

Features

- Two measuring channels
- Flameproof/explosion proof housing for hazardous areas
- Intrinsic safe process inputs for the integration of external pressure and temperature sensors
- More precise measurement at unfavorable measuring points through integrated disturbance correction
- Bidirectional communication and HART support
- Certification: ATEX/IECEEx zone 1

Applications

- Chemical industry
- Petrochemical industry
- Oil and gas industry



Transmitter

Technical data

		FLUXUS G831 (831-AA1)	FLUXUS G831 (831-AA2)
			
design		explosion-proof field device zone 1 (intrinsic safety: HART)	explosion-proof field device zone 1 (intrinsic safety: inputs, HART)
measurement			
measurement principle		transit time difference correlation principle	
synchronised channel averaging		x (2 measuring channels necessary)	
flow velocity	m/s	measuring range: 0.01...35, depending on pipe diameter	
repeatability		0.15 % MV ±0.005 m/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	
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		20...32 V DC, U _m = 120 V	
power consumption	W	< 4	
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		cast aluminum, special heavy-duty coating	
degree of protection		IP66	
dimensions	mm	see dimensional drawing	
weight	kg	6.5	
fixation		wall mounting, 2" pipe mounting	
ambient temperature	°C	-40...+60 (< -20 without operation of the display)	
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 II2G II2D Ex db eb ia IIC T6 Gb Ex tb ia IIC T100 °C Db T _a -40...+60 °C	CE 0637 Ex II(1)2G II(1)2D Ex db eb ia [ia] IIC T6 Gb Ex tb ia [ia] IIC T100 °C Db T _a -40...+60 °C
certification ATEX		IBExU20ATEX1103 X	
certification IECEx		IECEx IBE 20.0015X	
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	
communication interfaces			
service interfaces		measured value transmission, parametrisation of the transmitter: USB ²	
process interfaces		HART (intrinsic safety, optional)	
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	

¹ with aperture calibration of the transducers² outside the explosive atmosphere (housing cover open)

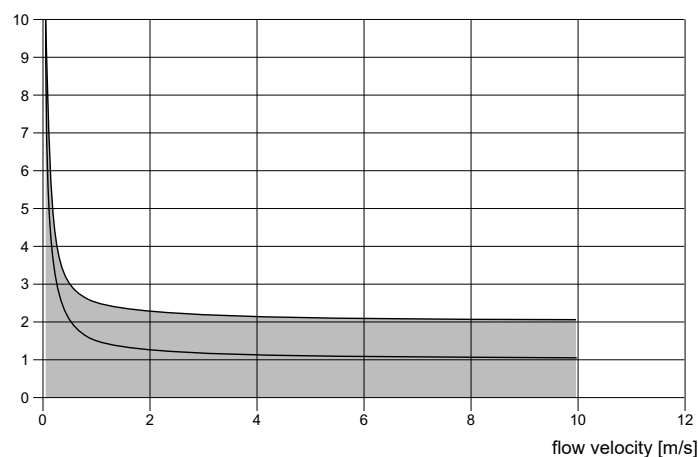
		FLUXUS G831 (831-AA1)	FLUXUS G831 (831-AA2)
outputs			
		The outputs are galvanically isolated from the transmitter.	
• current output			
number		1	
range	mA	4...20 (3.2...24)	
accuracy		0.04 % MV ±3 µA	
passive output		U _{ext} ≤ 29 V DC, depending on R _{ext} (R _{ext} < 830 Ω at 29 V)	
current output in HART mode			
• range	mA	4...20 (3.5...22)	
• passive output		U _{ext} = 9...29 V DC	
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			
• temperature input			
number		-	max. 1
type		-	Pt100/Pt1000
connection		-	4-wire
range	°C	-	-150...+560
resolution	K	-	0.01
accuracy		-	±0.01 % MV ±0.03 K
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
• current input			
number		-	max. 1
accuracy		-	±0.1 % MV ±0.01 mA
active input		-	U _{int} < 20 V, R _{int} = 360 Ω
• 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 with aperture calibration of the transducers

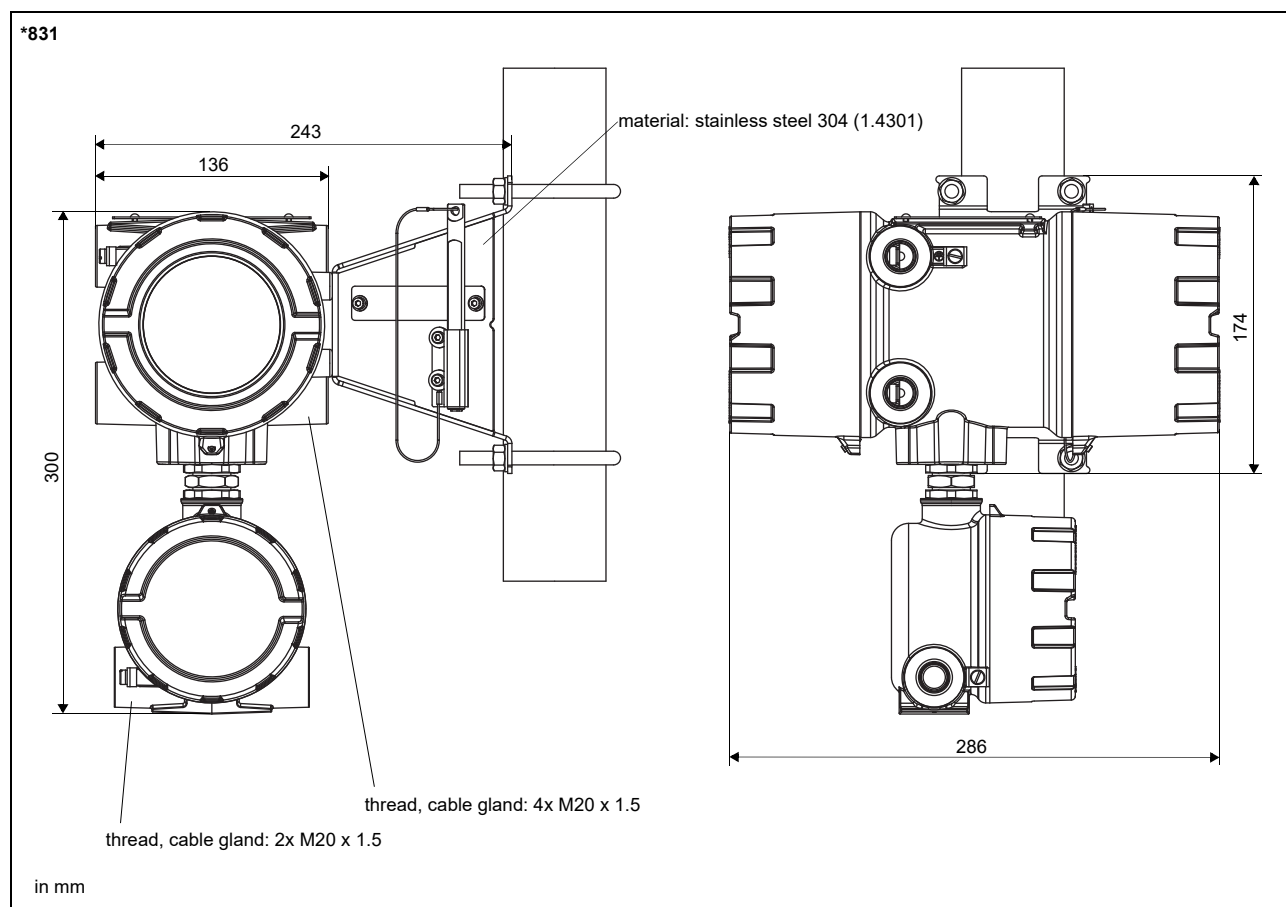
² outside the explosive atmosphere (housing cover open)

Measurement uncertainty

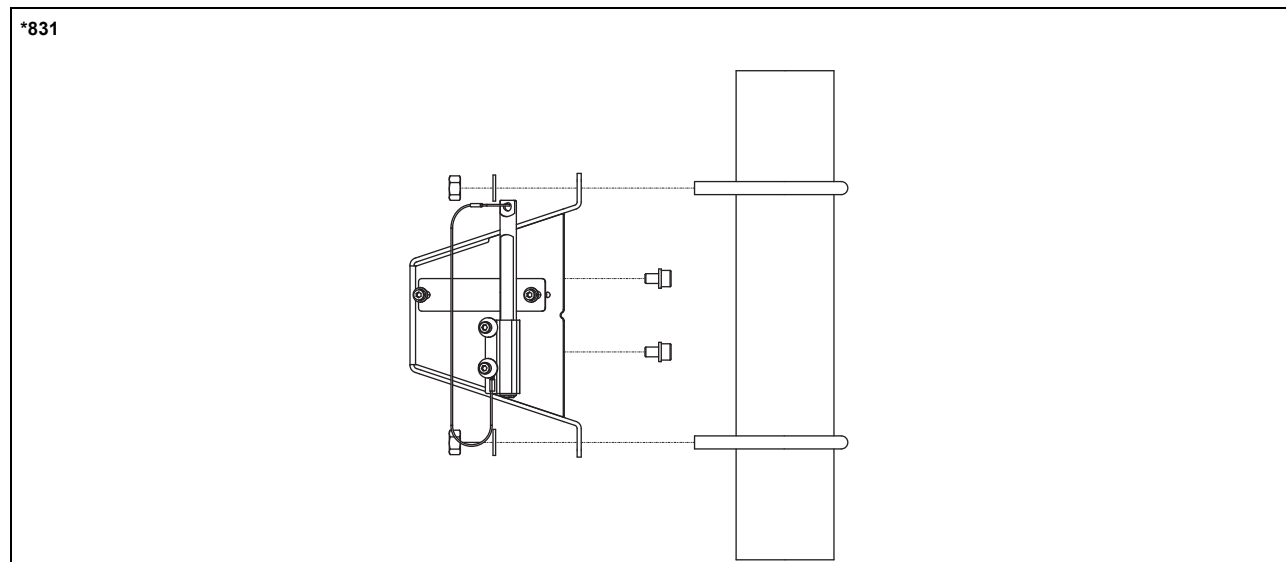
measurement uncertainty [%]



Dimensions



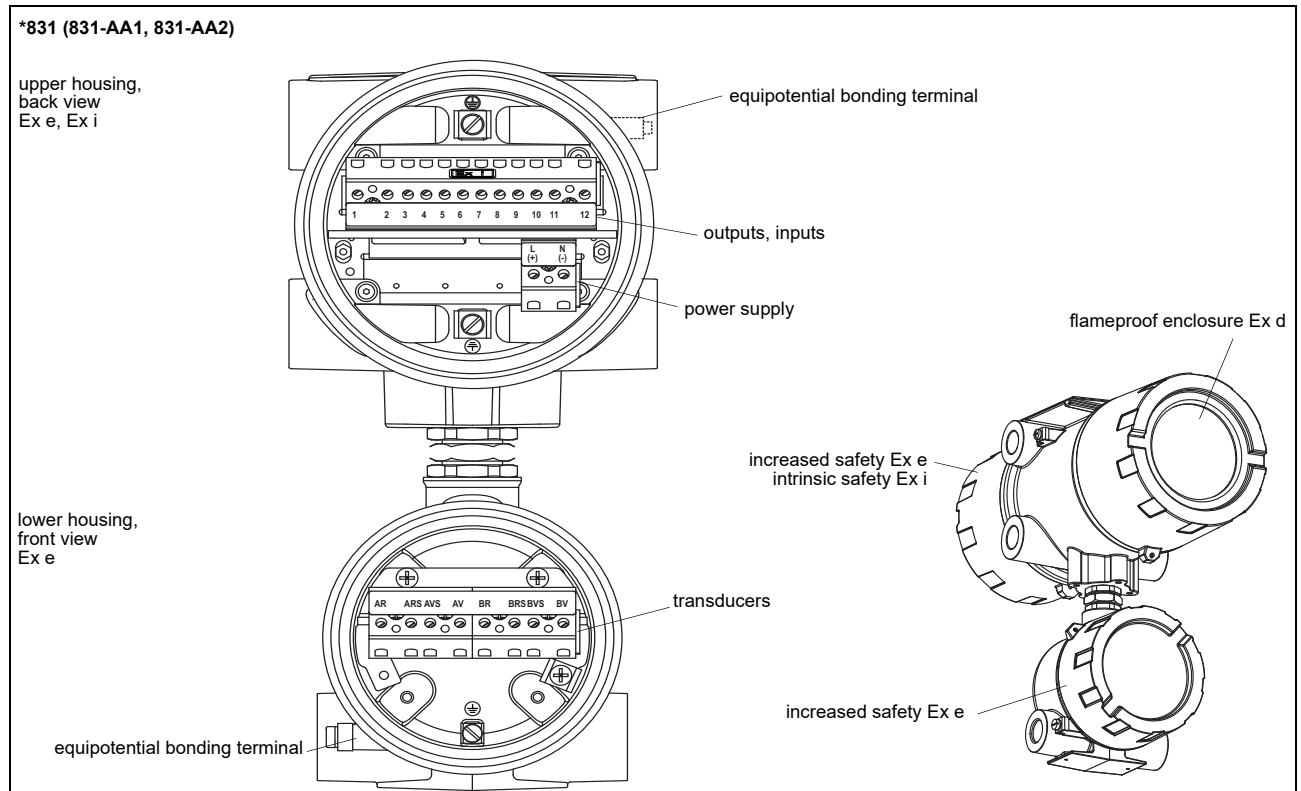
2" pipe mounting kit



Storage

- store within the original package
- keep all openings closed
- protect against sunlight
- store in a dry and dust-free place
- do not store outdoors
- storing temperature: -40...+60 °C

Terminal assignment



power supply ¹				
DC				
terminal		connection		
(+)		+		
(-)		-		
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 ^{1, 2}				
terminal		connection		
11+, 12-		current output, HART		
USB		type C Hi-Speed USB 2.0 Device		service (FluxDiag/FluxDiagReader)
inputs ²				
temperature probe				
terminal		direct connection		connection with extension cable
3		red		red
4		red/blue		blue
5		white/blue		grey
6		white		white
current input ¹				
terminal		connection		
1		-		
2		+		

¹ cable (by customer): e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm²

² The number, type and terminal assignment are customised.

Transducers

Shear wave transducers

		technical type				
		G	K	M	P	Q
zone 1 normal temperature range		G DG1N81 GLG1N81	G DK1N81 GLK1N81	G DM2N81 GLM2N81	G DP2N81 GLP2N81	G DQ2N81 GLQ2N81
zone 1 IP68		G DG1LI1	G DK1LI1	G DM2LI1	G DP2LI1	
zone 1 extended temperature range		G DG1E83 GLG1E83	G DK1E83 GLK1E83	G DM2E85 GLM2E85	G DP2E85 GLP2E85	G DQ2E85 GLQ2E85
inner pipe diameter d						
min. extended	mm	180	60	30	15	7
min. recommended	mm	220	80	40	20	10
max. recommended	mm	900	300	150	50	22
max. extended	mm	1100	360	180	60	30
pipe wall thickness						
min.	mm	11	5	2.5	1.2	0.6
fluid pressure						
min. extended	bar	metal pipe: 20				
min.	bar	metal pipe: 30, plastic pipe: 1				

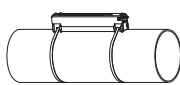
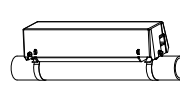
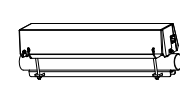
for further data see Technical specification TS_G8xx-transducersVx-xxx_Leu

Lamb wave transducers

		technical type						
		F	G	H	K	M	P	Q
zone 1 normal temperature range		GRF1N83 GTF1N83	GRG1N83 GTG1N83	GRH1N83 GTH1N83	GRK1N83 GTK1N83	GRM1N83 GTM1N83	GRP1N83 GTP1N83	GRQ1N83 GTQ1N83
zone 1 higher temperatures			GRG1S83 GTG1S83	GRH1S83 GTH1S83	GRK1S83 GTK1S83	GRM1S83 GTM1S83		
zone 1 IP68		GRF1LI3	GRG1LI3	GRH1LI3	GRK1LI3	GRM1LI3	GRP1LI3	
fluid pressure								
min. extended	bar	metal pipe: 10	metal pipe: 10	metal pipe: 10	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 plastic pipe: 1	metal pipe: 15 plastic pipe: 1	metal pipe: 15 plastic pipe: 1	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	220	180	110	60	30	15	7
min. recommended	mm	270	220	140	80	40	20	10
max. recommended	mm	1200	900	600	300	150	50	22
max. extended	mm	1600	1400	1000	360	180	60	30
pipe wall thickness ****N**, ****L**								
min.	mm	15	11	8	5	2.5	1.2	0.6
max.	mm	32	24	16	10	5	3	1.2
max. extended	mm	35	-	-	-	-	-	-
pipe wall thickness ****S**								
min.	mm		10.6	7.1	4.2	2.1		
max.	mm		23.7	15.8	9.5	4.7		

for further data see Technical specification TS_G8xx-transducersVx-xxx_Leu

Transducer mounting fixture

Variofix L	Variofix L with bolt mounting plates	Variofix C	Variofix C with bolt mounting plates
			
	outer pipe diameter: max. 48 mm		outer pipe diameter: VC M: max. 46 mm VC Q: max. 36 mm

for further data see Technical specification TS_G8xx-transducersVx-xxx_Leu

Coupling materials for transducers

	normal temperature range		extended temperature range		
	< 100 °C	< 170 °C	< 150 °C	< 200 °C	200...240 °C
< 24 h	coupling compound type N or coupling foil type VT	coupling compound type E or coupling foil type VT	coupling compound type E or coupling foil type VT	coupling compound type E or H or coupling foil type VT	coupling foil type TF
long time measurement	coupling foil type VT	coupling foil type VT	coupling foil type VT	coupling foil type VT	

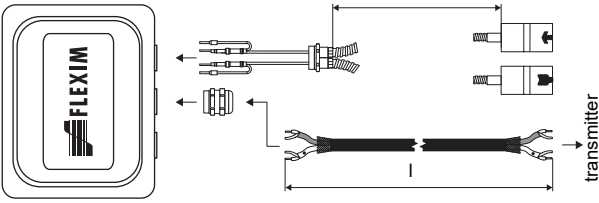
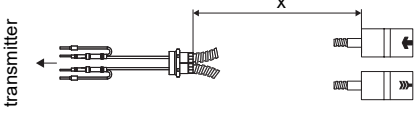
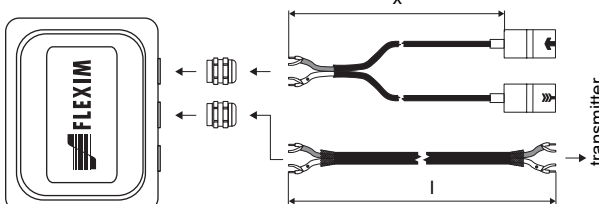
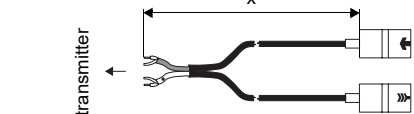
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Damping material

	damping mat		damping coat
order code	ACC-PE-GNNN/DPD2	ACC-PE-GNNN/DPD1	ACC-PE-GNNN/DPL1
type	E30R4	E30R3	

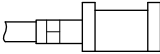
for further data see Technical specification TS_G8xx-transducersVx-xxx_Leu

Connection systems

connection system T1		
connection with extension cable	direct connection	transducers technical type
JB01 		*****g*
JB01 		****L)*

for further data see Technical specification TS_G8xx-transducersVx-xxx_Leu

Temperature probes

PT12N (order code: ACC-PE-xxxx-T332)
• clamp-on • ATEX-Zone 0 (intrinsic safety)
-45...+230 °C


see Technical specification TS_PTVx-xxX_Leu