FLEXIM

Technical specification

FLUXUS G831ST-HT

Superheated steam flow measurement

Permanently installed non-invasive ultrasonic measuring system

Features

- Exact and highly reliable measurement of superheated steam up to 630 °C
- Installation and start-up do not require any pipe work nor any process interruptions
- Volumetric and mass flow rate available without additional steam calculator
- Non-invasive and wear-free measurement without pressure loss
- Maintenance-free acoustic coupling using permanent coupling foil
- Bidirectional measurement over a wide turndown ratio - up to 10:1
- Advanced self-diagnosis and possibilities for event-based triggering of data recording
- Bidirectional communication and support of common bus technologies
- Transmitter and transducers are separately calibrated (traceable to national standards)
- The measurement is drift free

FLUXUS G831ST-HT

Applications

- Process control
- Consumption metering
- Check metering

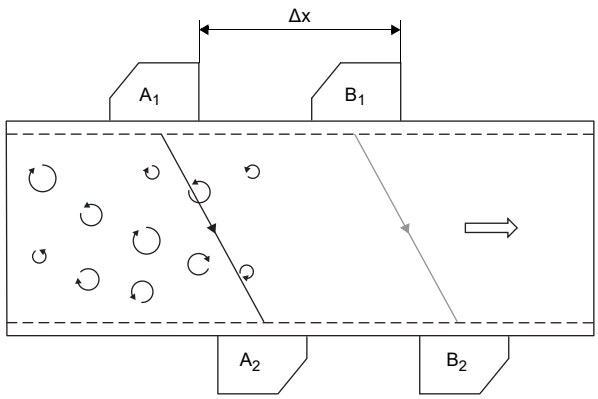
WaveInjector

Function

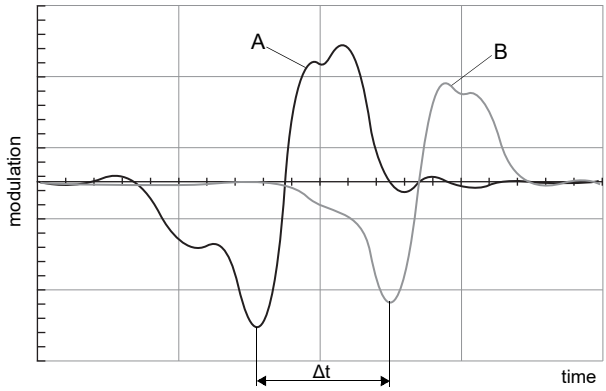
Measurement principle

The flow velocity of the fluid is measured using the correlation principle. 2 pairs of ultrasonic transducers are mounted one after the other at a distance Δx on the pipe. The transducer pairs form the measuring barriers A and B. Ultrasonic signals are alternately emitted by the emitters A_1 and B_1 and received by the respective receivers A_2 and B_2. The ultrasonic signals are modulated regarding amplitude and phase by the swirls of the turbulent flowing fluid. Since the swirls move with the flow, they pass the measuring barriers A und B with a time offset Δt, so that the modulation patterns of the ultrasonic signals of measuring barrier A and B are also offset by Δt. This time offset Δt is measured by means of cross correlation of the modulation signals.

Measuring setup



Time offset of the modulation patterns Δt



Calculation of volumetric flow rate

$$\dot{V} = A \cdot v = A \cdot k_{Re} \cdot \frac{\Delta x}{\Delta t}$$

where

$\dot{V}$	-	operating volumetric flow rate
A	-	cross-sectional pipe area
v	-	flow velocity
k_{Re}	-	fluid mechanic calibration factor
Δx	-	distance between measuring barriers
Δt	-	time offset of the modulation patterns

Transmitter

Technical data

		FLUXUS G831ST-HT (831-AA*, 831-SA*)	FLUXUS G831ST-HT (831-AB*, 831-SB*)	FLUXUS G831ST-HT (831-ANN, 831-SNN)
				
design		**831-AA*** (aluminum housing): explosion-proof field device or **831-SA*** (stainless steel housing): explosion-proof offshore device zone 1 (intrinsic safety: outputs, process interfaces)	**831-AB*** (aluminum housing): explosion-proof field device or **831-SB*** (stainless steel housing): explosion-proof offshore device zone 1 (intrinsic safety: outputs, inputs, process interfaces)	**831-ANN** (aluminum housing): explosion-proof field device or **831-SNN** (stainless steel housing): explosion-proof offshore device zone 1
application		high-temperature steam measurement[1]		
measurement				
measurement principle		cross correlation principle		
flow direction		bidirectional		
flow velocity	m/s	depending on the application		
repeatability		±1 % MV (Re > 60 000) ±3 % MV (Re 10 000...60 000)		
Reynolds number		Re > 10 000		
fluid		saturated steam, superheated steam		
fluid pressure	bar (a)	1...110		
fluid temperature	°C	100...630		
measurement uncertainty (volumetric flow rate)				
measurement uncertainty at the measuring point		±3 % MV (Re > 60 000) ±4 % MV (Re 10 000...60 000)		
transmitter				
power supply		20...32 V DC, U_m = 120 V		• 100...230 V/50...60 Hz or • 20...32 V DC
power consumption	W	< 4		< 8
measuring setup		2 transducer pairs of the same type required (see measuring setup in section Measurement principle)		
damping	s	0...100 (adjustable)		
measuring cycle	Hz	0.5...1 (depending on the application)		
response time	s	20...50 (depending on the application)		
housing material		aluminum housing: cast aluminum EN AC 44200 mod, special heavy-duty coating (C5 according to EN ISO 12944) stainless steel housing: stainless steel 316/316L (1.4401, 1.4404, 1.4432)		
degree of protection		IP66		
dimensions	mm	see dimensional drawing		
mounting position		**831-A*F** (Profibus PA, FF H1), **831-S**:** nameplate faces upwards		-
weight	kg	aluminum housing: 6.5, stainless steel housing: 15.6		
fixation		wall mounting, 2" pipe mounting		
ambient temperature	°C	aluminum housing: • -40...+60 • **831-A*F** (Profibus PA, FF H1): -40...+50 (< -20 without operation of the display) stainless steel housing: • -20...+60 • **831-S*F** (Profibus PA, FF H1): -20...+50		aluminum housing: -40...+60 (< -20 without operation of the display) stainless steel housing: -20...+60
display		128 x 64 pixels, backlight		
menu language		English, German, French, Spanish, Dutch, Russian, Polish, Turkish, Italian, Chinese		
explosion protection				
• ATEX/IECEx				
marking		CE 0637 Ex II2G II2D Ex db eb ia IIC T6 Gb Ex tb ia IIIC T100 °C Db **831-AAN:** T_a -40...+60 °C **831-SAN:** T_a -20...+60 °C **831-AAF:** T_a -40...+50 °C **831-SAF:** T_a -20...+50 °C	CE 0637 Ex II(1)2G II(1)2D Ex db eb ia [ia Ga] IIC T6 Gb Ex tb ia [ia Da] IIIC T100 °C Db **831-ABN:** T_a -40...+60 °C **831-SBN:** T_a -20...+60 °C **831-ABF:** T_a -40...+50 °C **831-SBF:** T_a -20...+50 °C	CE 0637 Ex II2G II2D Ex db eb IIC T6 Gb Ex tb IIIC T100 °C Db **831-ANN:** T_a -40...+60 °C **831-SNN:** T_a -20...+60 °C
certification		IBExU20ATEX1103 X, IECEx IBE 20.0015X	IBExU20ATEX1103 X, IECEx IBE 20.0015X	IBExU20ATEX1103 X, IECEx IBE 20.0015X

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

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

		FLUXUS G831ST-HT (831-AA*, 831-SA*)	FLUXUS G831ST-HT (831-AB*, 831-SB*)	FLUXUS G831ST-HT (831-ANN, 831-SNN)
measuring functions				
physical quantities		operating volumetric flow rate, mass flow rate, flow velocity		
totaliser		volume, mass		
diagnostic functions		crest factor, peak width, symmetry of amplification		
communication interfaces				
service interfaces		measured value transmission, parametrisation of the transmitter: USB[2]		
process interfaces		intrinsic safety, max. 1 option: • HART • Profibus PA • FF H1		max. 1 option: • Modbus RTU/RS485 • HART • Profibus PA • FF H1 • BACnet MS/TP
intrinsic safety parameters		Profibus PA, FF H1: U_i = 24 V I_i = 174 mA P_i = 1044 mW L_i = 10 µH C_i negligible		-
accessories				
data transmission kit		USB cable		
software		• FluxDiagReader: reading of measured values and parameters, graphical representation • FluxDiag (optional): reading of measurement data, graphical representation, 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**				
				configurable according to NAMUR NE43 All switchable current outputs are jointly switched to active or passive.
number		-		max. 3
range	mA	-		4...20 (alarm current: 3.2...3.99, 20.01...24, hardware fault current: 3.2)
Unsicherheit		-		0.04 % v. AW ±3 µA
active output		-		R_{ext} = 250...530 Ω, $U_{opencircuit}$ = 28 V DC
passive output		-		U_{ext} = 9...30 V DC, depending on R_{ext} (R_{ext} < 458 Ω at 20 V)
current output in HART mode • range • active output • passive output	 mA	- - - -		option 4...20 (alarm current: 3.5...3.99, 20.01...22, hardware fault current: 3.2) R_{ext} = 250...530 Ω, $U_{opencircuit}$ = 28 V DC U_{ext} = 9...30 V DC, depending on R_{ext} (R_{ext} = 250...458 Ω at 20 V)
• **current output**				
		configurable according to NAMUR NE43		
range	mA	4...20 (alarm current: 3.2...3.99, 20.01...24, hardware fault current: 3.2)		-
Unsicherheit		0.04 % v. AW ±3 µA		-
passive output		U_{ext} ≤ 29 V DC, depending on R_{ext} (R_{ext} < 458 Ω at 20 V)		-
current output in HART mode • range • passive output	 mA	option 4...20 (alarm current: 3.5...3.99, 20.01...22, hardware fault current: 3.2) U_{ext} = 9...29 V DC, depending on R_{ext} (R_{ext} = 250...458 Ω at 20 V)		 - -
intrinsic safety parameters		U_i = 29 V I_i = 100 mA P_i = 0.725 W C_i = 1 nF L_i = 50 nH		-

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

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

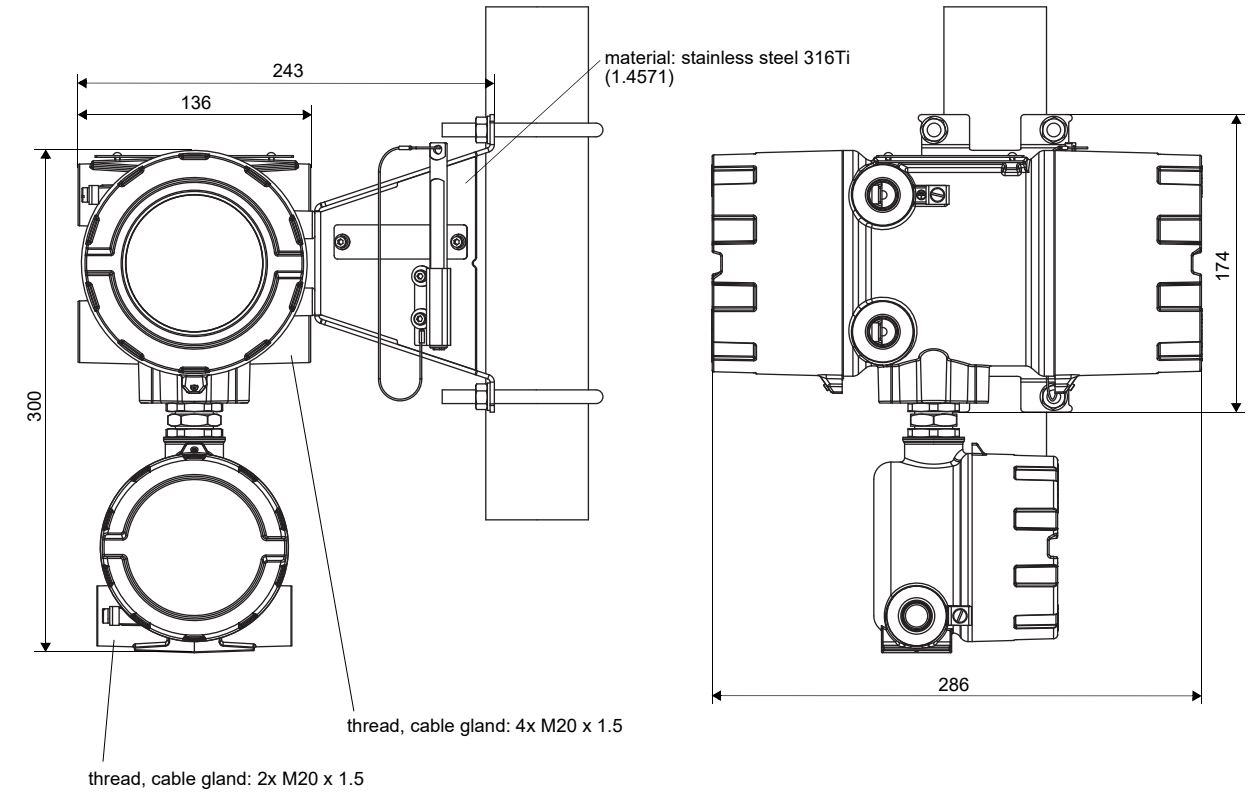
		FLUXUS G831ST-HT (831-AA*, 831-SA*)	FLUXUS G831ST-HT (831-AB*, 831-SB*)	FLUXUS G831ST-HT (831-ANN, 831-SNN)
• digital output				
functions		• frequency output • binary output • pulse output		• frequency output • binary output • pulse output
type		open collector (passive)		open collector (passive)
operating parameters		8.2 V/30 mA (NAMUR)		8.2 V/30 mA (NAMUR)
max. values		8 mA at 29 V DC		8 mA at 29 V DC
frequency output				
• range	kHz	2...10		2...10
• damping	s	0...999.9		0...999.9
• pulse-to-pause ratio		1:1		1:1
binary output				
• binary output as alarm output		limit, change of flow direction or error		limit, change of flow direction or error
pulse output				
• pulse value	units	0.01...1000		0.01...1000
• pulse width	ms	0.05...1000		0.05...1000
• pulse rate		max. 10 000 pulses		max. 10 000 pulses
intrinsic safety parameters		U_i = 29 V I_i = 100 mA P_i = 0.725 W C_i = 1 nF L_i = 50 nH		-
inputs				
		not short-circuit proof The inputs are not galvanically isolated from the transmitter.		The inputs are galvanically isolated from the transmitter.
• temperature input				
number		-	max. 1	max. 1
type		-	Pt100/Pt1000	Pt100/Pt1000
connection		-	4-wire	4-wire
range	°C	-	-150...+560	-150...+560
resolution	K	-	0.01	0.01
accuracy			±0.01 % MV ±0.03 K at 18...28 °C ±0.01 % MV ±0.03 K ±0.0005 %/K at <18 °C/>28 °C	±0.01 % MV ±0.03 K at 18...28 °C ±0.01 % MV ±0.03 K ±0.0005 %/K at <18 °C/>28 °C
Kabelwiderstand	Ω		max. 1000	max. 1000
intrinsic safety parameters		-	U_o = 9.2 V I_o = 25 mA P_o = 0.057 W C_o = 4283 nF L_o = 57 mH	-
• switchable current input				
		All switchable current inputs are jointly switched to active or passive.		
number		-		max. 2
accuracy		-		±0.1 % MV ±0.01 mA at 18...28 °C ±0.1 % MV ±0.01 mA ±0.005 %/K at <18 °C/>28 °C
resolution	µA	-		0.1
active input		-		R_{int} = 75 Ω, I_{max} ≤ 30 mA $U_{opencircuit}$ = 28 V (Leerlauf) U_{min} = 21.4 V at 20 mA
• range	mA	-		0...20
passive input		-		U_{ext} = 24 V, R_{int} = 35 Ω, I_{max} ≤ 24 mA
• range	mA	-		0...20
• current input				
number		-	max. 1	-
accuracy		-	±0.1 % MV ±0.01 mA at 18...28 °C ±0.1 % MV ±0.01 mA ±0.005 %/K at <18 °C/>28 °C	-
resolution	µA		0.1	-
active input		-	U_{int} < 20 V, R_{int} ≤ 385 Ω, I_{max} ≤ 40 mA U_{min} = 19.6 V - R_{int} · I	-
• range	mA	-	0...20	-
intrinsic safety parameters		-	U_o = 29.2 V I_o = 88 mA P_o = 0.64 W C_o = 73 nF L_o = 4.1 mH	-

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

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

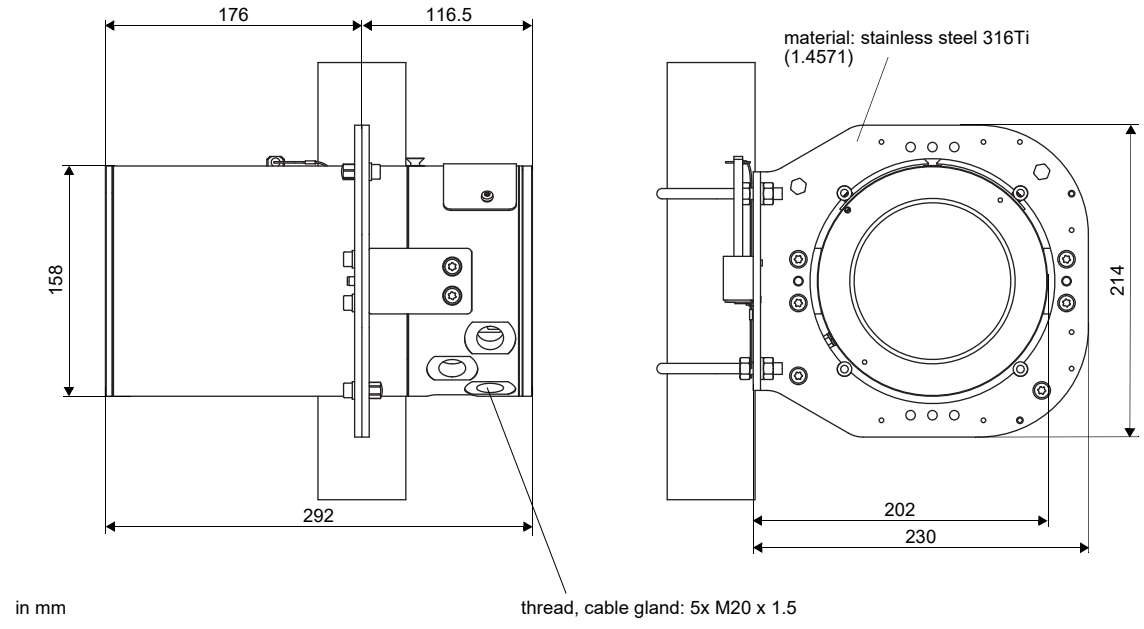
Dimensions

***831 (aluminum housing)**



in mm

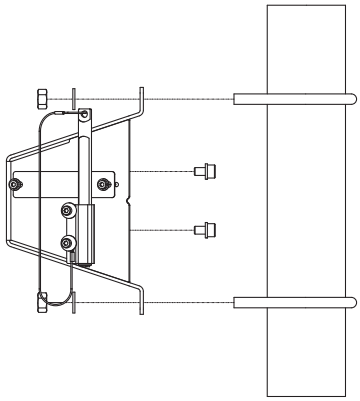
***831 (stainless steel housing)**



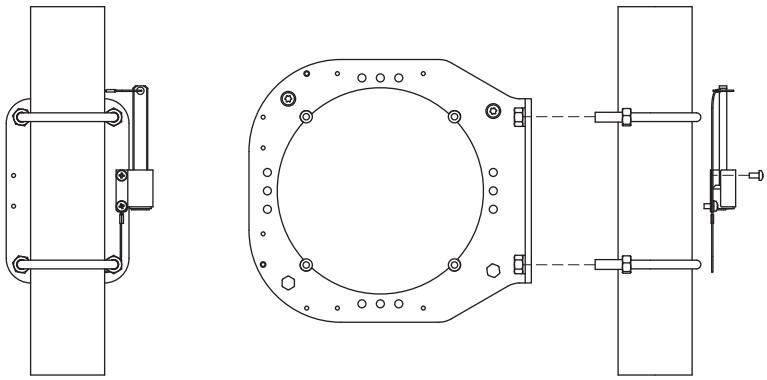
in mm

Wall and 2" pipe mounting kit

***831 (aluminum housing)**



***831 (stainless steel housing)**



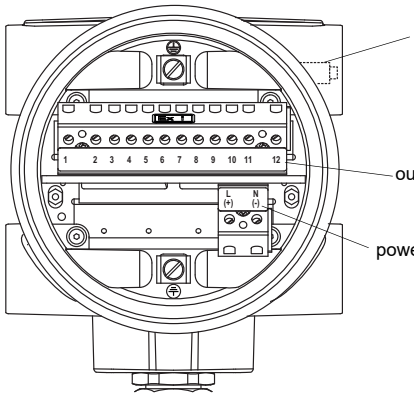
Storage

- 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:
  - aluminum housing: -40...+60 °C
  - stainless steel housing: -20...+60 °C

Terminal assignment

***831 (aluminum housing)**

upper housing,
back view
831-AA*: Ex e, Ex i
831-ANN: Ex e



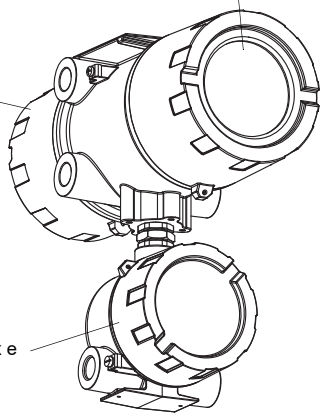
equipotential bonding terminal

outputs, inputs

power supply

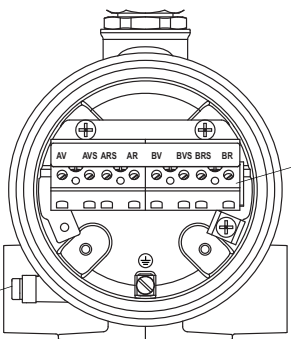
Ex d

831-AA*: Ex e, Ex i
831-ANN: Ex e



Ex e

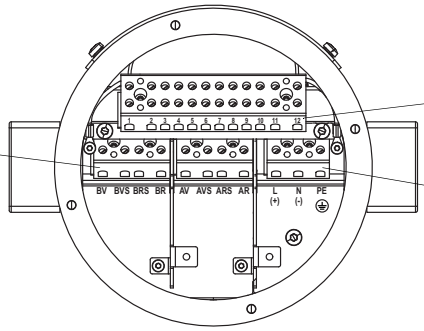
lower housing,
front view
Ex e



transducers

equipotential bonding terminal

***831 (stainless steel housing)**



outputs, inputs

transducers

power supply

power supply[1]			
AC		**DC**	
terminal	**connection**	**terminal**	**connection**
L	outer conductor	(+)	+
N	neutral conductor	(-)	-
⏚	protective conductor		

[1] cable (by customer): e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm^2

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	
cable gland	external shield	cable gland	external shield	↑ ⩔

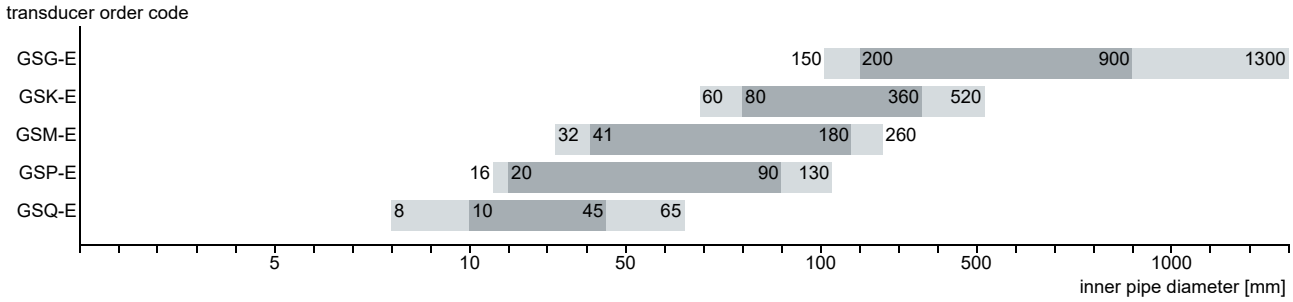
outputs, inputs[1, 2]		
terminal	**connection**	
depending on configuration	current output, digital output, current input	
3, 4, 5, 6	temperature input	
11+, 12-	passive current output/HART	
11-, 12+	active current output/HART	
11, 12	Modbus RTU, FF H1, Profibus PA, BACnet MS/TP	
temperature probe		
terminal	**direct connection**	**connection with extension cable**
3	red	blue
4	red	grey
5	white	white
6	white	red
USB	type C Hi-Speed USB 2.0 Device	service (FluxDiag/FluxDiagReader)

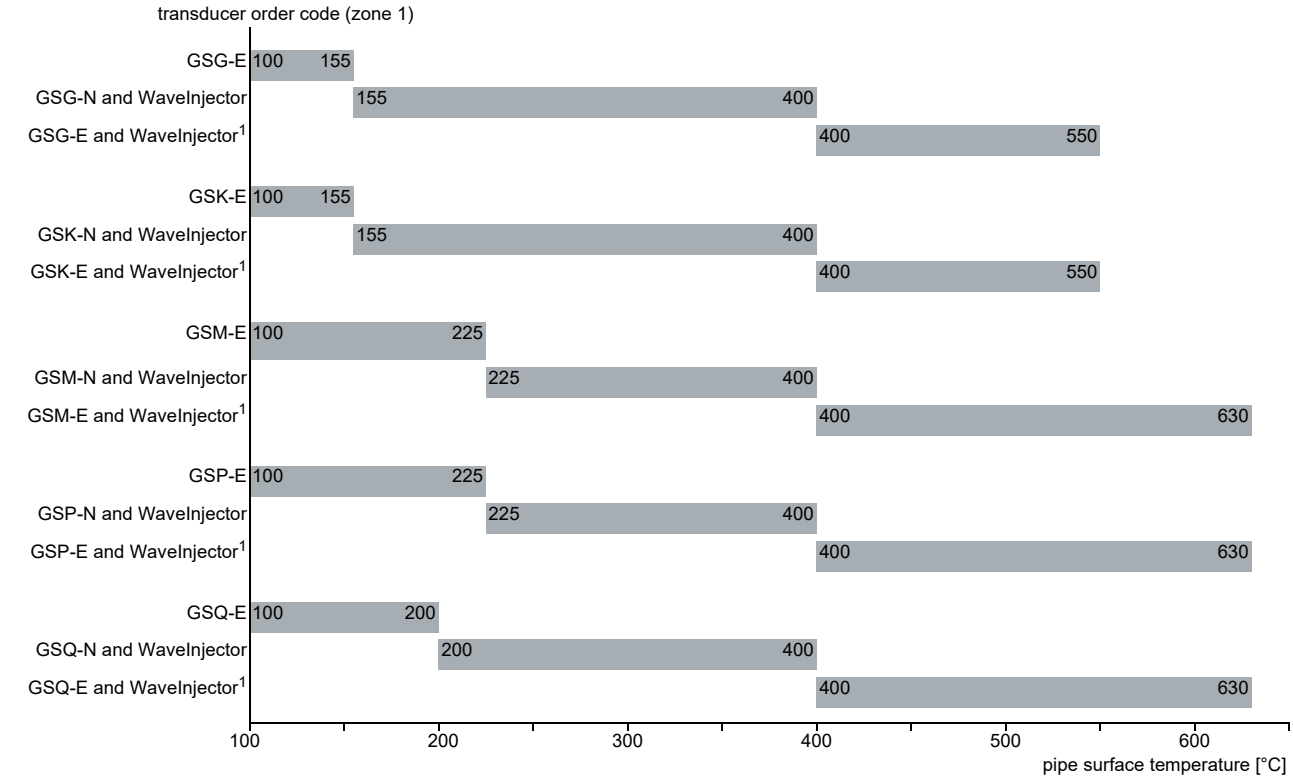
[1] cable (by customer): e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm^2

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

Transducers

Transducer selection





[1] technical verification to validate the application required in advance

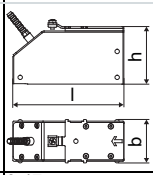
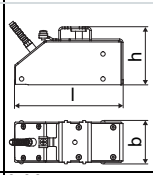
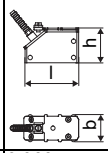
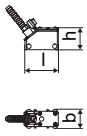
recommended possible

Transducer order code

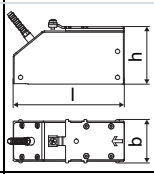
1, 2	3		4	5...7		8, 9	10, 11		12...14	no. of character
transducer	**transducer frequency**	**-**	**ambient temperature**	**explosion protection**	**-**	**certification**	**connection system**	**-**	**cable length**	**description**
GS										set of ultrasonic flow transducers, shear wave
	G									0.2 MHz
	K									0.5 MHz
	M									1 MHz
	P									2 MHz
	Q									4 MHz
			N							normal temperature range
			E							extended temperature range
				NNN						not explosion-proof
				A1N						ATEX zone 1/IECEx zone 1
						**				
							T1			with stripped cable ends
									***	in m

Technical data

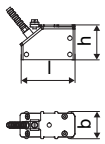
Shear wave transducers (zone 1, T1)

order code		GSG-N*1*-**T1	GSK-N*1*-**T1	GSM-N*1*-**T1	GSP-N*1*-**T1	GSQ-N*1*-**T1
technical type		G(DL)G1N81	G(DL)K1N81	G(DL)M2N81	G(DL)P2N81	G(DL)Q2N81
transducer frequency	MHz	0.2	0.5	1	2	4
inner pipe diameter d						
min. extended	mm	180	70	37	18	9
min. recommended	mm	240	100	48	24	12
max. recommended	mm	920	370	180	90	46
max. extended	mm	1300	520	260	130	66
pipe wall thickness						
min.	mm	11.1	4.4	2.2	1.1	0.6
material						
housing		PEEK with stainless steel cover 316L (1.4404)				
contact surface		PEEK				
degree of protection		IP66		IP66/IP67		
transducer cable						
type		1699				
length	m	5		4		3
dimensions						
length l	mm	129.5	126.5	64		40
width b	mm	51	51	32		22
height h	mm	67	67.5	40.5		25.5
dimensional drawing						
weight (without cable)	kg	0.47	0.36	0.066		0.016
pipe surface temperature	°C	-40...+130				
ambient temperature	°C	-40...+130				
temperature compensation		x				
explosion protection						
• **ATEX/IECEx**						
order code		GSG-NA1*-**T1	GSK-NA1*-**T1	GSM-NA1*-**T1	GSP-NA1*-**T1	GSQ-NA1*-**T1
pipe surface temperature (Ex)	°C	-55...+180				
marking		CE 0637 Ex II2G II2D Ex q IIC T6...T3 Gb Ex tb IIIC T80 °C...T185 °C Db				
certification		IBExU07ATEX1168 X, IECEx IBE 08.0007X				

Shear wave transducers (zone 1, T1, extended temperature range)

order code		GSG-E*1*-**T1	GSK-E*1*-**T1
technical type		G(DL)G1E83	G(DL)K1E83
transducer frequency	MHz	0.2	0.5
inner pipe diameter d			
min. extended	mm	150	60
min. recommended	mm	200	80
max. recommended	mm	900	360
max. extended	mm	1300	520
pipe wall thickness			
min.	mm	11.1	4.4
material			
housing		PPSU with stainless steel cover 316L (1.4404)	
contact surface		PPSU	
degree of protection		IP66	
transducer cable			
type		1699	
length	m	5	
length (***-*****/LC)	m	9	
dimensions			
length l	mm	129.5	
width b	mm	51	
height h	mm	67	
dimensional drawing			
weight (without cable)	kg	0.82	
pipe surface temperature	°C	100...180	
ambient temperature	°C	-40...+180	
temperature compensation		x	
explosion protection			
• ATEX/IECEx			
order code		GSG-EA1*-**T1	GSK-EA1*-**T1
pipe surface temperature (Ex)	°C	-50...+155	
marking		CE 0637 Ex II2G II2D Ex q IIC T6...T3 Gb Ex tb IIIC T80 °C...T160 °C Db	
certification		IBExU07ATEX1168 X, IECEx IBE 08.0007X	

Shear wave transducers (zone 1, T1, extended temperature range)

order code		GSM-E*1*-**T1	GSP-E*1*-**T1	GSQ-E*1*-**T1
technical type		G(DL)M2E85	G(DL)P2E85	G(DL)Q2E85
transducer frequency	MHz	1	2	4
inner pipe diameter d				
min. extended	mm	32	16	8
min. recommended	mm	41	20	10
max. recommended	mm	180	90	45
max. extended	mm	260	130	65
pipe wall thickness				
min.	mm	2.2	1.1	0.6
material				
housing		PI with stainless steel cover 316L (1.4404)		
contact surface		PI		
degree of protection		IP66/IP67		
transducer cable				
type		6111		
length	m	4		3
dimensions				
length l	mm	64		40
width b	mm	32		22
height h	mm	40.5		25.5
dimensional drawing				
weight (without cable)	kg	0.066		0.017
pipe surface temperature	°C	100...240[1]		100...200
ambient temperature	°C	-30...+40 -30...+200[2]		-30...+200
temperature compensation		x		
explosion protection				
• **ATEX/IECEx**				
order code		GSM-EA1*-**T1	GSP-EA1*-**T1	GSQ-EA1*-**T1
pipe surface temperature (Ex)	°C	-45...+225[1]		
marking		CE 0637 Ex II2G II2D Ex q IIC T6...T2 Gb Ex tb IIIA T80 °C...T230 °C Db		
certification		IBExU07ATEX1168 X, IECEx IBE 08.0007X		

[1] > +200 °C :
Variofix C
observe the insulation instruction
ambient temperature max. +40 °C

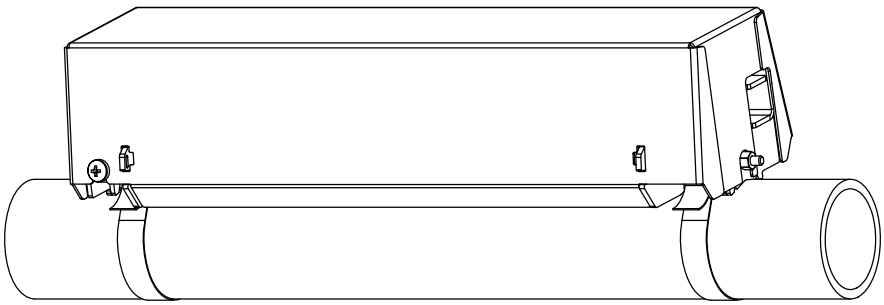
[2] pipe surface temperature max. +200 °C

Transducer mounting fixture

Order code

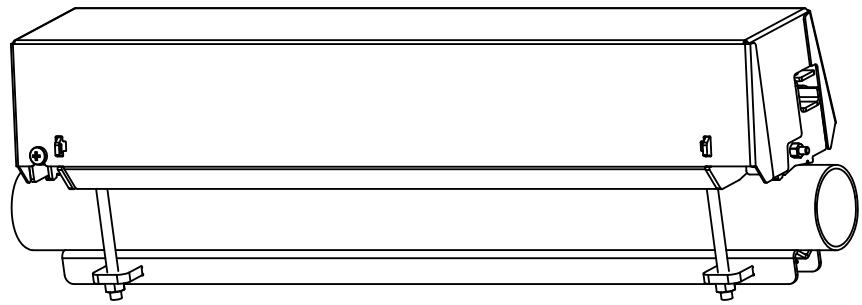
1, 2	3		4	5		6	7...10		
transducer mounting fixture	**transducer**	**-**	**measurement arrangement**	**size**	**-**	**fixation**	**outer pipe diameter**	**/**	**option**	**description**
VC										Variofix C
WI										transducer box for WaveInjector
	K									transducers with transducer frequency G, K
	M									transducers with transducer frequency M, P
	Q									transducers with transducer frequency Q
			D							diagonal arrangement
				S						small
				L						large
						B				bolts
						S				tension straps
							0020			10...20 mm
							0040			20...40 mm
							T360			40...360 mm
							0130			10...130 mm
							0360			130...360 mm
							0920			360...920 mm
							2000			920...2000 mm

Variofix C (VC)



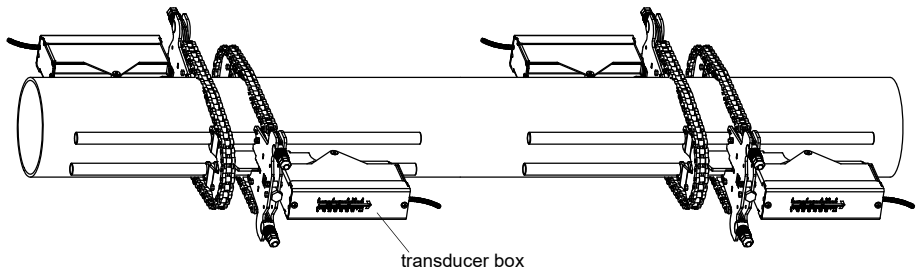
material: stainless steel 316Ti (1.4571)
inner length:
VCK-*L: 500 mm
VCK-*S: 350 mm
VCM: 400 mm
VCQ: 250 mm
dimensions:
VCK-*L:
560 x 126 x 125 mm
VCK-*S:
410 x 126 x 125 mm
VCM: 460 x 96 x 82 mm
VCQ: 310 x 85 x 71 mm

Variofix C (VC) with bolt mounting plates (VCM--B, VCQ-**-B)**



material: stainless steel 316Ti (1.4571)
inner length:
VCM: 400 mm
VCQ: 250 mm
dimensions:
VCM: 460 x 96 x 82 mm
VCQ: 310 x 85 x 71 mm
outer pipe diameter:
VCM: max. 46 mm
VCQ: max. 36 mm

transducer box WI for WaveInjector

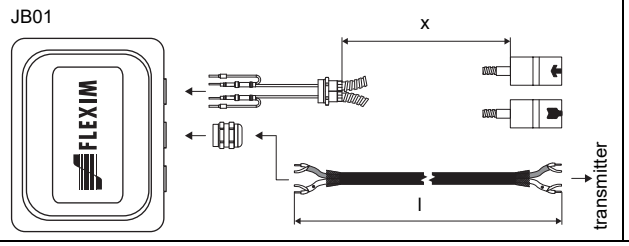
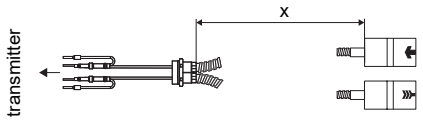


see Technical specification
TSWaveInjectorVx-x

Coupling materials for transducers

type	ambient temperature °C	remark
coupling foil type VT	-10...+200	fluid temperature 200 °C: min. 2 years
coupling foil type TF	200...240	
coupling compound type E	-30...+200	in combination with type VT only
coupling compound type H	-30...+250	in combination with type TF only
coupling foil type A	max. 280	WaveInjector
coupling foil type B	280...630	WaveInjector

Connection systems

connection system T1		
connection with extension cable	direct connection	transducers technical type
		*****8*

Cable

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

extension cable			
type		**2615**	**5245**
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

Cable length

transducer frequency		G, K		M, P		Q	
connection system TS							
transducers technical type		x	l	x	l	x	l
*D***8*	m	5	≤ 300	4	≤ 300	3	≤ 90
*L***8*	m	9	≤ 300	9	≤ 300	9	≤ 90

x - transducer cable length

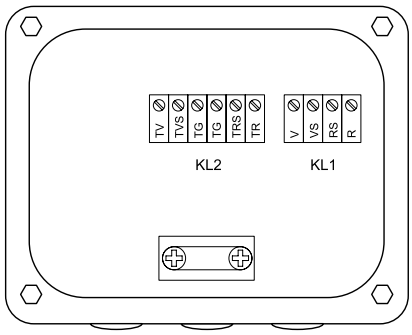
l - max. length of extension cable (depending on the application)

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		IP66/IP67
ambient temperature	°C	-40...+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		IBExU06ATEX1161 IECEx IBE 08.0006
type of protection		gas: increased safety decoupling network: encapsulation dust: protection by enclosure

Connection



Transducers

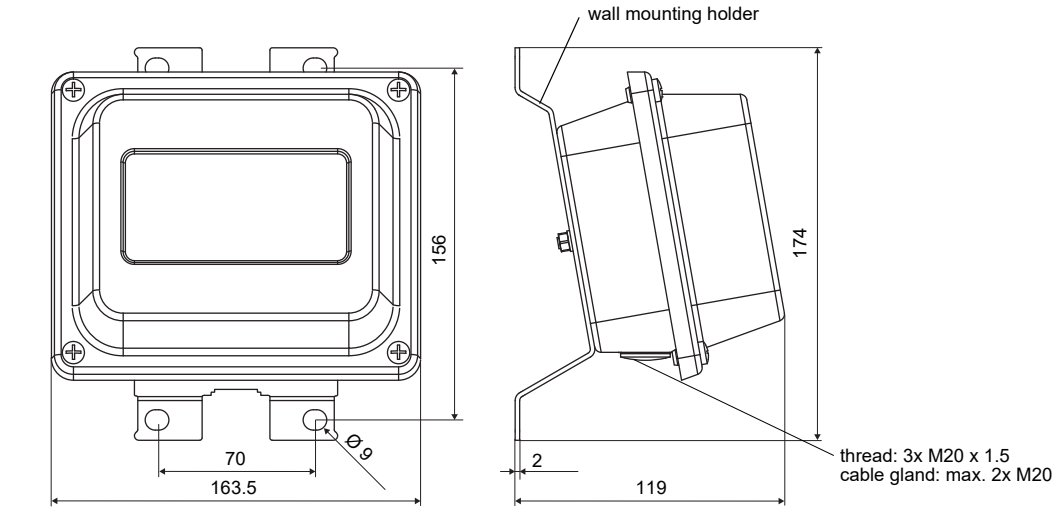
terminal strip	terminal	connection	transducer
KL1	V	signal	
	VS	internal shield	
	RS	internal shield	
	R	signal	

Extension cable

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

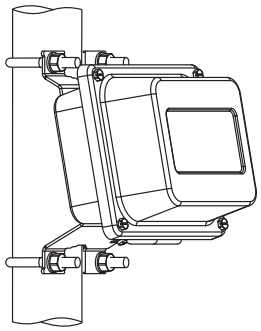
Dimensions

JB0*, JBP*



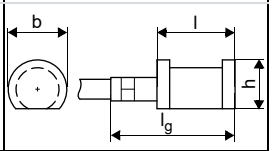
in mm

2" pipe mounting kit

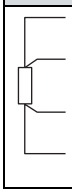
JB** 	item number: 751035-2

Clamp-on temperature probe (optional)

Technical data

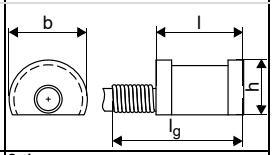
PT12N		
item number		770415-6
design		clamp-on zone 0/1 (intrinsic safety)
type		Pt100
connection		4-wire
measuring range	°C	-45...+230
accuracy T		±(0.15 °C + 2 · 10^{-3} · |T [°C]|) class A
housing material		stainless steel 316
degree of protection		IP65/IP68
dimensions		
length l	mm	20 (l_g = 45)
width b	mm	16
height h	mm	11
dimensional drawing		
weight	kg	0.15
explosion protection		
• ATEX/IECEx		
technical type		LEX25
marking		CE 0344 Ex II1G Ex ia IIC T6...T1 Ga
certification		DEKRA17ATEX0123 X IECExDEK 17.0046X
intrinsic safety parameters		U_i = 30 V DC I_i = 75 mA P_i = 500 mW C_i = 0 L_i = 0

Connection

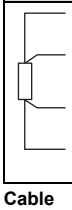
	temperature probe
	red
	red
	white
	white

Cable

		temperature probe
type		4 x 0.22 mm²
standard length	m	4
ambient temperature	°C	-45...+80
cable jacket		
material		FEP
outer diameter	mm	3.6
colour		black

PT12N		
item number		770415-7
design		clamp-on zone 1
type		Pt100
connection		4-wire
measuring range	°C	-45...+250
accuracy T		±(0.15 °C + 2 · 10^{-3} · |T [°C]|) class A
housing material		stainless steel 316
degree of protection		IP68
dimensions		
length l	mm	20 (l_g = 80)
width b	mm	16
height h	mm	11
dimensional drawing		
weight	kg	0.4
explosion protection		
• ATEX/IECEx		
technical type		LEX15
marking		CE 0344 Ex II2G Ex eb IIC T6…T1 Gb
certification		DEKRA17ATEX0123 X IECExDEK 17.0046X

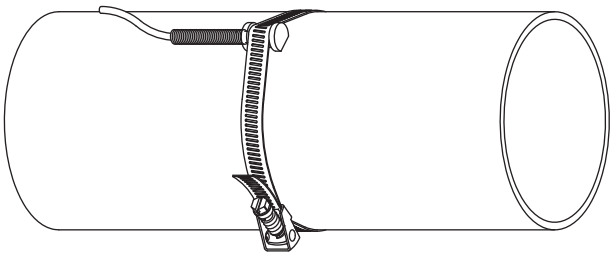
Connection

	temperature probe
	red
	red
	white
	white

Cable

		temperature probe
type		4 x 0.22 mm²
standard length	m	4
ambient temperature	°C	-45...+80
min. bend radius	mm	22
cable jacket		
material		PTFE
outer diameter	mm	3.6
colour		black

Fixation

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

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