



Main Features

- Ranges: from 0...0.05 bar to 0...60 bar (0...1 to 0...1000 psi)
- Complete range of voltage/current outputs
- Protection rating: IP65/IP67
- Wetted parts: AISI316L
- Operating temperature range -40...+85°C
- Accuracy: $\pm 0.15\%$ FS typical
- Fill Fluid: silicone oil
- Available absolute ranges
- Available "Barometric" range (0.8-1.2 bar abs)
- Available low ranges (50mbar and 100mbar)

Series TSA transmitters are based on silicon piezoresistive sensing element in wheatstone bridge configuration.

Thanks to highly stable electronic components, these transmitters can be used in applications requiring long-distance signal transmission or in smart control systems.

TSA pressure transmitters were developed mainly for pressure measurement in industrial refrigeration and air conditioning, compressor and pumps. They are also used for monitoring and control on automatic machines and general purpose industrial applications.

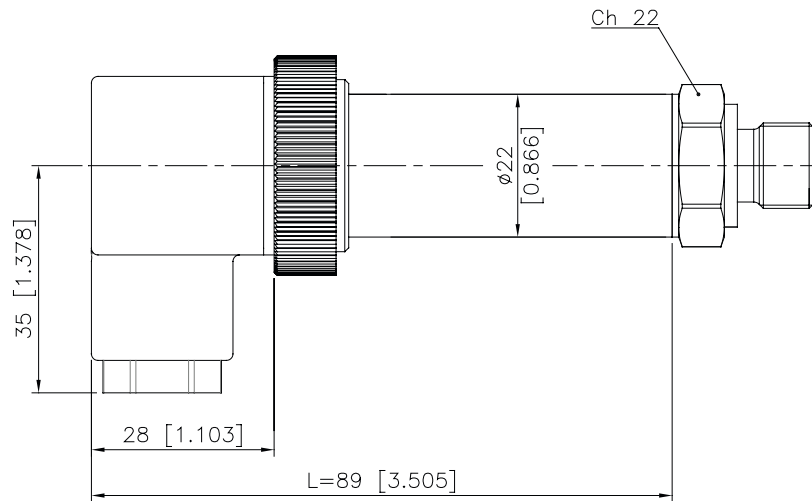
TECHNICAL DATA

	Output signal	VOLTAGE	CURRENT
Accuracy (1)		$\pm 0.15\%$ FS typical; $\pm 0.25\%$ FS max ($\pm 0.5\%$ FS for absolute ranges)	
Resolution		Infinite	
Overpressure (without degrading performance) (2)		see table	
Pressure containment (Burst test) (3)		see table	
Pressure media		Fluid compatible with AISI 316L Stainless steel	
Body materials		AISI 304 Stainless steel	
Power supply		15...30Vdc	10...30Vdc
Supply sensitivity		< 0,0015% FS/V	
Insulation resistance		> 1000 M Ω @ 50Vdc	
Zero output signal		C, M, N	4mA (E)
Full scale output signal		C, M, N	20mA (E)
Max current absorption		< 13mA	<32mA
Max allowed load		1mA	See diagram
Long term stability		< 0.1% FS/per year (ranges \geq 250mbar)	
Operating temperature range (process)		-40...+85°C (-40...+185°F)	
Compensated temperature range		-10...+85°C (+14...+185°F)	
Storage temperature range		-40...+85°C (-40...+185°F)	
Temperature effects over compensated range (zero-span)		$\pm 0.01\%$ FS/°C typical ($\pm 0.02\%$ FS/°C max.) ranges >1 bar $\pm 0.04\%$ FS/°C typical ranges \leq 1 bar	
Response time (10...90%FS)		< 4 msec.	
Start-up time		< 500 msec.	
Mounting position effects		Negligible (ranges \geq 1bar)	
Humidity		Up to 100%RH non condensing	
Weight		200 gr. nominal	
Mechanical shock		100 g / 1 msec. according to IEC 60068-2-27	
Vibrations		20 g max a 15-2000Hz according to IEC60068-2-6	
Ingress protection		IP65/IP67	
Output short circuit and reverse polarity protection		YES	
EC conformity		According to Directive 2014/30/EU	
FS = Full Scale	1 BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability 2 tested for more than 1000 strokes with single duration <2msec. 3 tested for more than 100 strokes with single duration <2msec		

MEASUREMENT RANGE (Bar)	0.05	0.1	0.25	0.5	1	0.8-1.2	2	2.5	4	5	6	7	10	16	20	25	30	40	50	60
Overpressure	0.2	0.2	0.7	1.4	2	2	5	5	8	12	12	20	20	32	50	50	80	80	100	120
Burst test	0.3	0.3	1	2	3	3	7.5	7.5	12	18	18	30	30	48	75	75	120	120	150	180

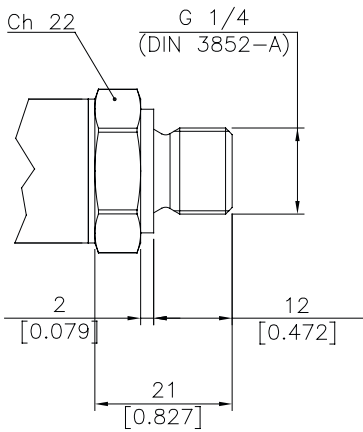
INSTALLATION DRAWINGS

Dimensions: mm [inches]

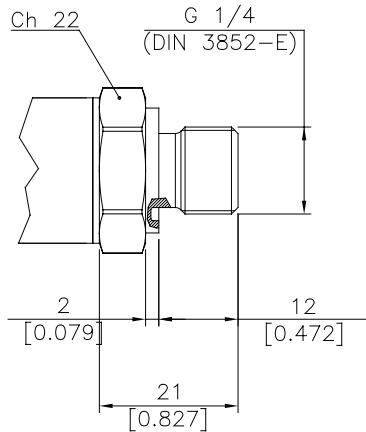


PRESSURE CONNECTION

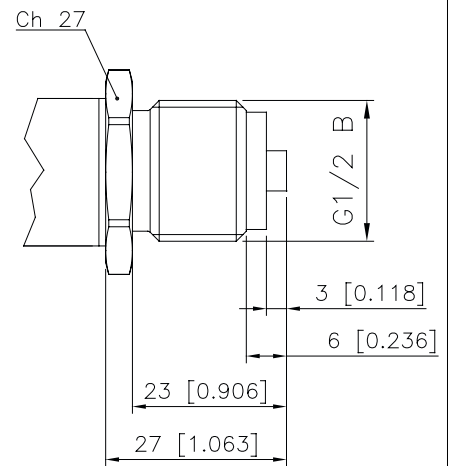
**(1) G 1/4 MALE
(DIN 3852-A)**



**(E) G 1/4 E
(DIN 3852-E)**

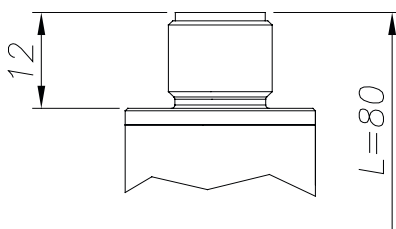


**(3) G 1/2 B
(EN 837)**

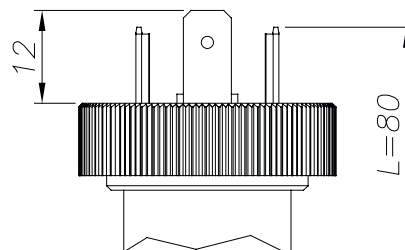


ELECTRICAL CONNECTION

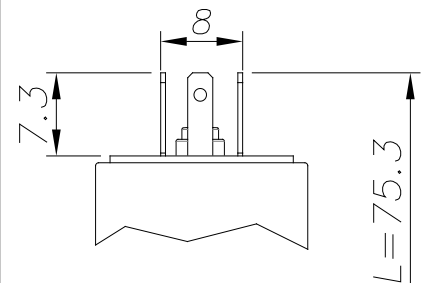
Z - 4 pole connector M12x1



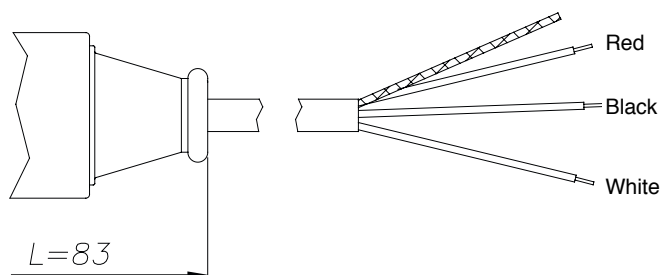
E - EN 175301-801 type A



C - EN 175301-801 type C

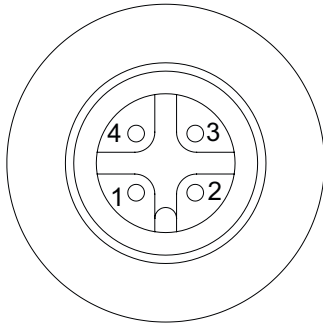


F - 2/3 pole cable



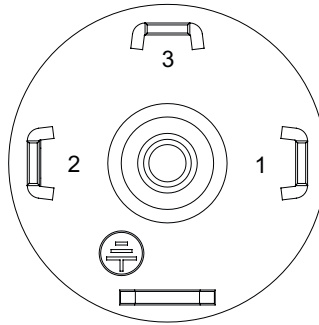
ELECTRICAL CONNECTION - Connectors

Z - M12 x 1 (4 pin)



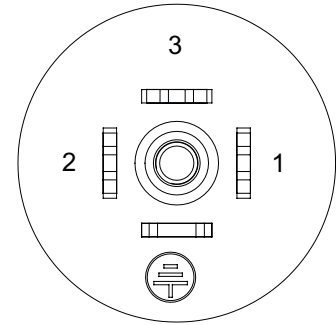
Protection IP67

E - EN 175301-803A



Protection IP65

C - EN 175301-803C

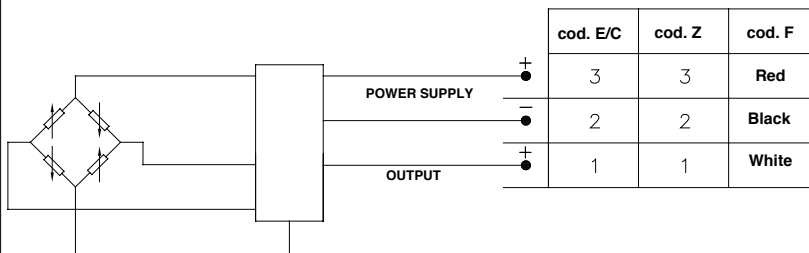


Protection IP65

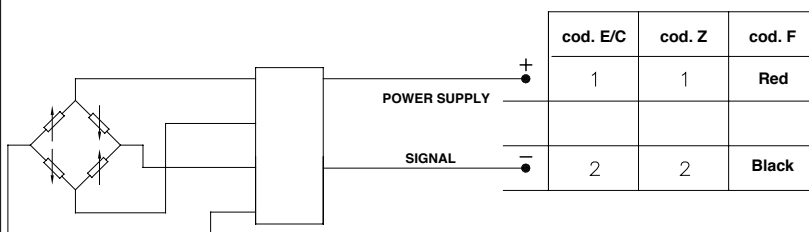
1. The IP rating specified in this document normally applies with the suitable female connector plugged-in and properly wired.
2. The transducers with relative pressure measuring ranges require vented cable and/or mating connector, to allow the compensation of the atmospheric pressure reference.

ELECTRICAL CONNECTION - connection diagrams

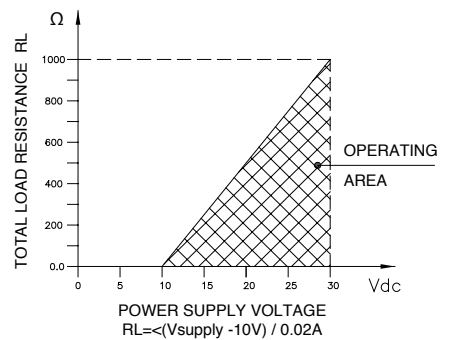
VOLTAGE AMPLIFIED OUTPUT - mod. C/M/N



CURRENT AMPLIFIED OUTPUT - mod. E



LOAD DIAGRAM



ACCESSORIES ON REQUEST

Connectors Plugs

Connection E

EN 175301-803 4 pin Type A – Prot. IP65

CON 006

Connection Z

4 poles connector M12x1 – Prot. IP67

CON 293

Connection C

EN 175301-803 4 pin Type C – Prot. IP65

CON 047

EXTENSION CABLES

IP67 female connector M12 x 1 + 2 m of cable

CAV220

IP67 female connector M12 x 1 + 3 m of cable

CAV221

IP67 female connector M12 x 1 + 5 m of cable

CAV222

IP67 female connector M12 x 1 + 10 m of cable

CAV223

Cable color code

Pin	Wire
1	Brown
2	White
3	Blue
4	Black

ORDERING INFORMATION

Pressure transmitter

TSA



OUTPUT SIGNAL	
4 .. 20 mA	E
0 .. 10 Vdc	N
0,1 .. 10,1 Vdc	C
0 .. 5 Vdc	M
Different outputs available on request	

PRESSURE CONNECTION	
G ¼ male (DIN 3852-A)	1
G ¼ male (DIN 3852-E)	E
G ½ B male (EN 837)	3
Different pressure connections available on request	

ELECTRICAL CONNECTION	
EN 175301-803 type A	E
4 pole M12x1 connector	Z
EN 175301-803 type C	C
Shielded cable (1 m)*	F
Different connectors available on request	
* Different lengths of cable available on request	

Mechanical and/or electrical characteristics differing from standard may be arranged on request.

RESPONSE TIME	
V	Fast (< 4 msec)

ACCURACY	
T	±0,25%FS

G	Relative
A	Absolute

CALIBRATION STANDARDS
Instruments manufactured by Gefran are calibrated against precision pressure calibration equipment which is traceable to International Standards.

MEASUREMENT RANGE					
bar			psi		
BV05	0...0.05		P01U	0...1	
BV10	0...0.1		P2V5	0...2.5	
BV25	0...0.25		P05U	0...5	
BV50	0...0.5		P15U	0...15	
B01U	0...1		P18U	11...18	
B1V2	0.8...1.2		P03D	0...30	
B02U	0...2		P05D	0...50	
B2V5	0...2.5		P75U	0...75	
B04U	0...4		P01C	0...100	
B05U	0...5		P15D	0...150	
B06U	0...6		P25D	0...250	
B07U	0...7		P03C	0...300	
B01D	0...10		P05C	0...500	
B16U	0...16		P75D	0...750	
B02D	0...20		P01M	0...1000	
B25U	0...25				
B03D	0...30				
B04D	0...40				
B05D	0...50				
B06D	0...60				

□ = Range available also "Absolute"

B1V2 = Range available only "Absolute" (Barometric)

P18U = Range available only "Absolute" (Barometric)

Note: The measurement range B1V2 is for absolute pressure from 0.8 to 1.2 bar and is defined as "Barometric". The signal output is scaled from 800mbar (i.e. 4mA) to 1200mbar (i.e. 20mA).

Sensors are manufactured in compliance with: - EMC 2014/30/EU compatibility directive

- RoHS 2011/65/EU directive

Electrical installation requirements and Conformity certificate are available on our web site www.gefran.com

Ex.: TSA - N - 1 - Z - B03D - G - T - V

Pressure transmitter TSA with 0...10Vdc output signal, G 1/4 male pressure connection, M12x1 connector, pressure range 0...30 bar gauge, ±0.25% FS accuracy, 4 msec response time.