

## Gas ultrasonic flowmeter for permanent installation

### Features

- 4 measuring channels to compensate highly disturbed flow profiles and to facilitate more accurate and repeatable measurements
- Best suitable for applications with limited straight runs
- High precision at fast and slow flow rates, high temperature and zero point stability

### Applications

- Redundant check metering to custody transfer flow measurements
- Flow and density measurement in gas transport systems
- Wet gas flow measurement on wellheads and after separators



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TSFLUXUS\_G736V1-1US\_Lus, 2023-10-01

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# Transmitter

## Technical data

	FLUXUS G736**-NN	FLUXUS G736**-A2	FLUXUS G736**-F2
			
design	field device with 4 measuring channels in stainless steel housing		
<b>measurement</b>			
measurement principle	transit time difference correlation principle		
flow direction	bidirectional		
synchronized channel averaging	x		
flow velocity	ft/s measuring range: 0.03 to 115, depending on pipe diameter		
repeatability	0.15 % MV ±0.02 ft/s		
fluid	all acoustically conductive gases, e.g., nitrogen, air, oxygen, hydrogen, argon, helium, ethylene, propane		
temperature compensation	corresponding to the recommendations in ANSI/ASME MFC-5.1-2011		
<b>measurement uncertainty (volumetric flow rate)</b>			
measurement uncertainty of the measuring system <sup>1</sup>	±0.3 % MV ±0.02 ft/s includes calibration certificate traceable to NIST		
measurement uncertainty at the measuring point	±1 to 2 % MV ±0.02 ft/s, contact FLEXIM for an application specific uncertainty evaluation		
<b>transmitter</b>			
power supply	<ul style="list-style-type: none"> <li>• 90 to 250 V/50 to 60 Hz or</li> <li>• 11 to 32 V DC</li> </ul>		
power consumption	W	< 15	
number of measuring channels	4 (1 measuring point)		
damping	s	0 to 100 (adjustable)	
measuring cycle	Hz	100 to 1000	
response time	s	1	
housing material	stainless steel 316L		
degree of protection	IP66		IP64
dimensions	inch	see dimensional drawing	
weight	lb	15.9	
fixation	wall mounting, optional: 2" pipe mounting		
ambient temperature	°F	-40 to +140 (< -4 without operation of the display)	-4 to +131
display	128 x 64 pixels, backlight		
menu language	English, German, French, Spanish, Dutch, Russian, Polish, Turkish, Italian, Chinese		
<b>explosion protection</b>			
<b>• ATEX</b>			
marking	-	CE  II3G Ex nA ic IIC T4 Gc T <sub>a</sub> -40...+60 °C	-
<b>• FM</b>			
marking	-	-	 NI/Cl. I, II, III / Div. 2 / GP. A, B, C, D, E, F, G / T5 -20 °C ≤ Ta ≤ 55 °C IP64
certification	-	-	FM23US0080, FM23CA0059
<b>measuring functions</b>			
physical quantities	operating volumetric flow rate, standard volumetric flow rate, mass flow rate, flow velocity, optional: gas energy flow rate (DGM)		
totalizer	volume, mass, optional: gas energy (DGM)		
diagnostic functions	sound speed, signal amplitude, SNR, SCNR, standard deviation of amplitudes and transit times		
<b>communication interfaces</b>			
service interfaces	measured value transmission, parametrization of the transmitter: <ul style="list-style-type: none"> <li>• USB<sup>2</sup></li> <li>• LAN<sup>2</sup></li> </ul>		
process interfaces	<ul style="list-style-type: none"> <li>max. 1 option:</li> <li>• Modbus RTU</li> <li>• BACnet MS/TP</li> <li>• HART</li> <li>• Modbus TCP</li> <li>• BACnet IP</li> <li>• Profibus PA</li> <li>• FF H1</li> </ul>	<ul style="list-style-type: none"> <li>max. 1 option:</li> <li>• Modbus RTU</li> <li>• BACnet MS/TP</li> <li>• HART</li> <li>• Profibus PA</li> <li>• FF H1</li> </ul>	<ul style="list-style-type: none"> <li>max. 1 option:</li> <li>• Modbus RTU</li> <li>• BACnet MS/TP</li> <li>• HART</li> <li>• Profibus PA</li> <li>• FF H1</li> </ul>

<sup>1</sup> with aperture calibration of the transducers

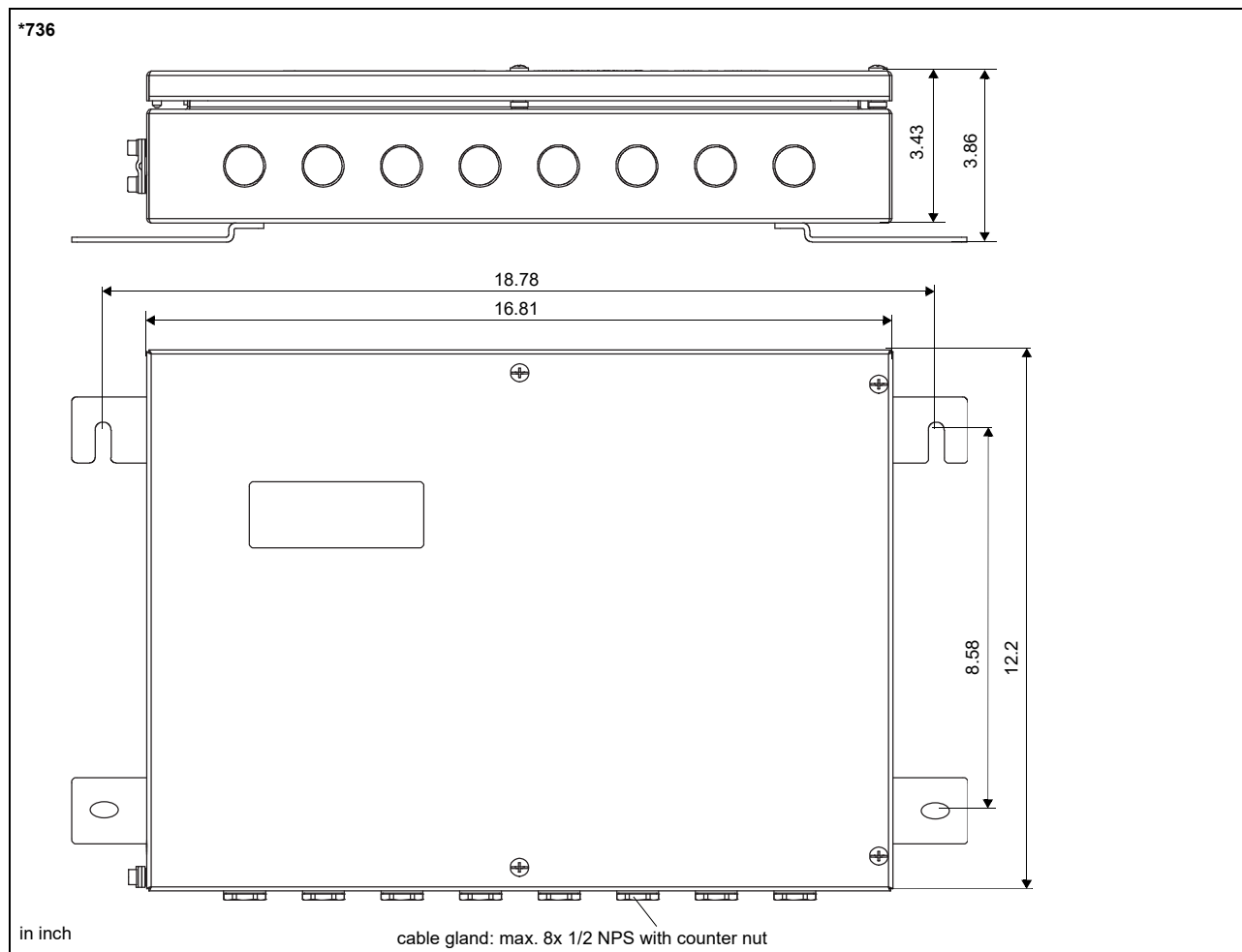
<sup>2</sup> outside the explosive atmosphere (housing cover open)

	FLUXUS G736**-NN	FLUXUS G736**-A2	FLUXUS G736**-F2
<b>accessories</b>			
data transmission kit	USB cable		
software	<ul style="list-style-type: none"> <li>FluxDiagReader: reading of measured values and parameters, graphical representation</li> <li>FluxDiag (optional): reading of measurement data, graphical representation, report generation, parametrization of the transmitter</li> </ul>		
<b>data logger</b>			
loggable values	all physical quantities, totalized physical quantities and diagnostic values		
capacity	max. 800 000 measured values		
<b>outputs</b>			
	The outputs are galvanically isolated from the transmitter.		
number	active current inputs and outputs: max. 4		
<b>• switchable current output</b>			
	configurable according to NAMUR NE43 All switchable current outputs are jointly switched to active or passive.		
number	max. 4		
range	mA	4 to 20 (alarm current: 3.2 to 3.99, 20.01 to 24, hardware fault current: 3.2)	
uncertainty	0.04 % of output value $\pm 3 \mu\text{A}$		
active output	$R_{\text{ext}} = 250 \text{ to } 530 \Omega$ , $U_{\text{opencircuit}} = 28 \text{ V DC}$		
passive output	$U_{\text{ext}} = 9 \text{ to } 30 \text{ V DC}$ , depending on $R_{\text{ext}}$ ( $R_{\text{ext}} < 458 \Omega$ at 20 V)		
current output in HART mode	option		
• range	mA	4 to 20 (alarm current: 3.5 to 3.99, 20.01 to 22, hardware fault current: 3.2)	
• active output	$R_{\text{ext}} = 250 \text{ to } 530 \Omega$ , $U_{\text{opencircuit}} = 28 \text{ V DC}$		
• passive output	$U_{\text{ext}} = 9 \text{ to } 30 \text{ V DC}$ , depending on $R_{\text{ext}}$ ( $R_{\text{ext}} = 250 \text{ to } 458 \Omega$ at 20 V)		
<b>• digital output</b>			
number	max. 4		
functions	<ul style="list-style-type: none"> <li>frequency output</li> <li>binary output</li> <li>pulse output</li> </ul>		
type	open collector (passive)		
operating parameters	8.2 V/30 mA (NAMUR)		
max. values	8 mA at 29 V DC		
<b>frequency output</b>			
• range	kHz	2 to 10	
• damping	s	0 to 999.9	
• pulse-to-pause ratio	1:1		
<b>binary output</b>			
• binary output as alarm output	limit, change of flow direction or error		
<b>pulse output</b>			
• pulse value	units	0.01 to 1000	
• pulse width	ms	0.05 to 1000	
• pulse rate	max. 10 000 pulses		
<b>inputs</b>			
	The inputs are galvanically isolated from the transmitter.		
number	active current inputs and outputs: max. 4		
<b>• temperature input</b>			
number	max. 4		
type	Pt100/Pt1000		
connection	4-wire		
range	°F	-238 to +1040	
resolution	K	0.01	
accuracy	$\pm 0.01 \text{ \% MV} \pm 0.03 \text{ K}$ at 64 to 82 °F $\pm 0.01 \text{ \% MV} \pm 0.03 \text{ K} \pm 0.0005 \text{ \% /K}$ at <64 °F/>82 °F		
cable resistance	$\Omega$	max. 1000	
<b>• switchable current input</b>			
	All switchable current inputs are jointly switched to active or passive.		
number	max. 4		
accuracy	$\pm 0.1 \text{ \% MV} \pm 0.01 \text{ mA}$ at 64 to 82 °F $\pm 0.1 \text{ \% MV} \pm 0.01 \text{ mA} \pm 0.005 \text{ \% /K}$ at <64 °F/>82 °F		
resolution	$\mu\text{A}$	0.1	
active input	$R_{\text{int}} = 75 \Omega$ , $I_{\text{max}} \leq 30 \text{ mA}$ $U_{\text{opencircuit}} = 28 \text{ V}$ (open circuit) $U_{\text{min}} = 21.4 \text{ V}$ at 20 mA		
• range	mA	0 to 20	
passive input	$U_{\text{ext}} = 24 \text{ V}$ , $R_{\text{int}} = 35 \Omega$ , $I_{\text{max}} \leq 24 \text{ mA}$		
• range	mA	0 to 20	

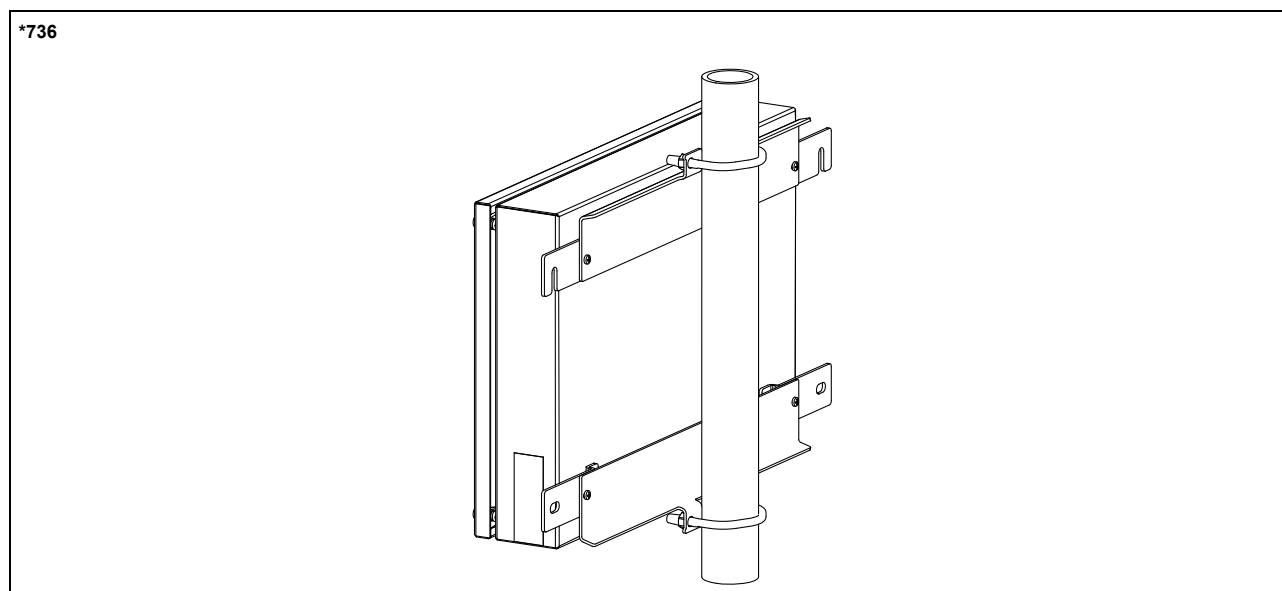
<sup>1</sup> with aperture calibration of the transducers

<sup>2</sup> outside the explosive atmosphere (housing cover open)

### Dimensions



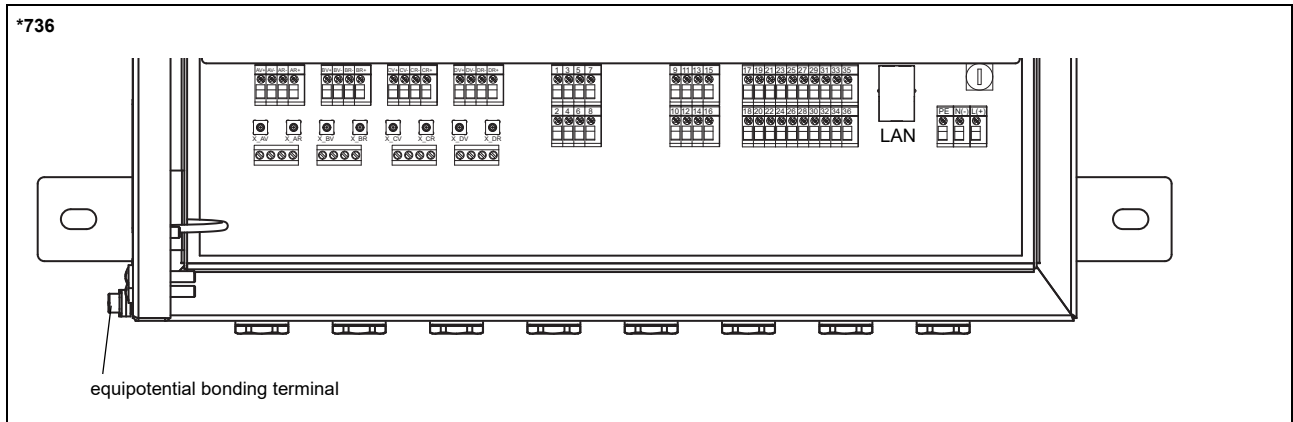
### Wall and 2" pipe mounting kit



### Storage

- do not store outdoors
- store within the original package
- store in a dry and dust-free place
- protect against sunlight
- keep all openings closed
- storing temperature: -4...+140 °F

# Terminal assignment



power supply <sup>1</sup>			
AC		DC	
terminal	connection	terminal	connection
L	outer conductor	(+)	+
N	neutral conductor	(-)	-
	protective conductor		protective conductor

<sup>1</sup> cable (by customer): e.g., flexible wires, with insulated wire ferrules, wire cross-section: AWG14 to 24

transducers, extension cable				
measuring channel A		measuring channel B		transducer
terminal	connection	terminal	connection	
AV	signal	BV	signal	↑
AVS	internal shield	BVS	internal shield	
ARS	internal shield	BRS	internal shield	⌆
AR	signal	BR	signal	

outputs, inputs <sup>1, 2</sup>	
terminal	connection
depending on configuration	current output, digital output, current input
1, 2, 3, 4 5, 6, 7, 8 9, 10, 11, 12 13, 14, 15, 16	temperature input
33+, 34-	passive current output/HART
33-, 34+	active current output/HART
33, 34	Modbus RTU, BACnet MS/TP, Profibus PA, FF H1

temperature probe		
terminal	direct connection	connection with extension cable, inline temperature probe
1, 5, 9, 13	red	white
2, 6, 10, 14	white	red
3, 7, 11, 15	red	black
4, 8, 12, 16	white	green
USB	type C Hi-Speed USB 2.0 Device	service (FluxDiag/FluxDiagReader)
LAN	RJ45 10/100 Mbps Ethernet	<ul style="list-style-type: none"> <li>• service (FluxDiag/FluxDiagReader)</li> <li>• Modbus TCP</li> <li>• BACnet IP</li> </ul>

<sup>1</sup> cable (by customer): e.g., flexible wires, with insulated wire ferrules, wire cross-section: AWG14 to 24

<sup>2</sup> The number, type and terminal assignment are customized.

# Transducers

## Overview

### Shear wave transducers

	technical type					
	G	K	M	P	Q	
<b>zone 2 - FM Class I Div. 2 - nonEx normal temperature range</b>	GDG1N52 GLG1N52	GDK1N52 GLK1N52	GDM2N52 GLM2N52	GDP2N52 GLP2N52	GDQ2N52 GLQ2N52	
<b>zone 2 - nonEx IP68</b>	GDG1L18	GDK1L18	GDM2L18	GDP2L18		
<b>zone 2 - FM Class I Div. 2 - nonEx extended temperature range</b>	GDG1E52 GLG1E52	GDK1E52 GLK1E52	GDM2E52 GLM2E52	GDP2E52 GLP2E52	GDQ2E52 GLQ2E52	
<b>zone 1 normal temperature range</b>	GDG1N81 GLG1N81	GDK1N81 GLK1N81	GDM2N81 GLM2N81	GDP2N81 GLP2N81	GDQ2N81 GLQ2N81	
<b>zone 1 IP68</b>	GDG1L11	GDK1L11	GDM2L11	GDP2L11		
<b>zone 1 extended temperature range</b>	GDG1E83 GLG1E83	GDK1E83 GLK1E83	GDM2E85 GLM2E85	GDP2E85 GLP2E85	GDQ2E85 GLQ2E85	
<b>inner pipe diameter d</b>						
min. extended	inch	7.1	2.4	1.2	0.59	0.28
min. recommended	inch	8.7	3.1	1.6	0.79	0.39
max. recommended	inch	35.4	11.8	5.9	2	0.87
max. extended	inch	43.3	14.2	7.1	2.4	1.2
<b>pipe wall thickness</b>						
min.	inch	0.43	0.2	0.1	0.05	0.02
<b>fluid pressure</b>						
min. extended	psi	metal pipe: 290				
min.	psi	metal pipe: 435, plastic pipe: 15				

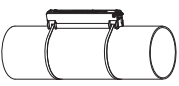
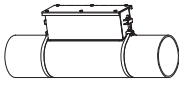
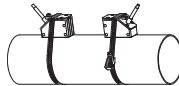
for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

### Lamb wave transducers

	technical type							
	F	G	H	K	M	P	Q	
<b>zone 2 - FM Class I Div. 2 - nonEx normal temperature range</b>	GRF1N52 GTF1N52	GRG1N52 GTG1N52	GRH1N52 GTH1N52	GRK1N52 GTK1N52	GRM1N52 GTM1N52	GRP1N52 GTP1N52	GRQ1N52 GTQ1N52	
<b>zone 2 - nonEx IP68</b>	GRF1L18 GTF1L18	GRG1L18 GTG1L18	GRH1L18 GTH1L18	GRK1L18 GTK1L18	GRM1L18 GTM1L18	GRP1L18 GTP1L18		
<b>zone 2 - FM Class I Div. 2 - nonEx higher temperatures</b>		GRG1S52 GTG1S52	GRH1S52 GTH1S52	GRK1S52 GTK1S52	GRM1S52 GTM1S52	GRP1S52 GTP1S52		
<b>zone 1 normal temperature range</b>	GRF1N83 GTF1N83	GRG1N83 GTG1N83	GRH1N83 GTH1N83	GRK1N83 GTK1N83	GRM1N83 GTM1N83	GRP1N83 GTP1N83	GRQ1N83 GTQ1N83	
<b>zone 1 IP68</b>	GRF1L13	GRG1L13	GRH1L13	GRK1L13	GRM1L13	GRP1L13		
<b>zone 1 higher temperatures</b>		GRG1S83 GTG1S83	GRH1S83 GTH1S83	GRK1S83 GTK1S83	GRM1S83 GTM1S83			
<b>fluid pressure</b>								
min. extended	psi	metal pipe: 145	metal pipe: 145	metal pipe: 145	metal pipe: 145 (d > 4.7 inch) 44 (d < 4.7 inch)	metal pipe: 44 (d < 2.4 inch)	metal pipe: 44 (d < 1.4 inch)	metal pipe: 44 (d < 0.59 inch)
min.	psi	metal pipe: 218 plastic pipe: 15	metal pipe: 218 plastic pipe: 15	metal pipe: 218 plastic pipe: 15	metal pipe: 218 (d > 4.7 inch) 145 (d < 4.7 inch) plastic pipe: 15	metal pipe: 145 (d > 2.4 inch) 73 (d < 2.4 inch) plastic pipe: 15	metal pipe: 145 (d > 1.4 inch) 73 (d < 1.4 inch) plastic pipe: 15	metal pipe: 145 (d > 0.59 inch) 73 (d < 0.59 inch) plastic pipe: 15
<b>inner pipe diameter d</b>								
min. extended	inch	8.7	7.1	4.3	2.4	1.2	0.59	0.28
min. recommended	inch	10.6	8.7	5.5	3.1	1.6	0.79	0.39
max. recommended	inch	47.2	35.4	23.6	11.8	5.9	2	0.87
max. extended	inch	63	55.1	39.4	14.2	7.1	2.4	1.2
<b>pipe wall thickness ****N**, ****L**</b>								
min.	inch	0.59	0.43	0.31	0.2	0.1	0.05	0.02
max.	inch	1.3	0.94	0.63	0.39	0.2	0.12	0.05
max. extended	inch	1.4	-	-	-	-	-	-
<b>pipe wall thickness ****S**</b>								
min.	inch		0.42	0.28	0.17	0.08		
max.	inch		0.93	0.62	0.37	0.19		

for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

### Transducer mounting fixture

PermaRail	PermaLok PL	quick release clasps and tension straps
		
	transducer frequency M, P	transducer frequency M, P, Q

for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

### Coupling materials for transducers

	normal temperature range		extended temperature range		
	< 212 °F	< 338 °F	< 302 °F	< 392 °F	392 to 464 °F
< 24 h	coupling compound type N or coupling pad type VT	coupling compound type E or coupling pad type VT	coupling compound type E or coupling pad type VT	coupling compound type E or H or coupling pad type VT	coupling pad type TF
long time measurement	coupling pad type VT	coupling pad type VT	coupling pad type VT	coupling pad type VT	

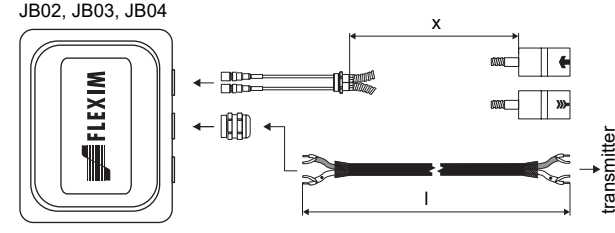
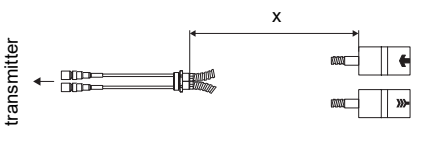
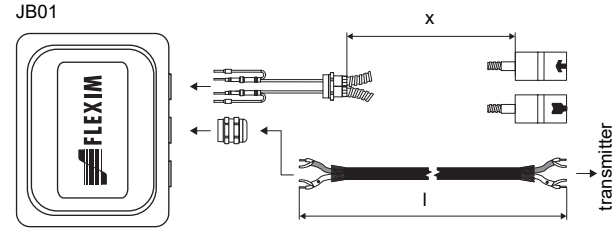
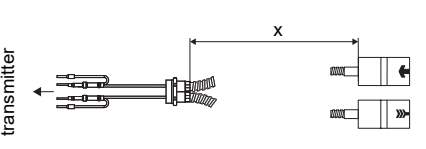
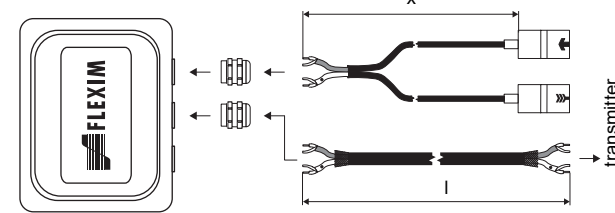
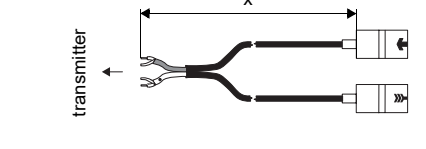
for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

### Damping material

	damping mat		damping coat
item number	992080-11	992080-10	992080-13
type	E30R4	E30R3	


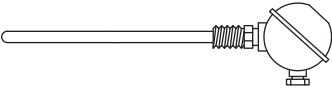
for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

### Connection systems

connection system TS		
connection with extension cable	direct connection	transducers technical type
 <p>JB02, JB03, JB04</p>	 <p>transmitter</p>	*****52
connection system T1		
connection with extension cable	direct connection	transducers technical type
 <p>JB01</p>	 <p>transmitter</p>	*****8*
 <p>JB01, JBP2, JBP3</p>	 <p>transmitter</p>	****L *

for further data see Technical specification TS\_G7xx-transducersVx-xxx\_Lus

## Temperature probes

PT13N	PT13F	A2179
<ul style="list-style-type: none"> <li>• Pt1000</li> <li>• clamp-on</li> <li>• -40 to +392 °F</li> </ul>	<ul style="list-style-type: none"> <li>• Pt1000</li> <li>• clamp-on</li> <li>• response time: 8 s</li> <li>• -49 to +482 °F</li> </ul>	<ul style="list-style-type: none"> <li>• Pt1000</li> <li>• inline</li> <li>• -58 to +500 °F</li> </ul>
<p>direct connection</p> 		
<p>connection with extension cable</p> <p>extension cable</p> 