

Flexim FLUXUS G704 (SIL) Ultrasonic Flowmeter



Transmitter

Technical data

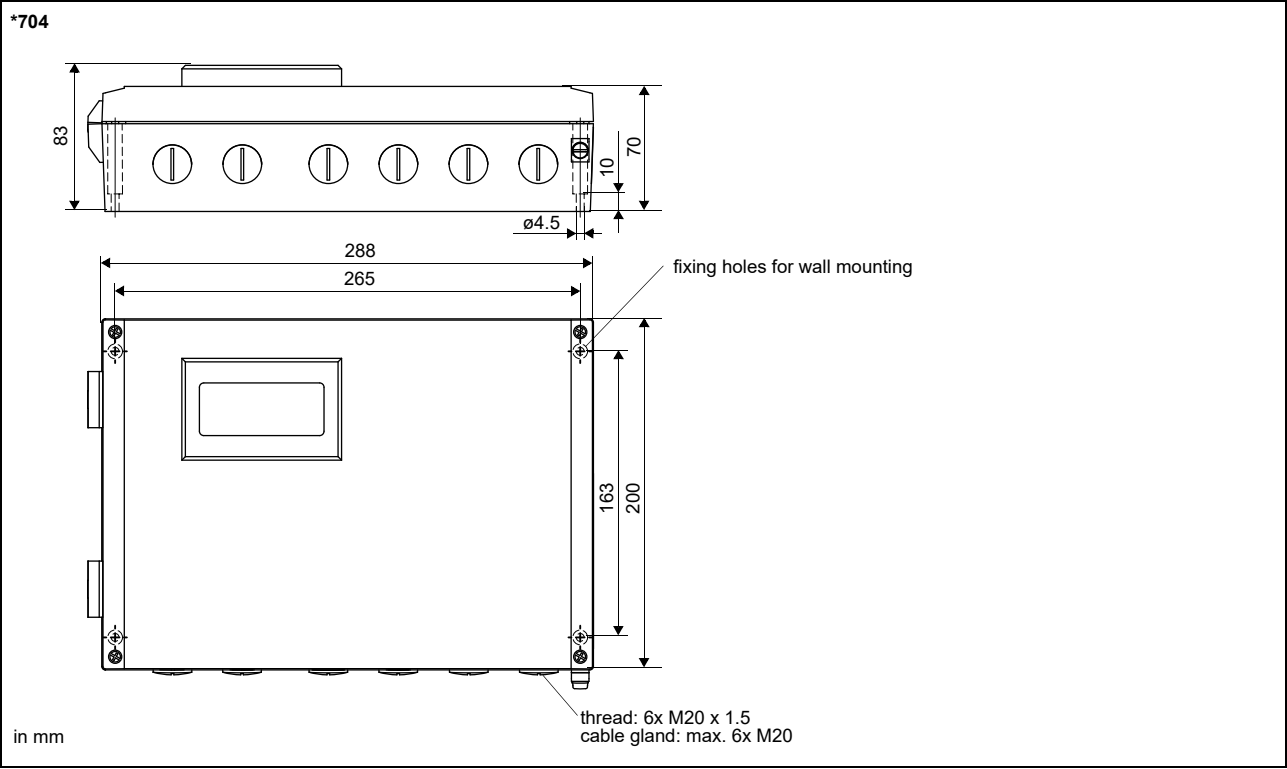
		G704SR-NN G704SR-A2 G704SR-F2
		
design		standard field device SIL2
supported transducer frequencies		F, G, H, K, M on request: P, Q
measurement		
measurement principle		transit time difference correlation principle
flow direction		bidirectional
flow velocity	m/s	0.01...35, depending on pipe diameter
repeatability		0.15 % MV ±0.01 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		±1...3 % MV ±0.01 m/s depending on the application ±0.5 % MV ±0.01 m/s with field calibration
transmitter		
power supply		100...230 V/50...60 Hz
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: 0.07
housing material		aluminum, powder coated
degree of protection		IP65
dimensions	mm	see dimensional drawing
weight	kg	3.1
fixation		wall mounting, optional: 2" pipe mounting
ambient temperature	°C	-20...+60 °C
display		2 x 16 characters, dot matrix, backlight
menu language		English, German, French, Dutch, Spanish
explosion protection		
• ATEX/IECEx		
transmitter		G704**-A2
marking		CE 0637 II3G II2D Ex nA nC ic IIC T4 Gc Ex tb IIC T120 °C Db T _a -40...+60 °C
certification		IBExU11ATEX1015, IECEx IBE 11.0008
• FM		
transmitter		G704**-F2
FM code		G70[1 or 2]Z2**9
marking		NI/Cl. I, II, III / Div. 2 / GP. A, B, C, D, E, F, G / T4A -20...+55 °C
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		• RS232 ¹ • USB (with adapter) ¹
accessories		
data transmission kit		
• cable		RS232
• adapter		RS232 - USB
software		• FluxDiagReader: reading of measured values and parameters, graphical representation • FluxDiag (optional): reading of measurement data, graphical representation, report generation
data logger		
loggable values		all physical quantities, totalised physical quantities and diagnostic values
capacity		> 100 000 measured values

¹ outside the explosive atmosphere (housing cover open)

		G704SR-NN G704SR-A2 G704SR-F2
outputs		
		The outputs are galvanically isolated from the transmitter.
• current output		
number		2 (1 (SIL2), 1 (diagnosis))
range	mA	0/4...20
accuracy		0.1 % MV ±15 µA
active output		R _{ext} < 500 Ω
• binary output		
number		0...3 (diagnosis)
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	1...1000

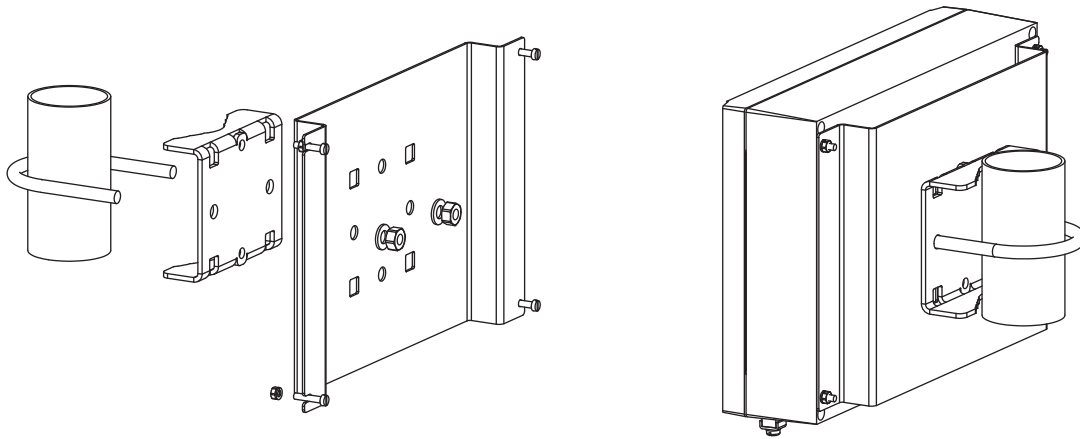
¹ outside the explosive atmosphere (housing cover open)

Dimensions



2" pipe mounting kit

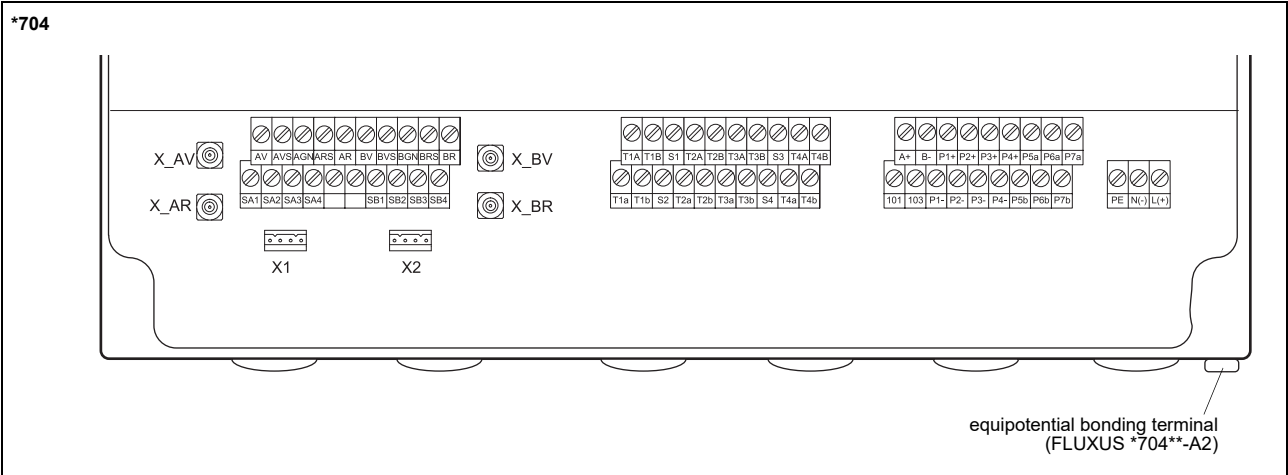
*704



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: -20...+60 °C

Terminal assignment



power supply ¹							
terminal				connection (AC)			
PE				protective conductor			
N(-)				neutral conductor			
L(+)				line conductor			
transducers							
transducer cable (transducers *****53, *****8*, ****L*), extension cable					transducer cable (transducers *****52)		
measuring channel A		measuring channel B			measuring channel A	measuring channel B	
terminal	connection	terminal	connection	transducer	terminal		connection
AV	signal	BV	signal	↑	X_AV	X_BV	SMB connector
AVS	shield	BVS	shield				
ARS	shield	BRS	shield	⌵	X_AR	X_BR	SMB connector
AR	signal	BR	signal				
outputs ¹							
terminal				connection			
P1+...P2+ P1-...P2-				current output			
P5a...P7a P5b...P7b				binary output			

¹ cable (by customer): e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.5...1.5 mm²

Transducers

Overview

Shear wave transducers

			technical type				
			G	K	M	P	Q
zone 2 - FM Class I Div. 2 - nonEx SMB connector normal temperature range			GDG1N52 GLG1N52	GDK1N52 GLK1N52	GDM2N52 GLM2N52	GDP2N52 GLP2N52	GDQ2N52 GLQ2N52
zone 2 - FM Class I Div. 2 - nonEx with stripped cable ends normal temperature range			GDG1N53 GLG1N53	GDK1N53 GLK1N53	GDM2N53 GLM2N53	GDP2N53 GLP2N53	GDQ2N53 GLQ2N53
zone 2 - nonEx IP68			GDG1LI8	GDK1LI8	GDM2LI8	GDP2LI8	
zone 2 - FM Class I Div. 2 - nonEx SMB connector extended temperature range			GDG1E52 ¹ GLG1E52 ¹	GDK1E52 ¹ GLK1E52 ¹	GDM2E52 GLM2E52	GDP2E52 GLP2E52	GDQ2E52 GLQ2E52
zone 2 - FM Class I Div. 2 - nonEx with stripped cable ends extended temperature range			GDG1E53 ¹ GLG1E53 ¹	GDK1E53 ¹ GLK1E53 ¹	GDM2E53 GLM2E53	GDP2E53 GLP2E53	GDQ2E53 GLQ2E53
zone 1 normal temperature range			GDG1N81 GLG1N81	GDK1N81 GLK1N81	GDM2N81 GLM2N81	GDP2N81 GLP2N81	GDQ2N81 GLQ2N81
zone 1 IP68			GDG1LI1	GDK1LI1	GDM2LI1	GDP2LI1	
zone 1 extended temperature range			GDG1E83 GLG1E83	GDK1E83 GLK1E83	GDM2E85 GLM2E85	GDP2E85 GLP2E85	GDQ2E85 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				

¹ nonEx, FM

for further data see Technical specification TS_Gxx-transducersVx-xxx_Leu

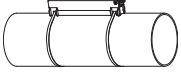
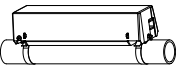
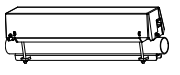
Lamb wave transducers

			technical type						
			F	G	H	K	M	P	Q
zone 2 - FM Class I Div. 2 - nonEx SMB connector normal temperature range			GRF1N52 GTF1N52	GRG1N52 GTG1N52	GRH1N52 GTH1N52	GRK1N52 GTK1N52	GRM1N52 GTM1N52	GRP1N52 GTP1N52	GRQ1N52 GTQ1N52
zone 2 - FM Class I Div. 2 - nonEx with stripped cable ends normal temperature range			GRF1N53 GTF1N53	GRG1N53 GTG1N53	GRH1N53 GTH1N53	GRK1N53 GTK1N53	GRM1N53 GTM1N53	GRP1N53 GTP1N53	GRQ1N53 GTQ1N53
zone 2 - nonEx IP68			GRF1LI8 GTF1LI8	GRG1LI8 GTG1LI8	GRH1LI8 GTH1LI8	GRK1LI8 GTK1LI8	GRM1LI8 GTM1LI8	GRP1LI8 GTP1LI8	
zone 2 - FM Class I Div. 2 - nonEx SMB connector higher temperatures				GRG1S52 GTG1S52	GRH1S52 GTH1S52	GRK1S52 GTK1S52	GRM1S52 GTM1S52	GRP1S52 ¹ GTP1S52 ¹	
zone 2 - FM Class I Div. 2 - nonEx with stripped cable ends higher temperatures				GRG1S53 GTG1S53	GRH1S53 GTH1S53	GRK1S53 GTK1S53	GRM1S53 GTM1S53	GRP1S53 ¹ GTP1S53 ¹	
zone 1 normal temperature range			GRF1N83 GTF1N83	GRG1N83 GTG1N83	GRH1N83 GTH1N83	GRK1N83 GTK1N83	GRM1N83 GTM1N83	GRP1N83 GTP1N83	GRQ1N83 GTQ1N83
zone 1 IP68			GRF1LI3	GRG1LI3	GRH1LI3	GRK1LI3	GRM1LI3	GRP1LI3	
zone 1 higher temperatures				GRG1S83 GTG1S83	GRH1S83 GTH1S83	GRK1S83 GTK1S83	GRM1S83 GTM1S83		
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		

¹ nonEx

for further data see Technical specification TS_Gxx-transducersVx-xXX_Leu

Transducer mounting fixture

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

for further data see Technical specification TS_Gxx-transducersVx-xXX_Leu

Coupling materials for transducers

	normal temperature range (4th character of transducer order code = N)		extended temperature range higher temperatures (4th character of transducer order code = E, S)		
	< 100 °C	< 130 °C	< 180 °C	< 200 °C	200...240 °C
< 24 h	coupling compound type N or coupling foil type VT	coupling compound type type N or E 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 H or coupling foil type TF
long time measurement	coupling foil type VT	coupling foil type VT	coupling foil type VT	coupling foil type VT	coupling foil type TF

for further data see Technical specification TS_Gxx-transducersVx-xxx_Leu

Damping material

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

for further data see Technical specification TS_Gxx-transducersVx-xxx_Leu

Connection systems

connection system TS		
connection with extension cable	direct connection	transducers technical type
JB02, JB03, JB04		****52
connection system T1		
connection with extension cable	direct connection	transducers technical type
JBP2, JBP3, JB06		****N53 ****E53 ****S53
JB01		****8*
JB01, JBP2, JBP3		****L*

for further data see Technical specification TS_Gxx-transducersVx-xxx_Leu

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