TP[1] • Profibus PA[1] • FF H1[1]
B-	signal -	
101	shield	
USB	type B Hi-Speed USB 2.0 Device	• service (FluxDiag/ FluxDiagReader)
LAN	RJ45 10/100 Mbps Ethernet	• service (FluxDiag/ FluxDiagReader) • BACnet IP • Modbus TCP

analog inputs[1]

	temperature probe		**passive sensor**	**active sensor**
terminal	**direct connection**	**connection with extension cable**	**connection**	**connection**
T1a...T2a	red	red	not connected	not connected
T1A...T2A	red/blue	grey	-	+
T1b...T2b	white/blue	blue	+	not connected
T1B...T2B	white	white	not connected	-
S1, S3	shield	shield	not connected	not connected

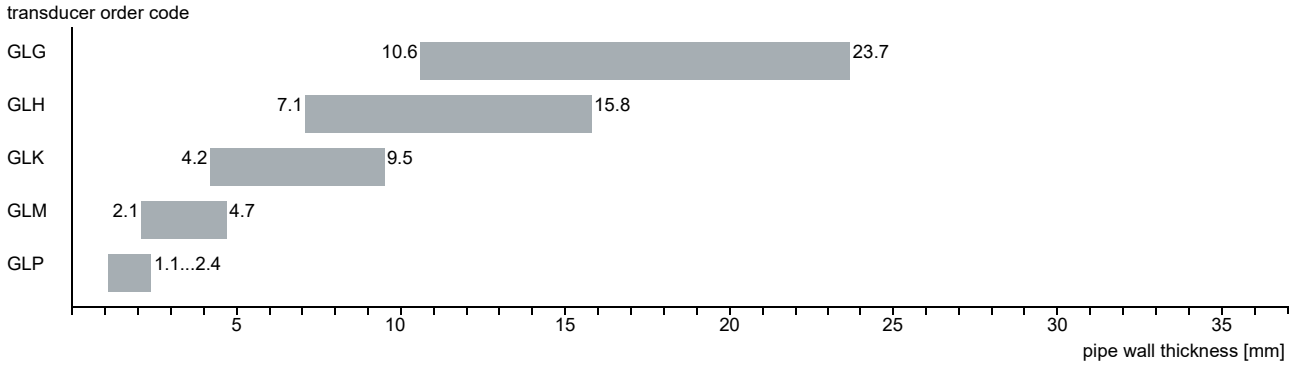
[1] cable (by customer):
- e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm^2
- outer diameter of the cable (*72***-****S with ferrite nut): max. 7.6 mm

Transducers

Transducer selection

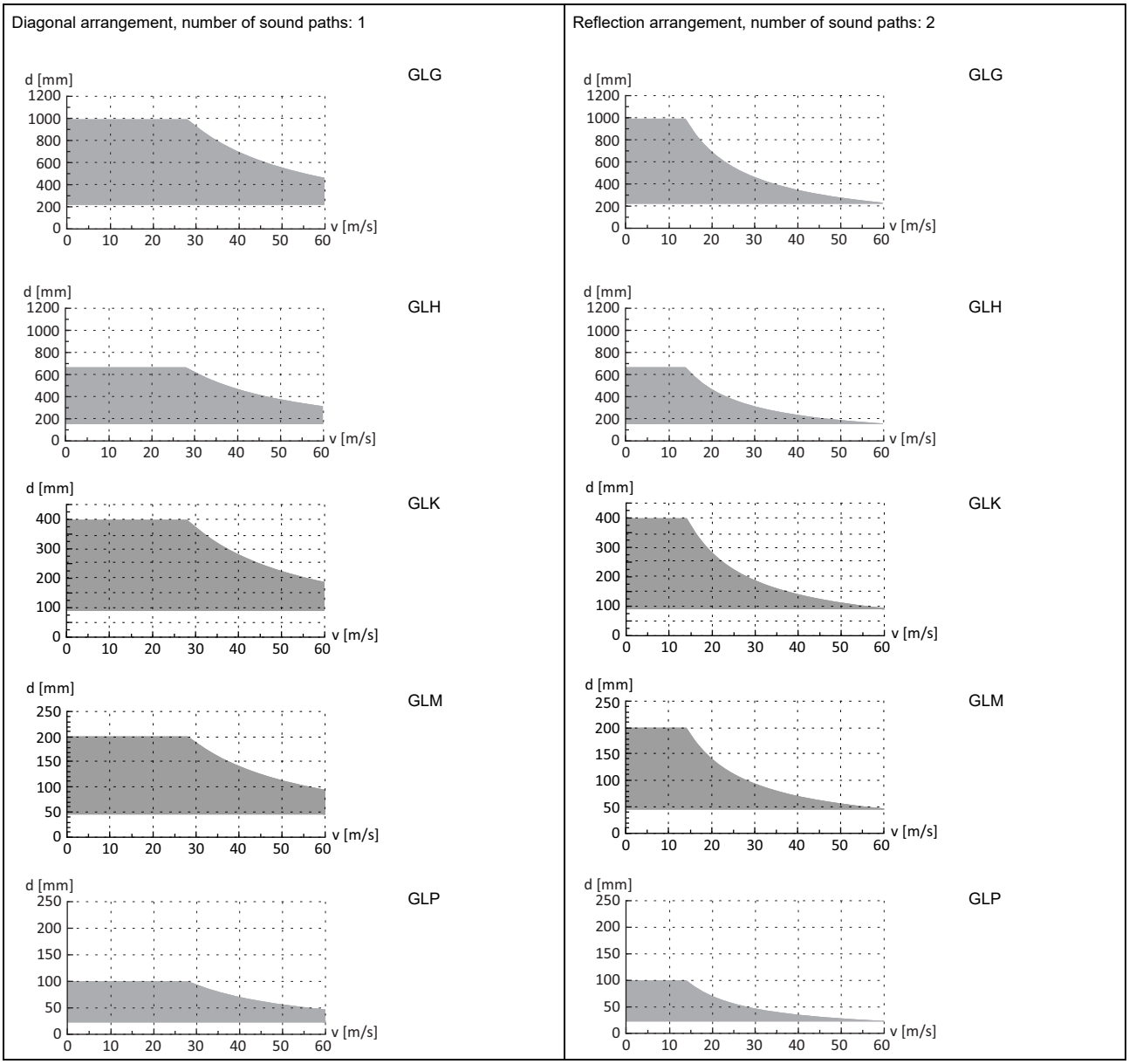
Step 1

pipe wall thickness



Step 2

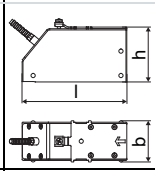
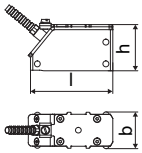
inner pipe diameter d dependent on the flow velocity v of the fluid in the pipe



inner pipe diameter and max. flow velocity for a steam application

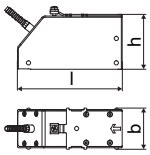
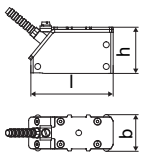
Technical data

Lamb wave transducers (zone 2 - FM Class I Div. 2 - nonEx, steam measurement, TS)

order code		GLG-S**TS/**	GLH-S**TS/**	GLK-S**TS/**	GLM-S**TS/**	GLP-SNNTS/**
technical type		G(RT)G1S52	G(RT)H1S52	G(RT)K1S52	G(RT)M1S52	G(RT)P1S52
transducer frequency	MHz	0.2	0.3	0.5	1	2
fluid pressure		see saturated steam pressure curve				
inner pipe diameter d						
min.	mm	225	150	90	45	23
max.	mm	1000	667	400	200	100
pipe wall thickness						
min.	mm	10.6	7.1	4.2	2.1	1.1
max.	mm	23.7	15.8	9.5	4.7	2.4
material						
housing		PPSU with stainless steel cover 316Ti (1.4571)				
contact surface		PPSU				
degree of protection		IP65				
transducer cable						
type		1699				
length	m	5			4	
length (***-*****/LC)	m	9			9	
dimensions						
length l	mm	128.5			74	
width b	mm	51			32	
height h	mm	67.5			40.5	
dimensional drawing						
weight (without cable)	kg	0.8			0.16	
storing temperature						
min.	°C	-40				
max.	°C	+180				
operating temperature[1]						
min.	°C	100				
max.	°C	180				
warm-up time	h	3			1	
temperature compensation		x				
explosion protection						
• **ATEX/IECEx**						
order code		GLG-SA2TS/**	GLH-SA2TS/**	GLK-SA2TS/**	GLM-SA2TS/**	-
pipe surface temperature (Ex)						
• min.	°C	-50				-
• max.	°C	gas: +165, dust: +155				-
marking		CE 0637 Ex II3G II2D Ex nA IIC T6...T3 Gc Ex tb IIIC T80 °C...T160 °C Db				-
certification ATEX		IBExU10ATEX1163 X				-
certification IECEx		IECEx IBE 12.0005X				-
• **FM**						
order code		GLG-SF2TS/**	GLH-SF2TS/**	GLK-SF2TS/**	GLM-SF2TS/**	-
pipe surface temperature (Ex)						
• min.	°C	-40				-
• max.	°C	+165				-
degree of protection		IP66				-
marking		FM APPROVED NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ Temp. Codes dwg 3860				-

completely thermically insulated transducer installation necessary

Lamb wave transducers (zone 1, steam measurement, TS)

order code		GLG-SA1TS/**	GLH-SA1TS/**	GLK-SA1TS/**	GLM-SA1TS/**
technical type		G(RT)G1S83	G(RT)H1S83	G(RT)K1S83	G(RT)M1S83
transducer frequency	MHz	0.2	0.3	0.5	1
fluid pressure		see saturated steam pressure curve			
inner pipe diameter d					
min.	mm	225	150	90	45
max.	mm	1000	667	400	200
pipe wall thickness					
min.	mm	10.6	7.1	4.2	2.1
max.	mm	23.7	15.8	9.5	4.7
material					
housing		PPSU with stainless steel cover 316Ti (1.4571)			
contact surface		PPSU			
degree of protection		IP65			
transducer cable					
type		1699			
length	m	5			4
length (***-*****/LC)	m	9			9
dimensions					
length l	mm	128.5			74
width b	mm	51			32
height h	mm	67.5			40.5
dimensional drawing					
weight (without cable)	kg	0.8			0.16
storing temperature					
min.	°C	-40			
max.	°C	+180			
operating temperature[1]					
min.	°C	100			
max.	°C	155			
warm-up time	h	3			1
temperature compensation		x			
explosion protection					
• **ATEX/IECEx**					
order code		GLG-SA1TS/**	GLH-SA1TS/**	GLK-SA1TS/**	GLM-SA1TS/**
pipe surface temperature (Ex)					
• min.	°C	-50			
• max.	°C	+155			
marking		CE 0637 Ex II2G II2D Ex q IIC T6...T3 Gb Ex tb IIIC T80 °C...T160 °C Db			
certification ATEX		IBExU07ATEX1168 X			
certification IECEx		IECEx IBE 08.0007X			

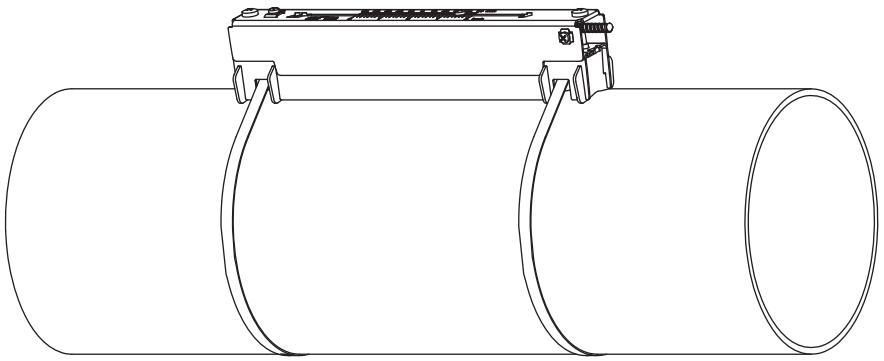
completely thermically insulated transducer installation necessary

Transducer mounting fixture

Order code

1, 2	3		4	5		6	7...9			no. of character
transducer mounting fixture	**transducer**	**-**	**measurement arrangement**	**size**	**-**	**fixation**	**outer pipe diameter**	**/**	**option**	**description**
VL										Variofix L
	K									transducers with transducer frequency G, H, K
	M									transducers with transducer frequency M, P
			D							reflection arrangement or diagonal arrangement
			R							reflection arrangement
				S						small
						B				bolts
						S				tension straps
						W				welding
							T36			40...360 mm
							013			10...130 mm
							036			130...360 mm
							092			360...920 mm
							200			920...2000 mm
							450			2000...4500 mm
									OS	housing with stainless steel 316
									Z	special design

Variofix L (VLK, VLM)



material: stainless steel 304 (1.4301), 301 (1.4310), 410 (1.4006)
option OS: 316Ti (1.4571), 316L (1.4404), 17-7PH (1.4568)

inner length:
VLK: 348 mm,
VLM: 234 mm

dimensions:
VLK: 423 x 90 x 93 mm
VLM: 309 x 57 x 63 mm

Coupling materials for transducers

type	ambient temperature °C
coupling foil type VT[1]	-10...+200
coupling compound type E[2]	-30...+200

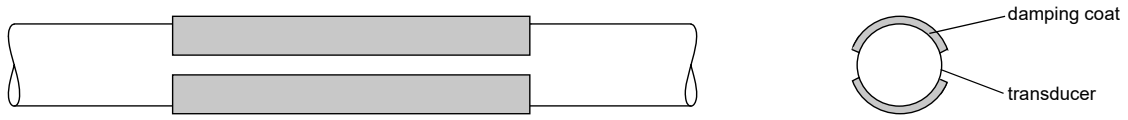
[1] fluid temperature 200 °C: min. 2 years

[2] in combination with type VT only

Damping coat

The damping coat will be used to reduce acoustic noise influences on the measurement.

Example (diagonal arrangement)



Technical data

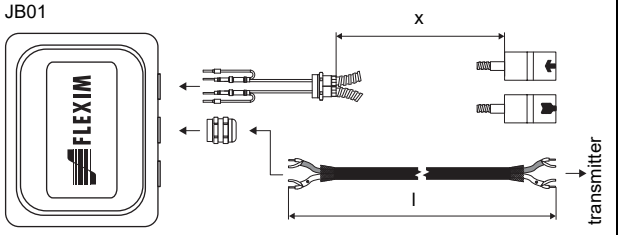
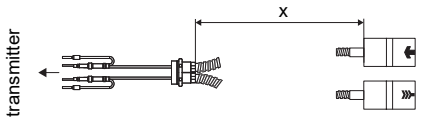
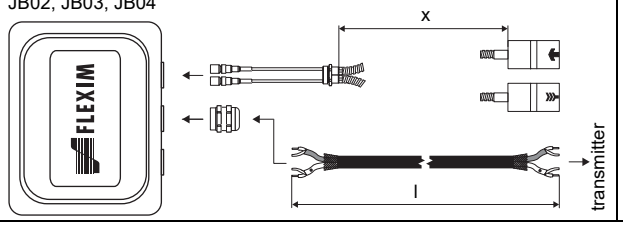
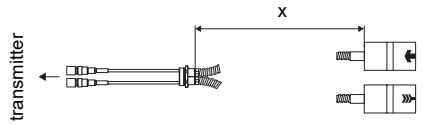
order code		ACC-PE-GNNN-/DPL1
material		multipolymeric matrix/inorganic ceramic coating
packing drum	l	1
properties		heat resistant, inert
fluid temperature when applying	°C	10...200
drying time (example)		approx. 3 h at 20 °C approx. 15 min at 150 °C
temperature resistance in dry state	°C	max. 650
durability of the packing drum (unopened)		2 years

Observe installation instructions (TI_DampingCoat).

Dimensioning

transducer frequency	**number of packing drums**		
	outer pipe diameter		
	≤300	≤500	≤700
	mm		
G	2	3	4
H	2	2	3
K	2	2	-
M	2	-	-
P	1	-	-

Connection systems

connection system TS		
connection with extension cable	direct connection	transducers technical type
JB01 		*****8*
JB02, JB03, JB04 		*****52

Cable

transducer cable		
type		**1699**
weight	kg/m	0.094
ambient temperature	°C	-55...+200
cable jacket		
material		PTFE
outer diameter	mm	2.9
thickness	mm	0.3
colour		brown
shield		x
sheath		
material		stainless steel 316Ti (1.4571)
outer diameter	mm	8

extension cable			
type		**2615**	**5245**
order code		ACC-PE- GNNN-/EXEXXXX	ACC-PE- GNNN-/EXA1XXX
weight	kg/m	0.18	0.38
ambient temperature	°C	-30...+70	-30...+70
properties		halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2	halogen free fire propagation test according to IEC 60332-1 combustion test according to IEC 60754-2
cable jacket			
material		PUR	PUR
outer diameter	mm	max. 12	max. 12
thickness	mm	2	2
colour		black	black
shield		x	x
sheath			
material		-	steel wire braid with copolymer sheath
outer diameter	mm	-	max. 15.5

XXX - cable length in m

Cable length

transducer frequency		**G, H, K**		**M, P**	
transducers technical type		x	l	x	l
*R***8*		5	≤ 300	4	≤ 300
option LC: *T***8*		9	≤ 300	9	≤ 300
*R***5*	m	5	≤ 300	4	≤ 300
option LC: *T***5*	m	9	≤ 300	9	≤ 300

x - transducer cable length

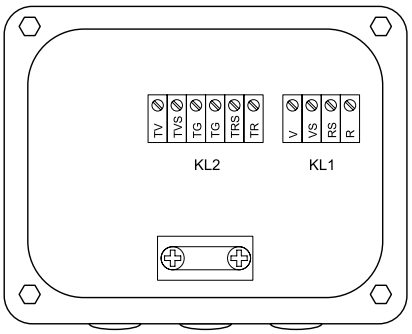
l - max. length of extension cable (depending on the application)

Junction box

Technical data

JB01S4E3M		
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
explosion protection		
• ATEX/IECEx		
marking		CE 0637 Ex II2G II2D Ex eb mb IIC T6...T4 Gb Ex tb IIIC T100 °C Db Ta -40...+70/80 °C
certification ATEX		IBExU06ATEX1161
certification IECEx		IECEx IBE 08.0006
type of protection		gas: increased safety decoupled network: encapsulation dust: protection by enclosure

Connection



Transducers

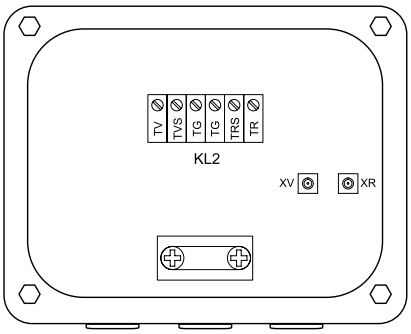
terminal strip	terminal	connection	transducer
KL1	V	signal	
	VS	internal shield	
	RS	internal shield	
	R	signal	

Extension cable

terminal strip	terminal	connection
KL2	TV	signal
	TVS	internal shield
	TRS	internal shield
	TR	signal

JB02, JB03, JB04		
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
explosion protection		
• ATEX		
junction box		JB02
marking		CE Ex II3G Ex nA IIC (T6)...T4 Gc II3D Ex tc IIIC T 100 °C Dc Ta -40...+(70)80 °C
• FM		
junction box		JB04
marking		FM APPROVED NI/Cl. I,II,III/Div. 2 / GP A,B,C,D,E,F,G/ T6 Ta = -40...+60 °C

Connection



Transducers

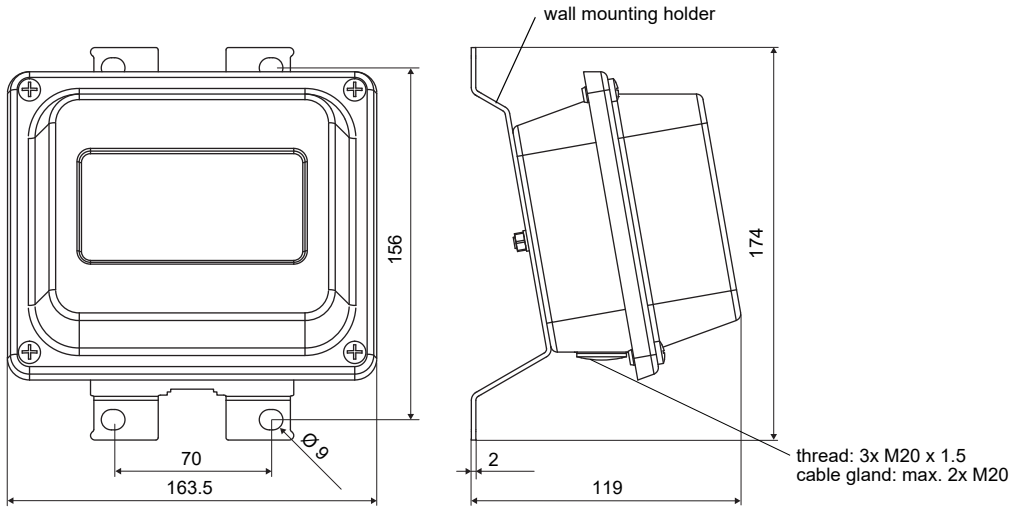
	terminal	connection	transducer
	XV	SMB connector	
	XR	SMB connector	

Extension cable

terminal strip	terminal	connection
KL2	TV	signal
	TVS	internal shield
	TRS	internal shield
	TR	signal

Dimensions

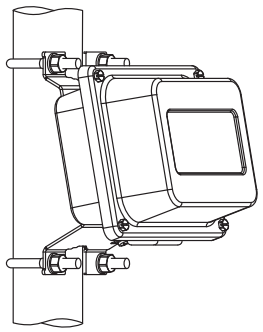
JB0*, JBP*



in mm

2" pipe mounting kit

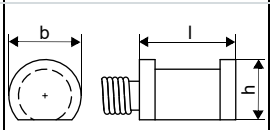
JB**



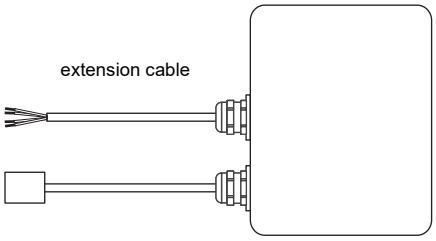
order code:
ACC-PE-GNNN-/JBPMK4

Clamp-on temperature probe (optional)

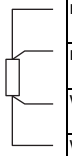
Technical data

PT12N, PT12N-LC		
order code		**PT12N:** • ACC-PE-GNNN-/T312 • ACC-PE-GNNN-/T512 (matched) **PT12N-LC:** • ACC-PE-GNNN-/T313 • ACC-PE-GNNN-/T513 (matched)
design		clamp-on option: with long cable
type		Pt100
connection		4-wire
measuring range	°C	-30...+250
accuracy T		±(0.15 °C + 2 · 10^{-3} · |T [°C]|) class A
accuracy ΔT (2x Pt matched according to EN 1434-1)		≤ 0.1 K (3 K < ΔT < 6 K), more corresponding to EN 1434-1
response time	s	50
housing		aluminum
degree of protection		IP54
dimensions		
length l	mm	20
width b	mm	15
height h	mm	13
dimensional drawing		
weight	kg	0.25
accessories		
thermal conductivity foil 250 °C		x

Connection system

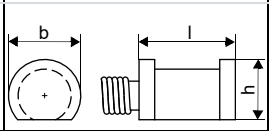
connection with extension cable	direct connection
	

Connection

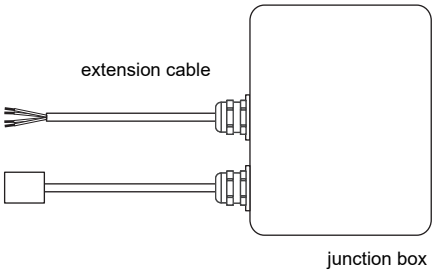
	temperature probe
	red
	red/blue
	white/blue
	white

Cable

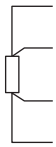
		PT12N	PT12N-LC	extension cable
type		4 x 0.22 mm²		LIYCY 8 x 0.14 mm² grey
standard length	m	3	15	5/10/25
max. length	m	-		200
ambient temperature	°C	-90...+200		-25...+80
min. bend radius	mm	27		68
cable jacket				
material		PFA		PVC
outer diameter	mm	3.8 ±0.15		4.8 ±2
colour		black		grey

PT12N		
order code		• ACC-PE-GNNN-/T322 • ACC-PE-GNNN-/T522 (matched)
design		clamp-on ATEX
type		Pt100
connection		4-wire
measuring range	°C	-30...+250
accuracy T		±(0.15 °C + 2 · 10^{-3} · |T [°C]|) class A
accuracy ΔT (2x Pt matched according to EN 1434-1)		≤ 0.1 K (3 K < ΔT < 6 K), more corresponding to EN 1434-1
response time	s	50
housing		aluminum
degree of protection		IP67
dimensions		
length l	mm	20
width b	mm	15
height h	mm	13
dimensional drawing		
weight	kg	0.25
accessories		
thermal conductivity foil 250 °C		x
explosion protection		
• **ATEX**		
marking		CE Ex II3G Ex nA IIC T6...T2 Gc Ta -30...+250 °C

Connection system

connection with extension cable	direct connection
	

Connection

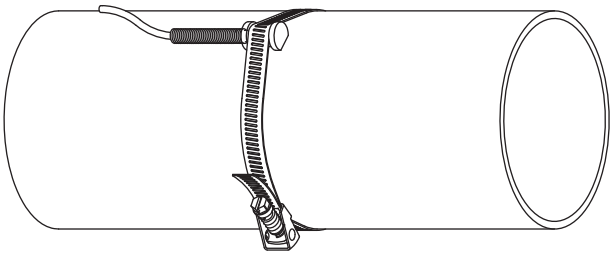
	temperature probe
	red
	red/blue
	white
	white/blue

Cable

		temperature probe	extension cable
type		4 x 0.25 mm²	LIYCY 8 x 0.14 mm²
standard length	m	3	5/10/25
max. length	m	-	200
ambient temperature	°C	-30...+250	-25...+80
min. bend radius	mm	19	68
cable jacket			
material		PTFE	PVC
outer diameter	mm	3.8	4.8 ±2
colour		black	grey

Fixation

tension strap PT12N



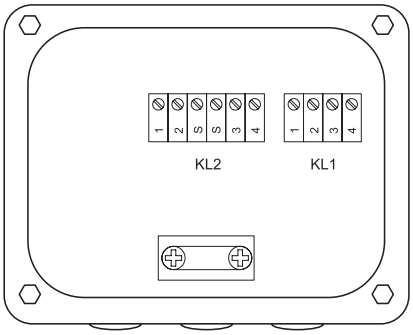
material: stainless steel 301 (1.4310), 410 (1.4006)

thermal insulation necessary

Junction box

JBT2, JBT3		
order code		• JBT2: ACC-PE-GNNN-/JB4 • JBT3: ACC-PE-GNNN-/JB6
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
explosion protection		
• **ATEX**		
junction box		JBT2
marking		CE Ex II3G Ex nA IIC (T6)...T4 Gc II3D Ex tc IIIC T 100 °C Dc Ta -40...+(70)80 °C

Connection



Temperature probe

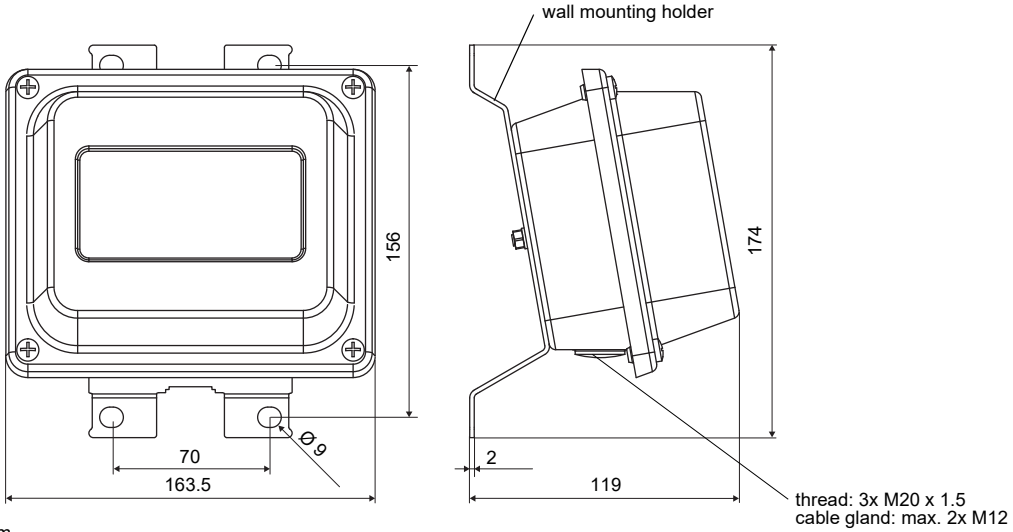
terminal strip	terminal	connection
KL1	1	red
	2	red/blue
	3	white
	4	white/blue

Extension cable

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

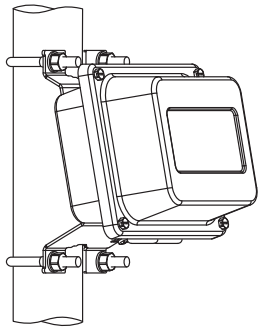
Dimensions

JBT*



in mm

2" pipe mounting kit

JB** 	order code: ACC-PE-GNNN-/JBPMK4

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