GEFRAN

TPFAS

MINIATURE FLUSH DIAPHRAGM PRESSURE TRANSMITTER

Main features

- *Ranges: from 0...25 to 0...600 bar*
- *Output signal 4...20mA 2-wires / 0.1...5.1Vdc / 0.1...10.1Vdc / 0...5Vdc / 0...10Vdc / 1...5Vdc / 1...6Vdc / 1...10Vdc*
- *Protection rating: IP65/IP67*
- *Wetted parts: 17-4PH Stainless Steel*
- *Miniature flush fitting stainless steel measuring diaphragm*
- *Magnetic or External Autozero function*

TPFAS Series flush diaphragm pressure transmitters are based on bonded strain gauge on stainless steel technology.
Thanks to the strong flush diaphragm made with 17-4 PH stainless steel, TPFAS is particularly suitable for pressure measurement where the media is with high viscosity (thick fluids, oils, rubber, pulps, chemical products, etc.) and small size diaphragm is required while internal measuring chamber transducers cannot be used.
The high thickness of the diapragm makes the product very reliable and suitable for heavy industrial application.
Internal state of the art electronics allows a wide range of current and voltage signal outputs, as well as the innovative “Digital Autozero” function is able to perform an easy and quick automatic zero adjustment after the installation, simply with the touch of a magnetic pen or by short circuiting two pins on the electrical connector.

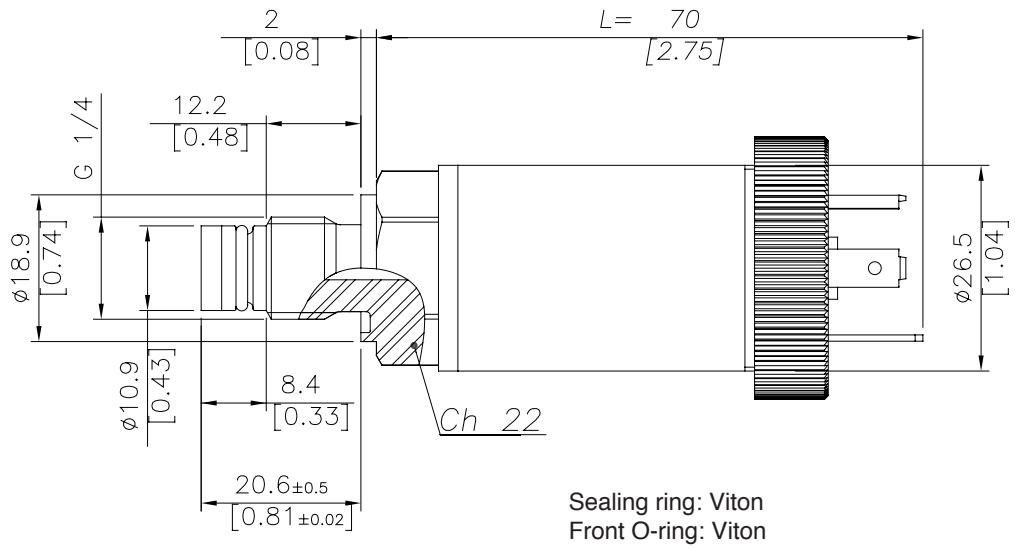
TECHNICAL DATA

Output signal	**VOLTAGE**	**CURRENT**
Accuracy at room temperature (**1**)	±0.5% FSO *	
Non-Linearity (BFSL)	±0.25% FSO	
Hysteresis	±0.1% FSO	
Repeatability	±0.05% FSO	
Torque effect	<±3% FSO	
Measurement range	from 0...25 to 0...600 bar / from 0...350 to 0...9000 psi	
Resolution	Infinite	
Overpressure (without degrading performance) (**2**)	3 x Full Scale	
Pressure containment (Burst test (**3**)	4 x Full Scale (max 2000 bar)	
Pressure media	Fluid compatible with Inox 17-4PH (1.4542)	
Body material	Inox AISI 304	
Power supply	B/M/P/R 10...30Vdc C/N/Q 15...30Vdc	10...30Vdc
Supply sensitivity	< 0.0015% FSO/V	
Measuring principle	Bonded strain gauge on stainless steel (4 active arms)	
Insulation resistance	> 1000 MΩ @ 50Vdc	
Zero output signal	B, C, M, N, P, Q, R	4mA (E)
Full scale output signal	B, C, M, N, P, Q, R	20mA (E)
Max current absorption	13mA	32mA
Max allowed load	1mA	see diagram
Zero adjustment	±10% FSO magnetic or external (see options)	
Calibration signal	80% FSO nominal (optional)	
Long term stability	< 0.2% FSO/Year typical	
Operating temperature range (process) (**5**)	-40...+120°C (-40...+248°F)	
Compensated temperature range (**4**)	-10...+85°C (14...+185°F)	
Storage temperature range	-40...+125°C (-40...+257°F)	
Temperature effects over compensated range (zero-span)	±0.01% FSO/°C typical (±0.02% FSO/°C max.)	
Response time (10...90%FSO)	< 1 msec.	
Start-up time	< 500 msec.	
Mounting position effects	Negligible	
Humidity	Up to 100%RH non-condensing	
Weight	110 gr. nominal	
Mechanical shock	100g/11msec according to IEC 60068-2-27	
Vibrations	20g max at 10...2000Hz according to IEC 60068-2-6	
Ingress protection	IP65/IP66/IP67	
Output short circuit and reverse polarity protection	YES	

FSO = Full Scale Output (output signal at rated pressure)
1 Includes combined effects of Non-Linearity BFSL (Best Fit Straight Line), Hysteresis and Repeatability, Zero-offset and Span-offset (acc. to IEC 61298-2)
2 tested for more than 1000 strokes with single duration < 2msec.
3 tested for more than 100 strokes with single duration < 2msec.
4 temperature outside compensated range may cause zero signal drift
5 ambient and/or electronics part temperature must not exceed 105°C
***** Zero offset <±1%FSO on basic version (without Autozero function)

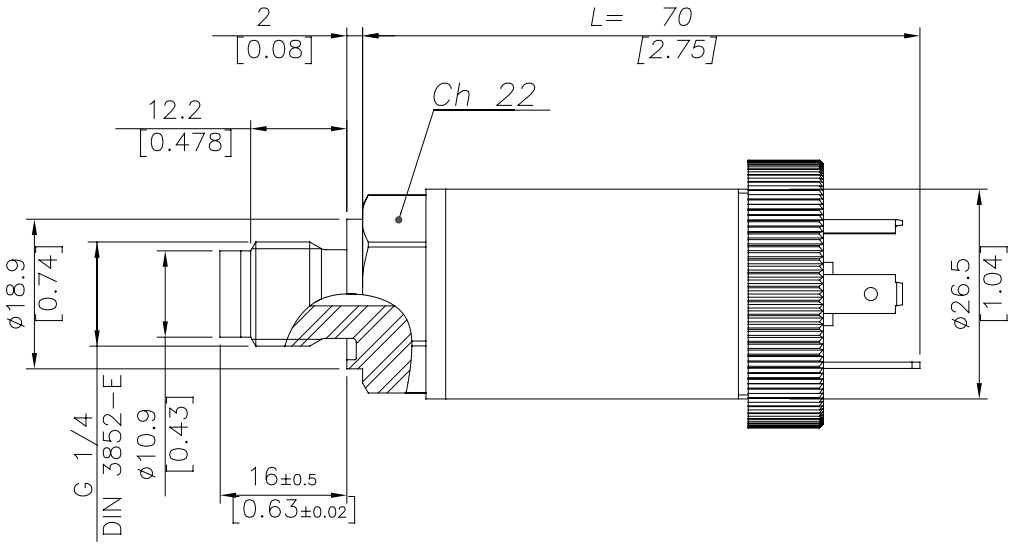
MECHANICAL DIMENSIONS - Process Connections

Connection
G ¼ Front seal
(code **Y**)



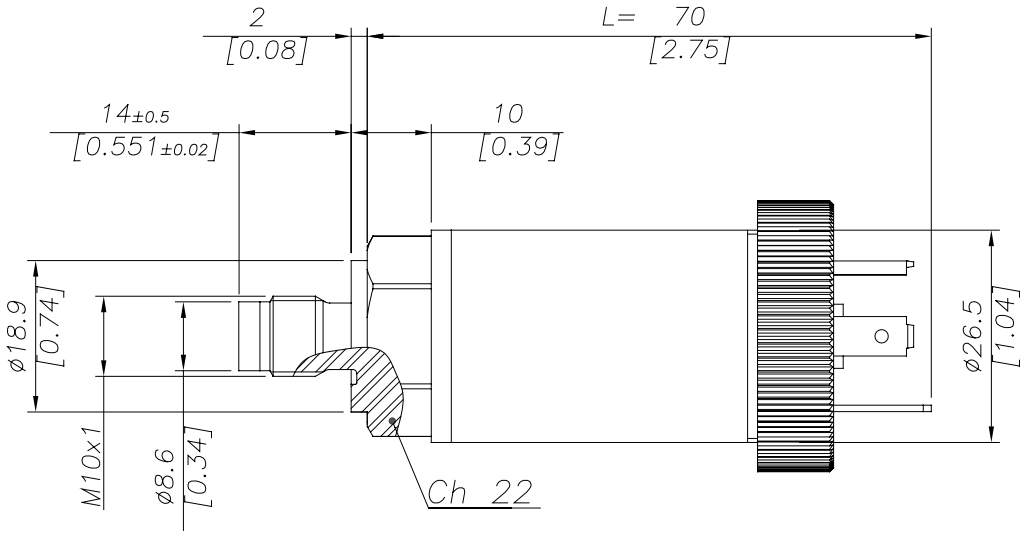
Sealing ring: Viton
Front O-ring: Viton

Connection
G ¼ DIN-E
(code **E**)



Sealing ring: Viton

Connection
M10x1 DIN-E
(code **T**)



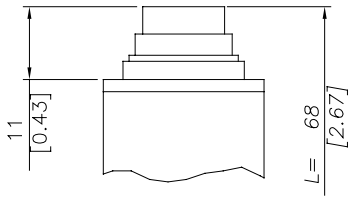
Sealing ring: Viton

Dimensions: mm [inches]

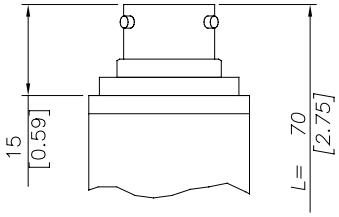
ATTENTION: for correct installation do not exceed 40Nm torque force

ELECTRICAL CONNECTION

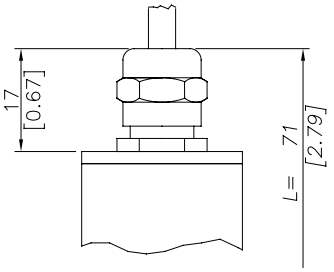
P - 7 pole connector



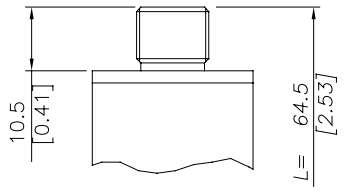
V - 6 pole connector



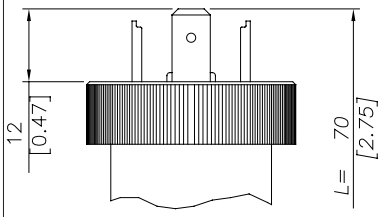
F - 4/6 pole cable



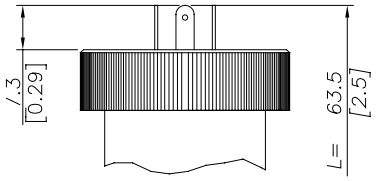
Z - 4 pole connector
M12 x 1



E - EN 175301-803
Form A (P=18 mm)

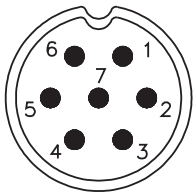


M - EN 175301-803
Form C (P=9.5 mm)



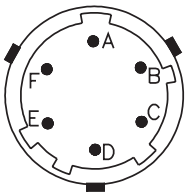
ELECTRICAL CONNECTION - Connectors

P - 7 pole connector



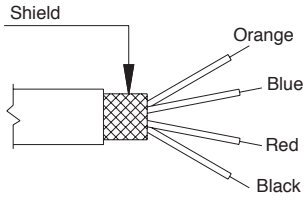
Male connector 7 pole M16x0.75
Protection rating IP67

V - 6 pole connector



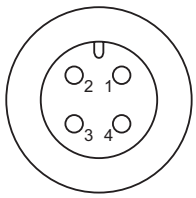
Male connector 6 pole bayonet
Protection rating IP66

F - 4 pole cable



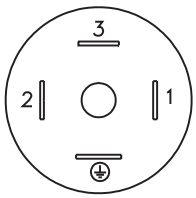
Shielded cable 4x0.25 - 1m. (output E)
Protection rating IP65

Z - Connector 4 pin
M12 x 1



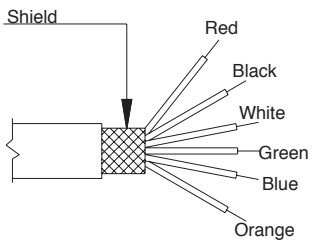
4 pole series 713 male connector
Protection rating IP67

E - Connector EN175301-803
M - Connector EN175301-803



E - 4 pin DIN type A
Protection rating IP65
M - 4 pin microDIN type C
Protection rating IP65

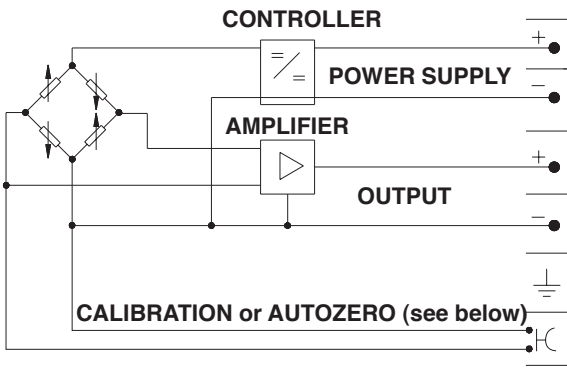
F - 6 pole cable



Shielded cable 6x0.25 - 1m
Protection rating IP65

ELECTRICAL CONNECTION - connection diagrams

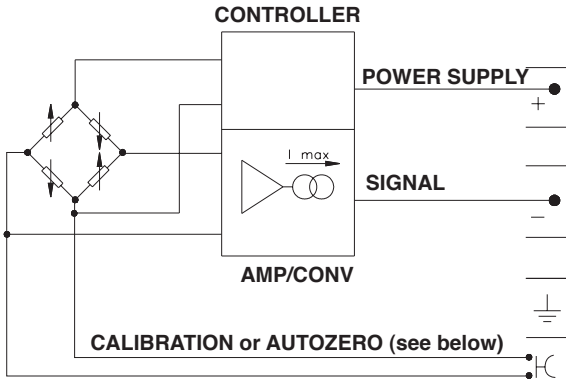
VOLTAGE AMPLIFIED OUTPUT - mod. B/C/M/N/P/Q/R



	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	C	1	White	3	3
–	D	2	Green	2	2
+	A	3	Red	1	1
–	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case
⊣⊂	E - F	5 - 6	Blue / Orange	not available	not available

⊣⊂ Option **M**: Magnetic Autozero — Activation of CALIBRATION function
⊣⊂ Option **E**: External Autozero — Activation of AUTOZERO function

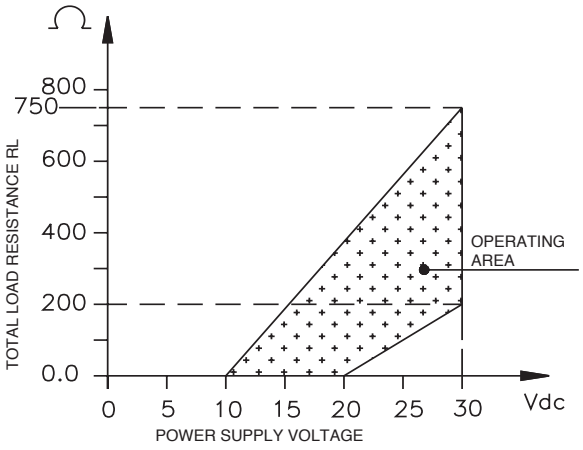
CURRENT AMPLIFIED OUTPUT - mod. E



	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	A	3	Red	1	1
–	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case
⊣⊂	E - F	5 - 6	Blue / Orange	not available	not available

⊣⊂ Option **M**: Magnetic Autozero — Activation of CALIBRATION function
⊣⊂ Option **E**: External Autozero — Activation of AUTOZERO function

LOAD DIAGRAM
(Current output)



DIGITAL AUTOZERO (Option M) - Technical data

Autozero	±10%FS max with zero setting within the sensor accuracy class, @ °TAmb.
Autozero Setting Time	1...10 seconds
Autozero Function Activation	By pen with magnetic head (PKIT 312) supplied as standard
Fine Autozero Adjustment	Resolution 6 mV (voltage output); 12 µA (current output)
Fine Autozero Adjustment Amplitude	±100 mV (voltage output), ±0.16 mA (current output) by successive steps with maximum setting time 5 sec. for step
Fine Autozero Setting Time	10...30 seconds
Fine Autozero Function Activation	By pen with magnetic head (PKIT 312) supplied as standard
Calibration Function	Signal output generation of 80%FS @ °TAmb.
Calibration Function Activation	By short circuiting the correct pins (see electric diagrams)
Total Reset	Restore of complete factory setting
Total Reset Setting Time	> 60 sec.
Total Reset Function Activation	By pen with magnetic head (PKIT 312) supplied as standard

For complete functionality and how to use the digital Autozero feature, please download the relevant operating manual on our website www.gefran.com

EXTERNAL AUTOZERO (Option E) - Technical data

Autozero	±10%FS max with zero setting within the sensor accuracy class, @ °TAmb.
Autozero Setting Time	1...10 seconds
Autozero Function Activation	By short circuiting the correct pins (see electric diagrams)
Fine Autozero Adjustment	Resolution 6 mV (voltage output); 12 µA (current output)
Fine Autozero Adjustment Amplitude	±100 mV (voltage output), ±0.16 mA (current output) by successive steps with maximum setting time 5 sec. for step
Fine Autozero Setting Time	10...30 seconds
Fine Autozero Function Activation	By short circuiting the correct pins (see electric diagrams)
Calibration Function	Not Available
Total Reset	Restore of complete factory setting
Total Reset Setting Time	> 60 sec.
Total Reset Function Activation	By short circuiting the correct pins (see electric diagrams)

For complete functionality and how to use the digital Autozero feature, please download the relevant operating manual on our website www.gefran.com

ACCESSORIES ON REQUEST

Connectors

Connection E	connector EN17301-803 Type A Prot. IP65	**CON 006**
Connection M	connector EN17301-803 Type C Prot. IP65	**CON 008**
Connection Z	4 pole female cable connector M12x1 Prot. IP67	**CON 293**
Connection Z	4 pole female cable connector, 90° M12x1 Prot. IP67	**CON 050**
Connection P	7 pole female cable connector, Prot. IP67	**CON 321**
Connection P	7 pole female cable connector, Prot. IP40	**CON 320**
Connection P	7 pole female cable connector 90°, Prot. IP40	**CON 322**
Connection V	6 pole Female cable connector, Prot. IP66	**CON 300**

EXTENSION CABLES

6 pole female connector (CON 300) + 2 m (6.5 ft) of cable (6x0.25)	**C02WLS**
6 pole female connector (CON 300) + 4 m (13 ft) of cable (6x0.25)	**C04WLS**
6 pole female connector (CON 300) + 6 m (20 ft) of cable (6x0.25)	**C06WLS**
6 pole female connector (CON 300) + 8 m (25 ft) of cable (6x0.25)	**C08WLS**
6 pole female connector (CON 300) + 10 m (33 ft) of cable (6x0.25)	**C10WLS**
6 pole female connector (CON 300) + 15 m (50 ft) of cable (6x0.25)	**C15WLS**
6 pole female connector (CON 300) + 20 m (66 ft) of cable (6x0.25)	**C20WLS**
6 pole female connector (CON 300) + 25 m (82 ft) of cable (6x0.25)	**C25WLS**
6 pole female connector (CON 300) + 30 m (100 ft) of cable (6x0.25)	**C30WLS**
Other lengths	**on request**

CABLE COLOR CODE	
Pin	**Wire**
A	Red
B	Yellow/Black
C	White
D	Green
E	Blue
F	Orange

ORDERING INFORMATION

Pressure transmitter **TPFAS** ☐☐☐☐☐☐☐☐☐☐☐

OUTPUT SIGNAL	
4...20 mA	**E**
0...10 Vdc	**N**
0.1...5.1 Vdc	**B**
0...5 Vdc	**M**
1...5 Vdc	**P**
1...10 Vdc	**Q**
1...6 Vdc	**R**
0.1...10.1 Vdc	**C**

PROCESS CONNECTION	
G ¼ B Front seal	**Y**
G ¼ E	**E**
M10x1 E	**T**

ELECTRICAL CONNECTION	
6 pole connector	**V**
7 pole connector	**P**
M12x1 connector (*)	**Z**
4/6 pole shielded cable (**)	**F**
Connector EN175301-803A (P18) (*)	**E**
Connector EN175301-803C (P9.5) (*)	**M**

(*) available Magnetic Autozero function only (M), NO External Autozero (E) available.
(**) 1mt cable included as standard. Custom lengths available, at extra cost.

Ex.: **TPFAS - E - T - V - B01C - H - V - M**
Pressure transmitter: 4...20 mA output signal, M10x1 process connection, 6 pole connector, 0...100 bar measurement range, fast response time, 0.25% BFSL Non-Linearity, magnetic autozero function.

Sensors are manufactured in compliance with:
- EMC2004/108/CE compatibility directive
- RoHS 2002/95/CE directive

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

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

AUTOZERO FUNCTION	
0	Not installed
M	Magnetic autozero function
E	External autozero function

RESPONSE TIME	
V	Fast

ACCURACY	
H	±0.25%BFSL (Non-Linearity)

MEASUREMENT RANGE			
Bar		**Psi**	
B25U	0...25	**P35D**	0...350
B03D	0...30	**P05C**	0...500
B35U	0...35	**P75D**	0...750
B04D	0...40	**P01M**	0...1000
B05D	0...50	**P15C**	0...1500
B06D	0...60	**P02M**	0...2000
B01C	0...100	**P25C**	0...2500
B16D	0...160	**P03M**	0...3000
B02C	0...200	**P04M**	0...4000
B25D	0...250	**P05M**	0...5000
B35D	0...350	**P75C**	0...7500
B04C	0...400	**P09M**	0...9000
B05C	0...500		
B06C	0...600		

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

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