



### Main features

- **Pressure range:**  
0...1500 to 0...5000 bar / 0...20000 to 0...70000 psi
- **Precision class:** 0,3% FSO
- **Entirely in stainless steel**
- **Internally generated calibration signal**
- **"Autoclave" pressure fitting**
- **Protection level:** IP65

Series TPHA transmitters are designed for applications in high-pressure hydraulic circuits.

It uses the extensimetric measurement principle with photoengraved metal leaf.

The 4 active elements configuration allows significant signals, with conditions of stress with high coefficient of safety on the measurement diaphragm.

Careful selection and ultrasonic checking of materials used guarantee the absence of inclusions and defects on the primary reaction mechanics, assuring a highly reliable product.

The resonance frequency of the measurement diaphragm varies from 18 to 80KHz based on the Full Scale.

The selection of highly stable electronic components and the availability of output signals in voltage and current make series TPHA transmitters suitable for applications in which the signal has to be transmitted over long distances or in smart control and checking systems.

### TECHNICAL DATA

Output signal	VOLTAGE B/C/M/N/P/Q/R	CURRENT E
Precision class (1)	< 0,3% FSO	
Resolution	Infinite	
Pressure range	from 0...1500 to 0...5000 bar / from 0...20000 to 0...750000 psi	
Max. applicable pressure (without degradation of the specific)	2 times Full Scale (max. 6000 bar / 86000psi)	
Resistance to bursting	3 times Full Scale (max. 6000 bar / 86000psi)	
Measurement principle	Metal strain gauge glued (4 active elements)	
Power supply	15/30Vdc	10/30Vdc
Max. absorption on power supply (2)	40mA	20mA
Resistance of isolation at 50Vdc	> 1000MΩ	
Nominal pressure signal: ± 0,5% FS	<b>B</b> 5,1Vdc <b>M/P</b> 5Vdc <b>R</b> 6Vdc	<b>C</b> 10,1Vdc <b>Q/R</b> 10Vdc 20mA
Ambient pressure signal: ± 0,5% FS	<b>B/C</b> 0,1Vdc <b>P/Q/R</b> 1Vdc	<b>M/N</b> 0Vdc 4mA
Calibration signal	80% ± 1%FSO	
Nominal pressure signal control	± 5% FSO	
Ambient pressure signal control	± 5% FSO	
Max. permitted load	1mA	diagr.
Max. response time (0...90% FSO) <b>L</b> <b>V</b>	4ms 1ms	8ms 4ms
Noise at output (RMS 10-400Hz)	< 0,05% FSO	
Output short circuit protection and reverse power polarity	YES	
Output pulse overvoltage protection	YES	
Compensated temperature range	0...70°C / 32...158°F	
Permitted temperature range	-30...85°C / -22...185°F	
Thermal drift in compensated range (zero - span - sens.)	< ±0,02%FSO/°C / < ±0,01%FSO/°F	
Materials in contact with measurement fluid	15-5 PH stainless steel	
Outer case material	AISI 304 stainless steel	
Protection level	IP65	
Process connections	Standard: F-250-C (9/16-UNF female); on request: M16x1.5 female	
Electrical connections	6-pole connector; other connectors on request	

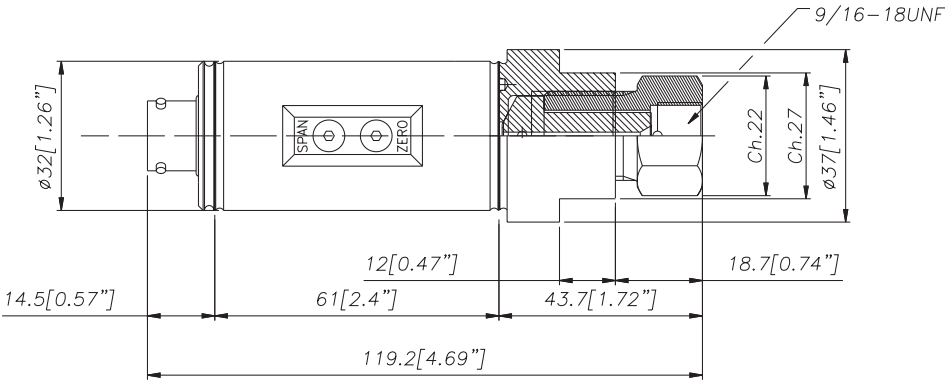
FSO = Full Scale Output

1 BFSL (Best Fit Straight Line) method

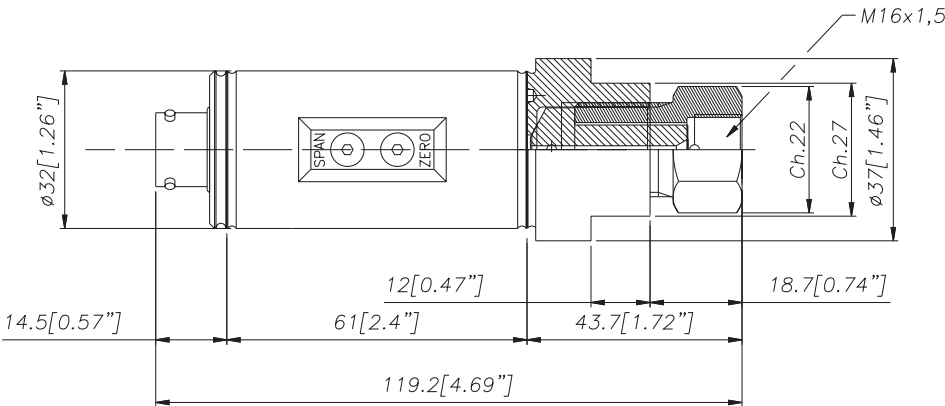
2 with 30 V power supply, max. load and calibration signal on.

MECHANICAL DIMENSIONS - Process Connections

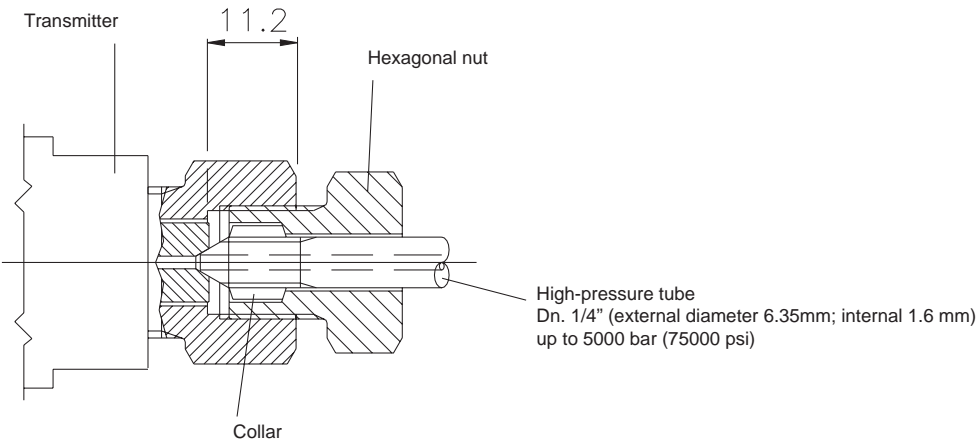
Connection  
F-250-C  
(9/16-18UNF female)  
(code D)



Connection  
M16 x 1.5 female  
(code E)

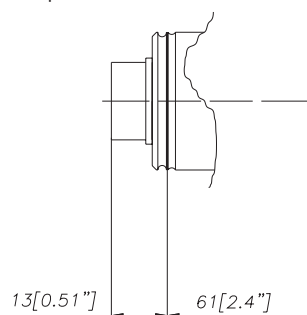


MECHANICAL DIMENSIONS - Notes on use

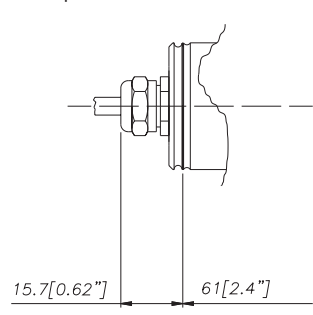


MECHANICAL DIMENSIONS - Connectors

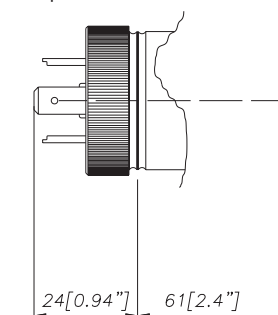
P - 7-pole connector



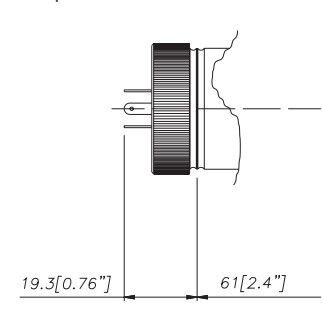
F - 4-6 pole cable



E - 4-pole connector solenoid

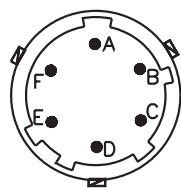


M - 4-pole connector microsolenoid



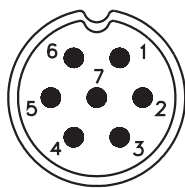
## ELECTRICAL CONNECTIONS - Connectors

V - 6-pole connector



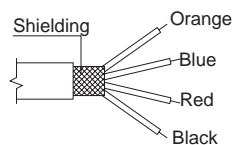
Male conn.  
VPT02A10-6PT2

P - 7-pole connector

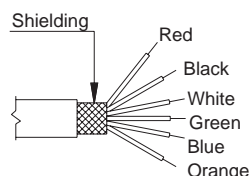


Male conn.  
09-0127-09-07

F - 4-6-pole cable

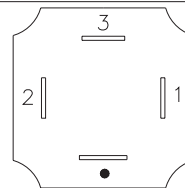


F - Shielded cable 4 x 0,25 - 1m  
(for output code E)



F - Shielded cable 6 x 0,25 - 1m.

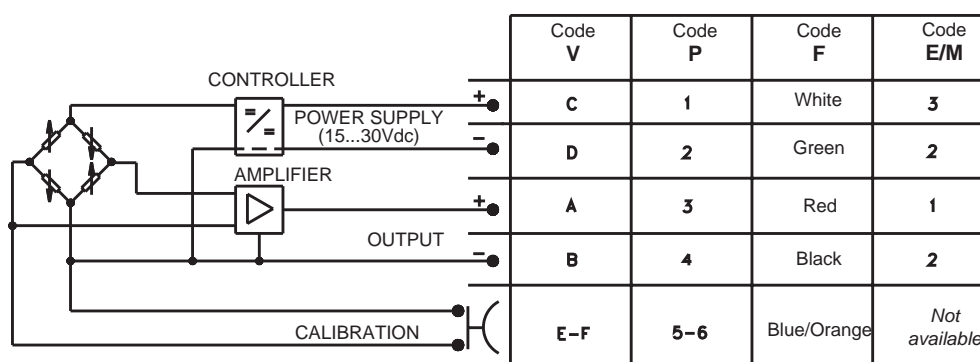
E - 4-pole connector solenoid  
M - 4-pole connector microsolenoid



E - Solenoid 400DIN  
46350A-ISO 4400  
M - Microsolenoid 400 DIN  
46350B-ISO 4400

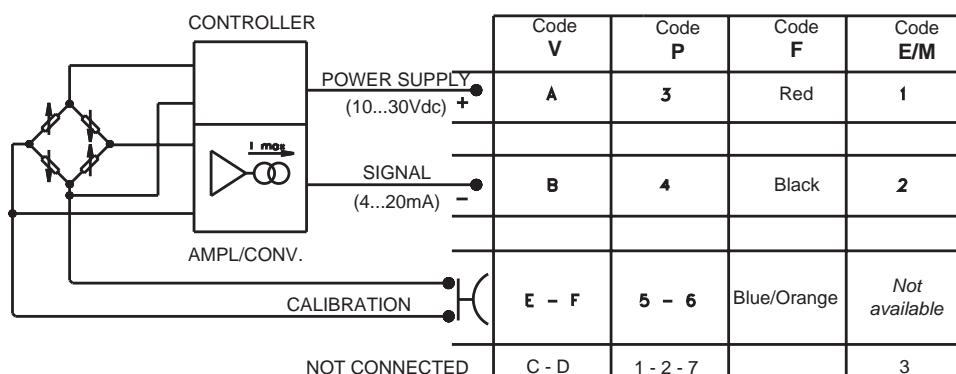
## ELECTRICAL CONNECTIONS - connection diagrams

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



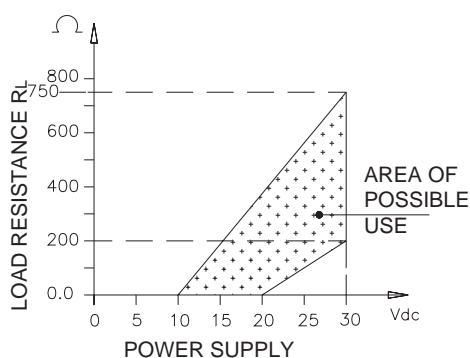
The cable sheathing is connected to the transducer body.

### OUTPUT AMPLIFIED IN CURRENT - mod. E

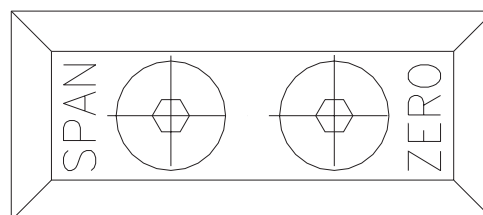


The cable sheathing is connected to the transducer body.

## LOAD DIAGRAM (current output)



## SETTINGS



The signal can be set to room pressure (ZERO) and to rated pressure (SPAN) by means of their trimmers, accessed inside the transmitter after removal of the two fixing screws.

**SPAN is set during production and must not be changed.**

## ACCESSORIES ON REQUEST

### Connectors

#### Connection V

Female cable connector Prot. IP66

**CON 300**

#### Connection P

Female cable connector Prot. IP40

**CON 320**

Female cable connector 90° Prot. IP40

**CON 322**

Female cable connector Prot. IP67

**CON 321**

#### Connection E

Connector 3 poles + ground DIN43650A ISO4400 Prot. IP65 **CON 006**

#### Connection M

Connector 3 poles + ground DIN43650B ISO4400 Prot. IP65 **CON 008**

## ORDER CODE

Pressure transmitter

**TPHA**

### OUTPUT SIGNAL

#### Standard

0.1 .. 10.1 Vdc **C**

4 .. 20 mA **E**

0 .. 10 Vdc **N**

#### On request

0.1 .. 5.1 Vdc **B**

0 .. 5 Vdc **M**

1 .. 5 Vdc **P**

1 .. 10 Vdc **Q**

1 .. 6 Vdc **R**

1 .. 11 Vdc (Supply 18..30) **S**

### PROCESS CONNECTIONS

#### Standard

F-250-C (9/16-18UNF female) **D**

#### On request

M16x1.5 **E**

### ELECTRICAL CONNECTIONS

#### Standard

6-pole connector **V**

#### On request

7-pole connector **P**

4/6-pole shielded cable **F**

4-pole connector solenoid **E**

4-pole connector microsolenoid **M**

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

### RESPONSE TIME

**L** Standard

**V** Fast

### PRESSURE RANGE

	bar		psi
<b>B01M</b>	0..1000	<b>P15M</b>	0..15000
<b>B15C</b>	0..1500	<b>P20M</b>	0..20000
<b>B02M</b>	0..2000	<b>P30M</b>	0..30000
<b>B35C</b>	0..3500	<b>P50M</b>	0..50000
<b>B05M</b>	0..5000	<b>P70M</b>	0..70000

Ex.: **TPHA - E - D - V - B02M - L**

Transmitter: output signal 4...20mA (two wires), autoclave pressure fitting 9/16-18UNF female, 6-pole connector, pressure range 0...2000 bar.

Ex.: **TPHA - N - D - V - B02M - V**

Transmitter: output signal 0...10Vdc, autoclave pressure fitting 9/16-18UNF female, 6-pole connector, pressure range 0...2000 bar, fast output (1 msec)

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice

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