FLEXIM

Technical specification

FLUXUS G721CA

Stationary ultrasonic clamp-on system for flow measurement of compressed air and other industrial gases

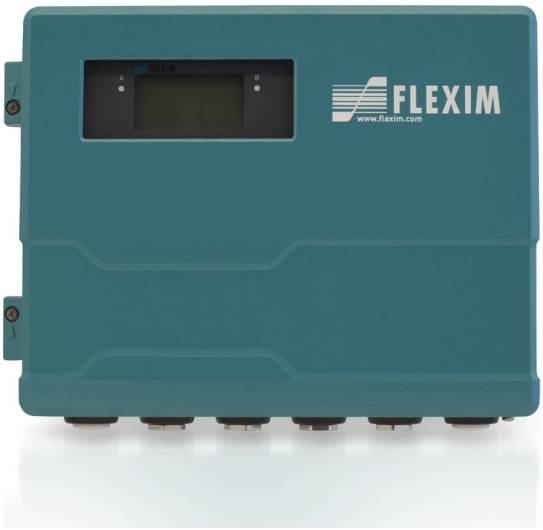
Transmitter for permanent outdoor wall or pipe mounting

Features

- Accurate and reliable flow measurement
- Bidirectional measurement for flow direction detection in compressed-air networks
- Installation and start-up do not require any pipe work nor any process interruptions
- Measurement unaffected by gas density, viscosity, dust content and humidity
- Measurement at extremely low pressure:
  - min. 3 bar(a) in metal pipes
  - 1 bar(a) in plastic pipes
- Extremely high turndown ratio > 1000:1
- High measuring accuracy, even at low flow velocities down to 0.01 m/s
  - Monitoring of small flows (e.g. during the night)
  - Leakage detection
- For pipe diameters of DN 15...DN 250
- Maintenance-free acoustic coupling using permanent coupling material
- Support of numerous fieldbus systems
- ATEX, IECEx, FM Class I Div. 2 approved transducers for hazardous areas available

Applications

- Industrial manufacturing facilities:
  - Air compressors and compressed-air distribution networks
  - Pressure generators and distribution networks for inert or purge gases
  - Pressure generators and distribution networks for oxygen, e.g. for steel production
- Measurement of atmospheric gases consumption: compressed air, nitrogen, oxygen, argon, helium



FLUXUS G721CA-****A

FLUXUS G721CA-****S

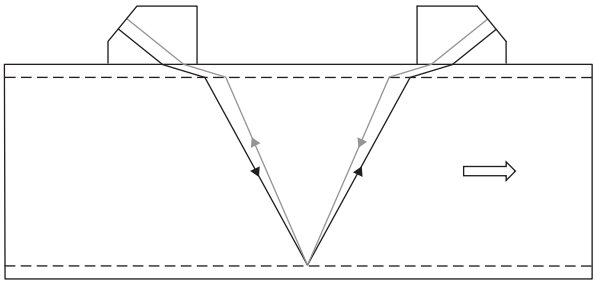
Variofix L

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

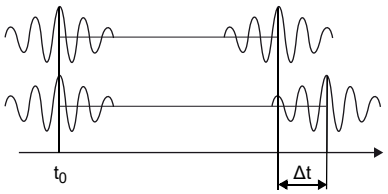


As the fluid where the ultrasound propagates is flowing, the transit time of the ultrasonic signal in flow direction is shorter than the one against the flow direction.

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 standard volumetric flow rate

The standard volumetric flow rate can be selected as physical quantity. It is calculated with the following formula:

$$\dot{V}_N = \dot{V} \cdot \frac{p}{p_N} \cdot \frac{T_N}{T} \cdot \frac{1}{K}$$

where

$\dot{V}_N$ - standard volumetric flow rate

$\dot{V}$ - operating volumetric flow rate

p_N - standard pressure (absolute value)

p - operating pressure (absolute value)

T_N - standard temperature in K

T - operating temperature in K

K compressibility coefficient of gas: ratio of the compressibility factors of the gas at operating conditions and at standard conditions Z/Z_N

The operational pressure p and the operational temperature T of the fluid will be entered directly as fixed values into the transmitter.

or:

If inputs are installed (optional), pressure and temperature can be measured by the customer and fed in the transmitter.

Number of sound paths

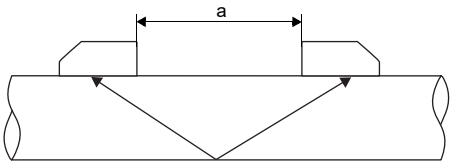
The number of sound paths is the number of transits of the ultrasonic signal through the fluid in the pipe. Depending on the number of sound paths, the following methods of installation exist:

- **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.

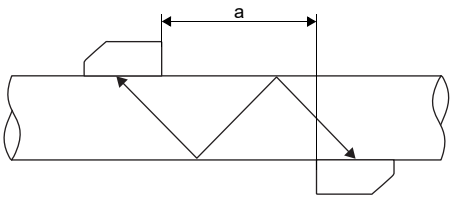
The preferred method of installation depends on the application. While increasing the number of sound paths increases the accuracy of the measurement, signal attenuation increases as well. The optimum number of sound paths for the parameters of the application will be determined automatically by the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

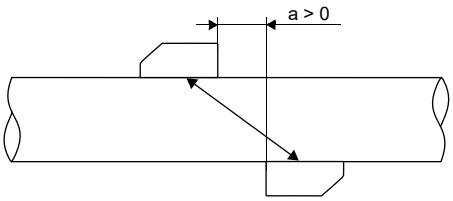
Reflection arrangement, number of sound paths: 2



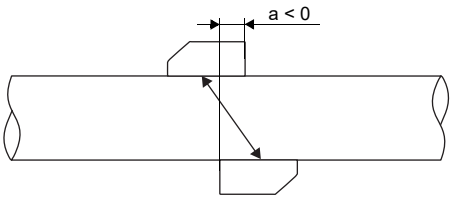
Diagonal arrangement, number of sound paths: 3



Diagonal arrangement, number of sound paths: 1



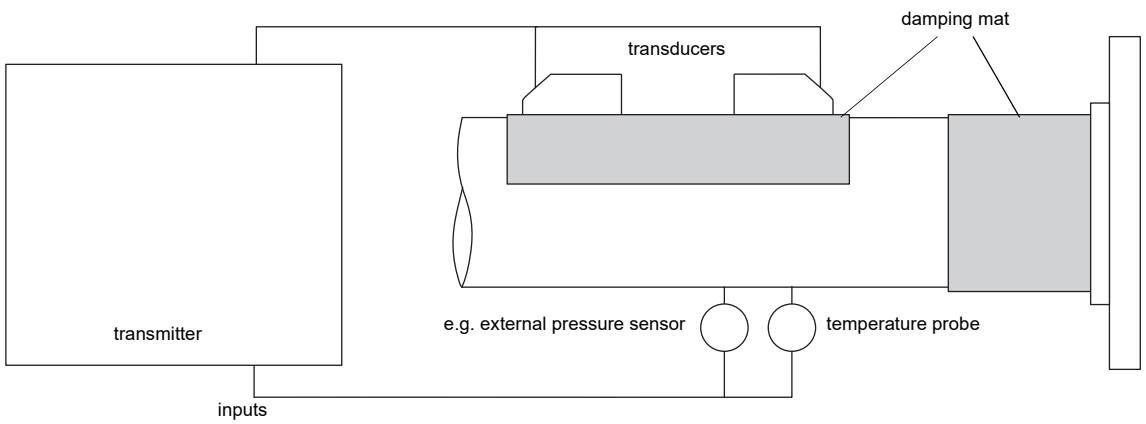
Diagonal arrangement, number of sound paths: 1, negative transducer distance



a - transducer distance

Typical measurement setup

Example of a reflection arrangement with connection of the inputs to an external process pressure and temperature measurement for standard volumetric flow rate calculation



Transmitter

Technical data

		FLUXUS G721CA-NN0*A G721CA-NN0*S	FLUXUS G721CA-A20*A G721CA-A20*S	FLUXUS G721CA-F20*A G721CA-F20*S
		 		
design		standard field device	standard field device zone 2	standard field device FM Class I Div. 2
application		flow measurement of compressed air and industrial gases		
measurement				
measurement principle		transit time difference correlation principle		
flow velocity	m/s	0.01...35, depending on pipe diameter		
repeatability		0.15 % MV ±0.005 m/s		
fluid		compressed air, oxygen, nitrogen, argon, helium		
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...2 % 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
measuring functions				
physical quantities		operating volumetric flow rate, standard 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		

[1] with aperture calibration of the transducers

[2] outside the explosive atmosphere (housing cover open)

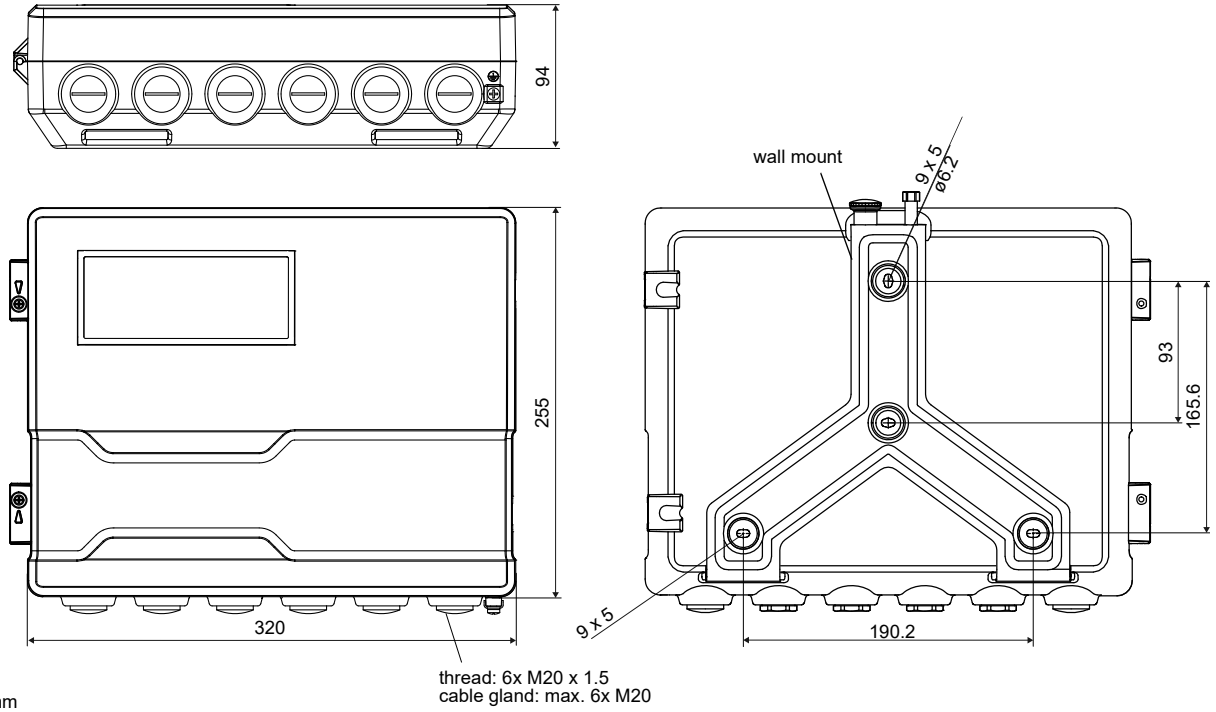
		FLUXUS G721CA-NN0*A G721CA-NN0*S	FLUXUS G721CA-A20*A G721CA-A20*S	FLUXUS G721CA-F20*A G721CA-F20*S
communication interfaces				
service interfaces		measured value transmission, parametrisation of the transmitter: • USB[2] • LAN[2]		
process interfaces		max. 1 option: • RS485 (ASCII sender) • Modbus RTU • BACnet MS/TP • M-Bus • Profibus PA • FF H1 • Modbus TCP • BACnet IP	max. 1 option: • RS485 (ASCII sender) • Modbus RTU • BACnet MS/TP • Profibus PA • FF H1 • Modbus TCP • BACnet IP	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 or 4		
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)		
• binary output				
number		3		
optorelay		26 V/100 mA		
binary output as alarm output				
• functions		limit, change of flow direction or error		
binary output as pulse output				
• functions		mainly for totalising		
• pulse value	units	0.01...1000		
• pulse width	ms	optorelay: 1...1000		
inputs				
		The inputs are galvanically isolated from the transmitter.		
• temperature input				
number		1 (1 measuring channel), 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), 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] outside the explosive atmosphere (housing cover open)

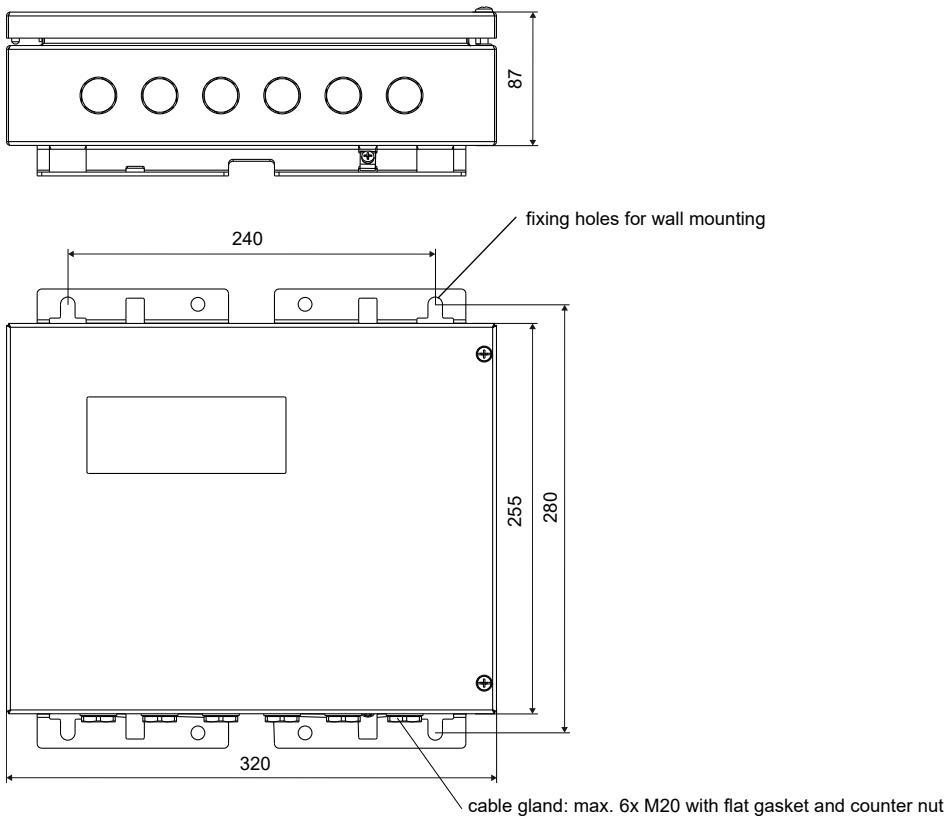
Dimensions

72-****A**



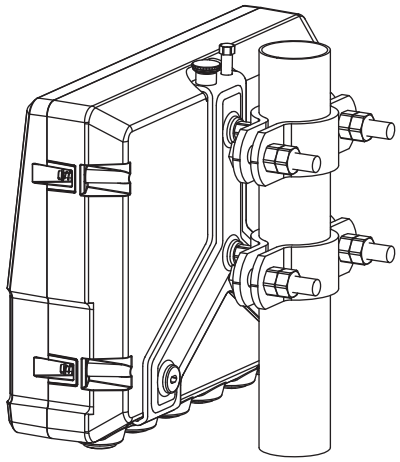
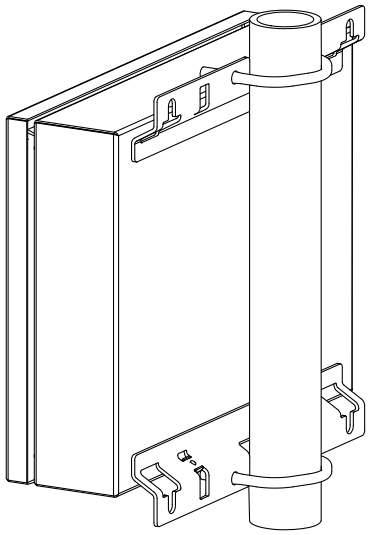
in mm

72-****S**

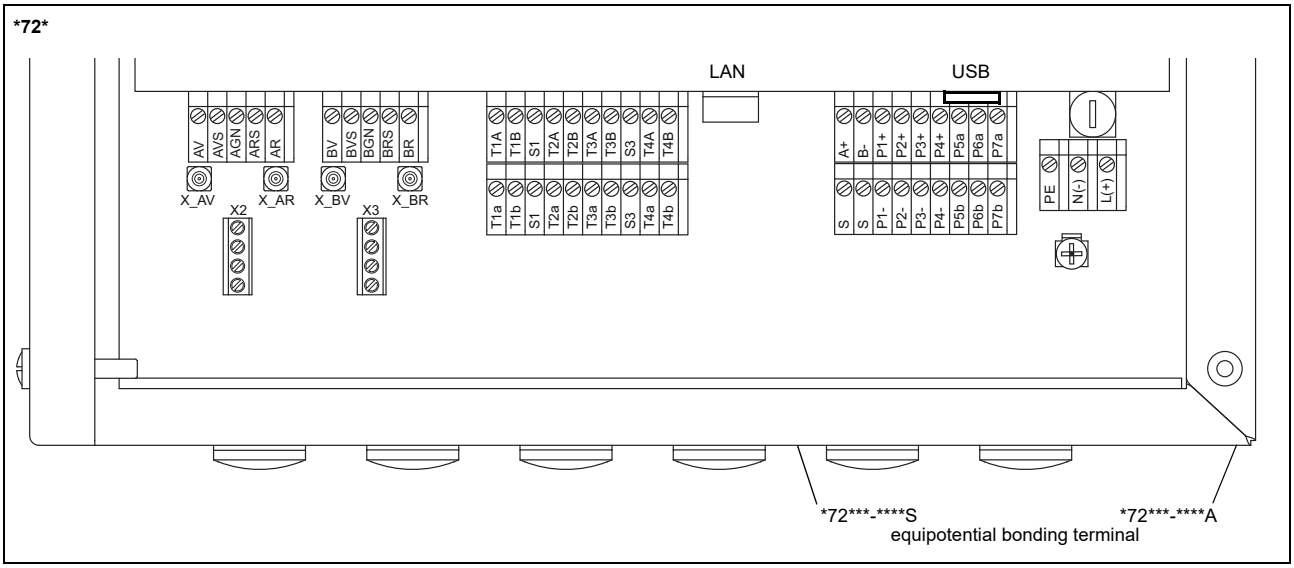


in mm

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

extension cable					transducer cable		
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	binary output

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

analog inputs[1, 2]

	temperature probe		**passive sensor**	**active sensor**
terminal	**direct connection**	**connection with extension cable**	**connection**	**connection**
T1a...T4a	red	red	not connected	not connected
T1A...T4A	red/blue	grey	-	+
T1b...T4b	white/blue	blue	+	not connected
T1B...T4B	white	white	not connected	-
S1, S3	shield	shield	not connected	not connected

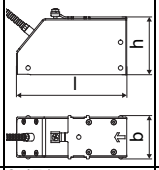
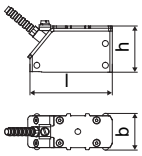
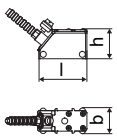
[1] cable (by customer):
- e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm^2
- outer diameter of the cable (*72***-****S with ferrite nut): max. 7.6 mm

[2] The number, type and terminal assignment are customised.

Transducers

Technical data

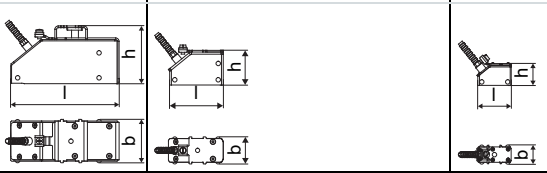
Lamb wave transducers

order code		GLK-N**TS/**	GLM-N**TS/**	GLP-N**TS/**	GLQ-N**TS/**
technical type		G(RT)K1N52	G(RT)M1N52	G(RT)P1N52	G(RT)Q1N52
transducer frequency	MHz	0.5	1	2	4
fluid pressure[1]					
min. extended	bar	metal pipe: 10 (d > 120 mm) 3 (d < 120 mm)	metal pipe: 3 (d < 60 mm)	metal pipe: 3 (d < 35 mm)	metal pipe: 3 (d < 15 mm)
min.	bar	metal pipe: 15 (d > 120 mm) 10 (d < 120 mm) plastic pipe: 1	metal pipe: 10 (d > 60 mm) 5 (d < 60 mm) plastic pipe: 1	metal pipe: 10 (d > 35 mm) 5 (d < 35 mm) plastic pipe: 1	metal pipe: 10 (d > 15 mm) 5 (d < 15 mm) plastic pipe: 1
inner pipe diameter d					
min. extended	mm	60	30	15	7
min. recommended	mm	80	40	20	10
max. recommended	mm	250	150	50	22
max. extended	mm	250	180	60	30
pipe wall thickness[2]					
min.	mm	5	2.5	1.2	0.6
max.	mm	10	5	3	1.2
material					
housing		PPSU with stainless steel cover 304 (1.4301)			
contact surface		PPSU			
degree of protection		IP67	IP65		
transducer cable					
type		1699			
length	m	5	4		3
length (***-*****/LC)	m	9			
dimensions					
length l	mm	128.5	74		42
width b	mm	51	32		22
height h	mm	67.5	40.5		25.5
dimensional drawing					
weight (without cable)	kg	0.471	0.077		0.019
pipe surface temperature					
min.	°C	-40			
max.	°C	+130			
ambient temperature					
min.	°C	-40			
max.	°C	+130			
temperature com-pensation		x			
explosion protection					
• **ATEX/IECEx**					
order code		GLK-NA2TS/**	GLM-NA2TS/**	GLP-NA2TS/**	GLQ-NA2TS/**
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		GLK-NF2TS/**	GLM-NF2TS/**	GLP-NF2TS/**	GLQ-NF2TS/**
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			

[1] depending on the application, typical absolute value for compressed air, nitrogen, argon

[2] typical values for steel, aluminum and titanium pipes, for other pipe materials please contact FLEXIM

Shear wave transducers (optional)

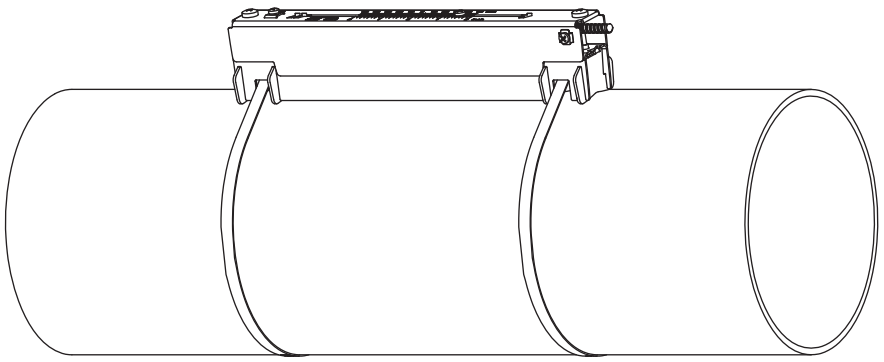
order code		GSK-N**TS/**	GSM-N**TS/**	GSP-N**TS/**	GSQ-N**TS/**
technical type		G(DL)K1N52	G(DL)M2N52	G(DL)P2N52	G(DL)Q2N52
transducer frequency	MHz	0.5	1	2	4
fluid pressure[1]					
min. extended	bar	metal pipe: 20			
min.	bar	metal pipe: 30, plastic pipe: 1			
inner pipe diameter d					
min. extended	mm	60	30	15	7
min. recommended	mm	80	40	20	10
max. recommended	mm	250	150	50	22
max. extended	mm	250	180	60	30
pipe wall thickness[2]					
min.	mm	5	2.5	1.2	0.6
material					
housing		PEEK with stainless steel cover 304 (1.4301)			
contact surface		PEEK			
degree of protection		IP67			
transducer cable					
type		1699			
length	m	5	4		3
length (***-*****/LC)	m	9			
dimensions					
length l	mm	126.5	64		40
width b	mm	51	32		22
height h	mm	67.5	40.5		25.5
dimensional drawing					
weight (without cable)	kg	0.36	0.066		0.016
pipe surface temperature					
min.	°C	-40			
max.	°C	+130			
ambient temperature					
min.	°C	-40			
max.	°C	+130			
temperature compensation		x			
explosion protection					
• ATEX/IECEx					
order code		GSK-NA2TS/**	GSM-NA2TS/**	GSP-NA2TS/**	GSQ-NA2TS/**
pipe surface temperature (Ex)					
• min.	°C	-55			
• max.	°C	gas: +190, dust: +180			
marking		CE 0637 Ex II3G II2D Ex nA IIC T6...T3 Gc Ex tb IIIC T80 °C...T185 °C Db			
certification ATEX		IBExU10ATEX1163 X			
certification IECEx		IECEx IBE 12.0005X			
• FM					
order code		GSK-NF2TS/**	GSM-NF2TS/**	GSP-NF2TS/**	GSQ-NF2TS/**
pipe surface temperature (Ex)					
• min.	°C	-40			
• max.	°C	+125	+190		
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			

[1] depending on the application, typical absolute value for compressed air, nitrogen, argon

[2] typical values for steel, aluminum and titanium pipes, for other pipe materials please contact FLEXIM

Transducer mounting fixture

Variofix L (VLK, VLM, VLQ)



material: stainless steel 304 (1.4301), 301 (1.4310), 410 (1.4006)
inner length:
VLK: 348 mm
VLM: 234 mm
VLQ: 176 mm

dimensions:
VLK: 423 x 90 x 93 mm
VLM: 309 x 57 x 63 mm
VLQ: 247 x 43 x 47 mm

Coupling materials for transducers

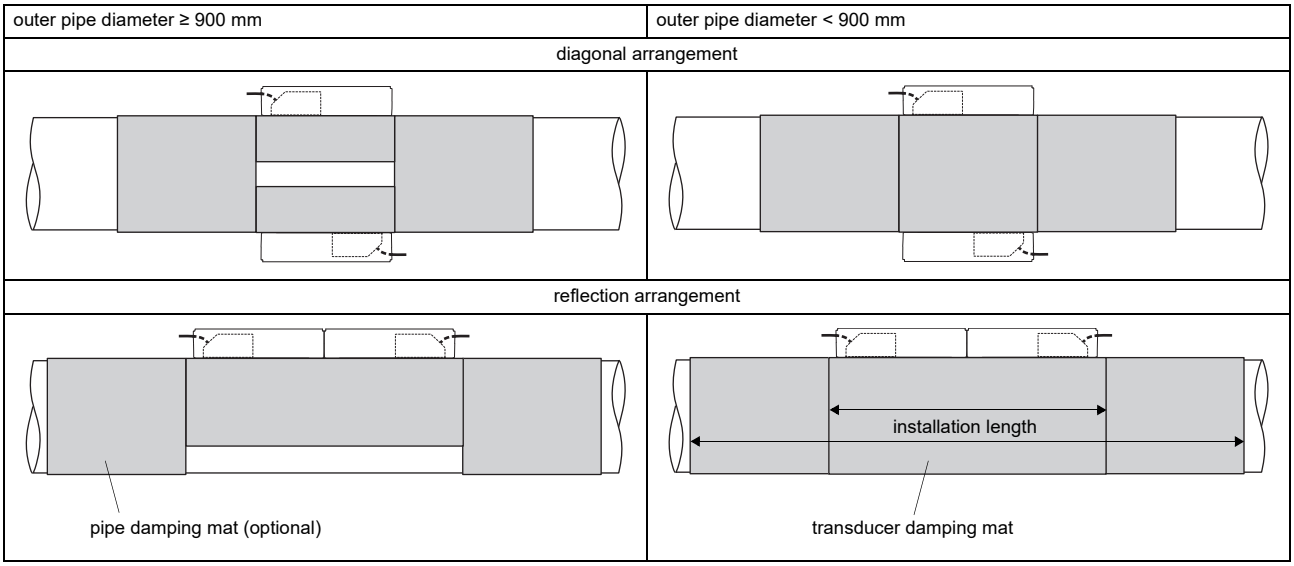
type	**ambient temperature** °C
coupling compound type N	-30...+130
coupling foil type VT	-10...+200

Damping mats (optional)

Damping mats will be used for the gas measurement to reduce acoustic noise influences on the measurement.

transducer damping mat
Transducer damping mats will be installed below the transducers.

pipe damping mat
Pipe damping mats will be installed if the sound propagation is disturbed at reflection points (e.g. flange, weld). Depending on the noise, the pipe damping mats will be installed at one or both sides of the transducer damping mat. If the local conditions are unknown, pipe damping mats should be installed.



Technical data

type		E30R4	E30R3
order code		ACC-PE-GNNN-/DPD2	ACC-PE-GNNN-/DPD1
width	mm	225	50
thickness	mm	0.7	
length (per roll)	m	10	
weight	kg/m²	1.015	
ambient temperature	°C	-30...+80	
properties		self-adhesive	

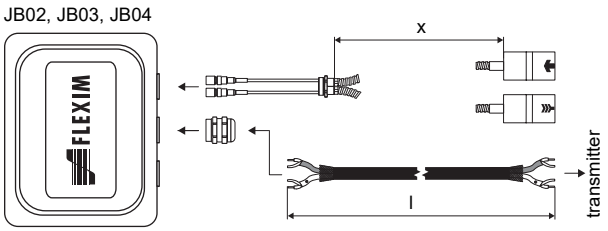
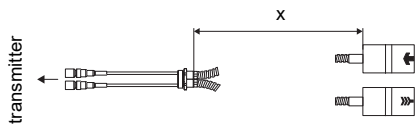
Dimensioning

transducer		damping mat							
transducer mounting fixture	order code	type	number of layers	transducer damping mat			transducer damping mat + 2x pipe damping mat		
				max. installation length	number of rolls[1]		max. installation length	number of rolls[1]	
				[mm]	standard[2]	extended[2]	[mm]	standard	extended
VarioFix L									
VLK	GLK	E30R4	1	890	1	1	1830	2	2
	GSK		1		1	1		2	2
VLM	GLM	E30R3	1	660	1	1	1360	2	2
	GSM		1		1	1		2	2
	GLP		1		1	1		1	1
	GSP		1		1	1		1	1

[1] calculation on the base of:
max. installation length (installation of one transducer mounting fixture per transducer in reflection arrangement) and
max. recommended pipe diameter (standard) or max. extended pipe diameter (extended)

[2] calculation of the number of rolls when both transducers are mounted in one transducer mounting fixture (reflection arrangement) or in diagonal arrangement: number of rolls/2 and round up to the nearest integer

Connection systems

connection system TS		
connection with extension cable	direct connection	transducers technical type
		*****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 304 (1.4301)
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		F, G, H, K		M, P		Q		S	
connection system TS									
transducers technical type		x	l	x	l	x	l	x	l
*(DR)***5*	m	5	≤ 300	4	≤ 300	3	≤ 90	2	≤ 40
option LC: *(LT)***5*	m	9	≤ 300	9	≤ 300	9	≤ 90	-	≤ 40

x - transducer cable length

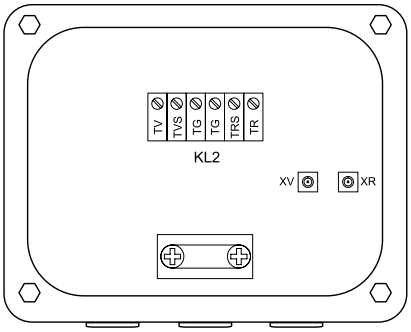
l - max. length of extension cable (depending on the application)

Junction box

Technical data

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

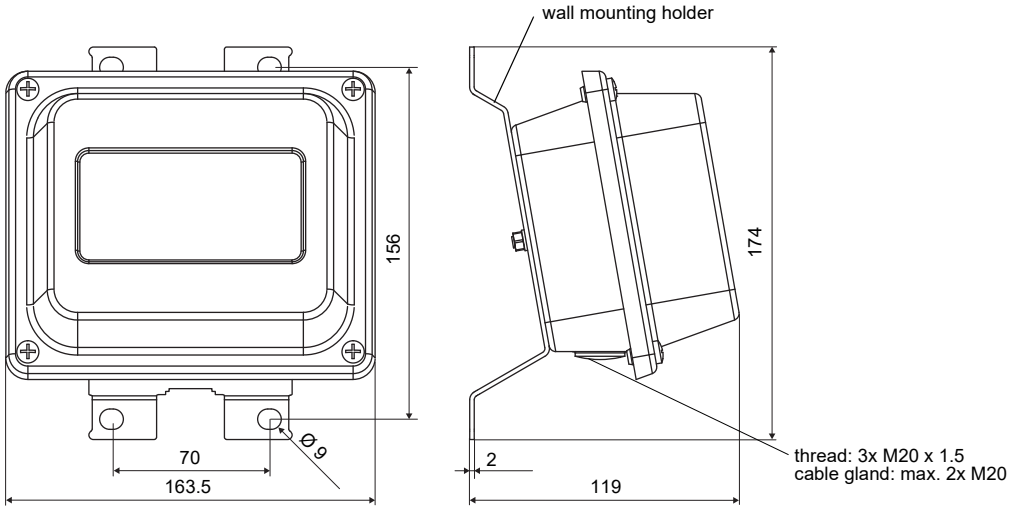
	terminal	connection	transducer
	XV	SMB connector	
	XR	SMB connector	

Extension cable

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

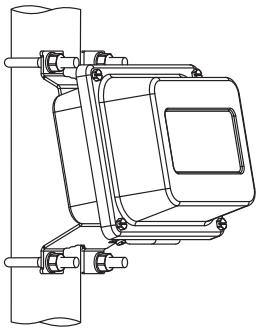
Dimensions

JB0*, JBP*



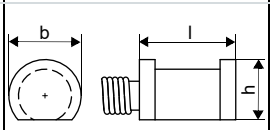
in mm

2" pipe mounting kit

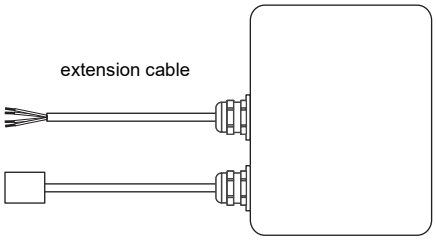
JB** 	order code: ACC-PE-GNNN-/JBPMK4

Clamp-on temperature probe (optional)

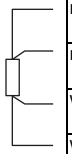
Technical data

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

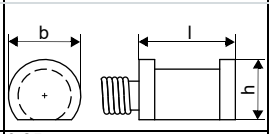
connection with extension cable	direct connection
	

Connection

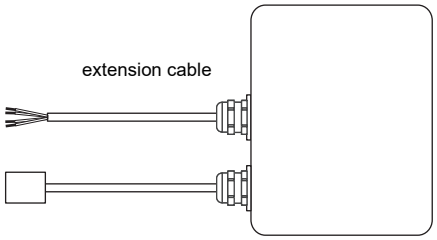
	temperature probe
	red
	red/blue
	white/blue
	white

Cable

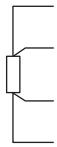
		PT12N	PT12N-LC	extension cable
type		4 x 0.22 mm²		LIYCY 8 x 0.14 mm² grey
standard length	m	3	15	5/10/25
max. length	m	-		200
ambient temperature	°C	-90...+200		-25...+80
min. bend radius	mm	27		68
cable jacket				
material		PFA		PVC
outer diameter	mm	3.8 ±0.15		4.8 ±2
colour		black		grey

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

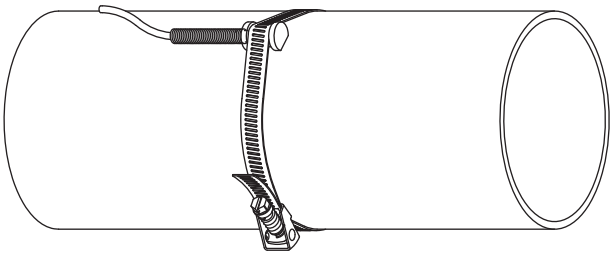
	temperature probe
	red
	red/blue
	white
	white/blue

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

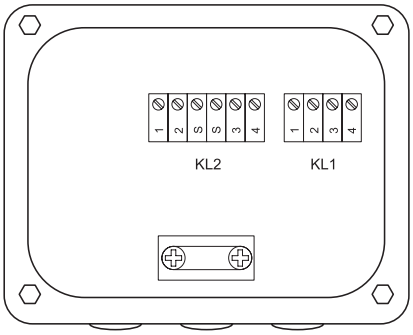


material: stainless steel 301 (1.4310), 410 (1.4006)
thermal insulation necessary

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

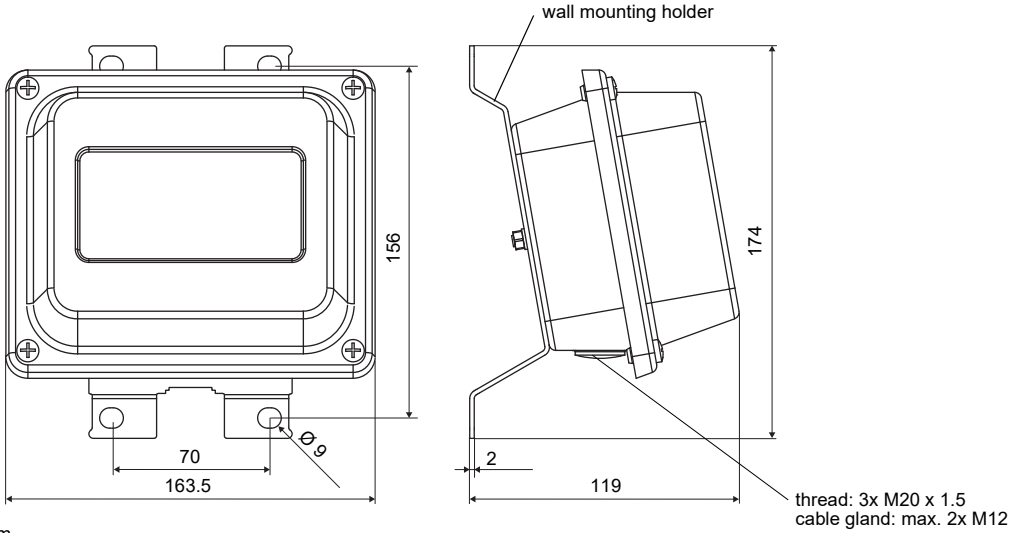
terminal strip	terminal	connection
KL1	1	red
	2	red/blue
	3	white
	4	white/blue

Extension cable

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

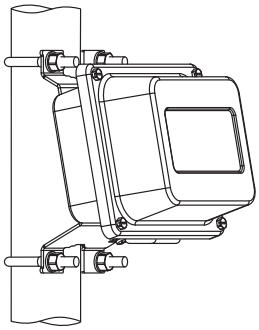
Dimensions

JBT*



in mm

2" pipe mounting kit

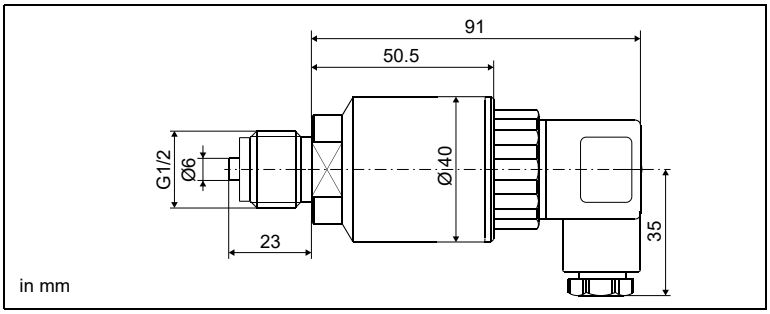
JB** 	order code: ACC-PE-GNNN-/JBPMK4

Pressure transmitter (optional)

Technical data

Nöding P 121		
connection		2-wire
measuring range	bar (a)	0...16
fluid pressure	bar (a)	-1...40
accuracy		≤ ±0.2 % FS ≥ 0.1 bar at 25 °C
temperature coefficient		≤ ±0.015 % FS/K (zero) ≤ ±0.01 % FS/K (span)
long term stability		≤ ±0.15 % per year
response time	ms	200 (T_{90})
power supply	V DC	9...30
ambient temperature	°C	-25...+80
fluid temperature	°C	-40...+100 max. 125 (< 0.5 h)
material		
housing		stainless steel 316L (1.4404)
measuring cell		Al_2O_3
process connection		stainless steel 316L (1.4404)
process gasket		FPM
degree of protection		IP65
weight (without connector)	kg	0.236
current output	mA	4...20

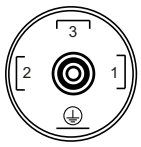
Dimensions



in mm

Connection

connector	
pin	
1(+)	
2(-)	



Cable

		8038
type		2 x 0.5 mm²
standard length	m	5 15
weight	kg/m	0.045
ambient temperature	°C	-40...+80
bend radius	mm	min. 29
properties		self-extinguishing, flame retardant according to IEC 60332-1
cable jacket		
material		PVC
outer diameter	mm	5.7
colour		grey
shield		x

FLEXIM GmbH
Boxberger Str. 4
12681 Berlin
Germany
Tel.: +49 (30) 93 66 76 60
Fax: +49 (30) 93 66 76 80

internet: www.flexim.com
e-mail: info@flexim.com

2021-07-01, TSFLUXUS_G721CAV2-7EN_Leu