SENSEL MEASUREMENT
CAPTEURS, ELECTRONIQUES & ACQUISITION DE DONNEES

SMTPHADA

TRANSMITTER FOR HIGH PRESSURE WITH DIGITAL AUTO-ZERO & SPAN

Main features

- *Ranges: from: 0...1000 to 0...5000 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: IP65/IP67*
- *Wetted parts: 15-5PH / 17-4PH stainless steel*
- *Measurement diaphragm with monolithic stainless steel structure*
- *Digital Auto-Zero & Span function*
- *Suitable for measuring static and dynamic pressure **

Series SMTPHADA transmitters for high pressure are based on the extensimetric measurement principle with strain gauge on stainless steel. The measurement diaphragm with monolithic structure makes the transmitter highly efficient, reliable, and safe – extremely impor-tant factors in high-pressure applications.
The entire mechanical structure, with vent holes, is designed to guarantee safety and makes the transducer suitable for measuring both static and dynamic pressure, even under harsh conditions. The SMTPHADA is particularly suitable for applications in high and very high pressure hydraulic circuits, such as (for example) on test benches or on waterjet cutting machines.
State-of-the-art electronics provides a wide range of output signals in current and in voltage, and the innovative digital “Auto-Zero & Span” function provides quick and easy automatic adjustment of zero after installation with a simple touch of the magnetic pen (supplied).

TECHNICAL DATA

Output signal	**VOLTAGE**	**CURRENT**
Accuracy (**1**)	± 0.1% FSO typical; ± 0.2% FSO max	
Measurement range	from 0...1000 to 0...5000 bar / from 0...15000 to 0...70000 psi	
Resolution	Infinite	
Overpressure (without degrading)	2 x FS (max 6000 bar)	
Burst pressure	3 x FS (max 7500 bar)	
Pressure media	15-5PH (1.4545) / 17-4PH (1.4542) stainless steel	
Body materials	AISI 304 (1.4301) stainless steel	
Power supply	**B/M/P/R** 10...30Vdc **C/N/Q** 15...30Vdc	10...30Vdc
Measurement principle	Bonded Strain gauge on steel (4 active elements)	
Insulation resistance	> 1000 MΩ @ 50Volt	
Output signal at zero	**B, C, M, N, P, Q, R** ±0.5% FSO	4mA (E) ±0.5% FSO
Output signal at full scale	**B, C, M, N, P, Q, R** ±0.25% FSO	20mA (E) ±0.25% FS
Max current absorption	13mA	32mA
Max. permitted load	1mA	see diagram
Zero adjustment	±10% FSO digital, with magnetic pen	
Full scale adjustment	±5% FSO digital, with magnetic pen	
Calibration signal	80% FSO nominal	
Long-term stability	< 0.2% FSO/Year (at rated condition)	
Operating temperature range (process) (**3**)	-30...+120°C (-22...+248°F)	
Compensated temperature range (**2**)	-10...+85°C (14...+185°F)	
Storage temperature range	-30...+105°C (-22...+221°F)	
Temperature effects over compensated range (zero-span)	±0.01% FSO/°C typical (±0.015% FSO/°C max.)	
Response time (10...90%FSO)	< 1 msec.	
Mounting position effects	Negligible	
Humidity	Up to 100%RH non condensing	
Weight	330 gr. nominal	
Mechanical shock	according IEC 60068-2-27 100g/11msec	
Vibrations	according IEC 60068-2-6 20g max a 10...2000Hz	
Ingress protection	IP65/IP66/IP67	
Output short circuit and reverse polarity protection	YES	

FSO = Full Scale Output

***** Infinite number of cycles for dynamic measurement cycles with range between 0 and 70%FS

1 Includes combined effects of Non-Linearity BFSL (Best Fit Straight Line), Hysteresis and Repeatability.

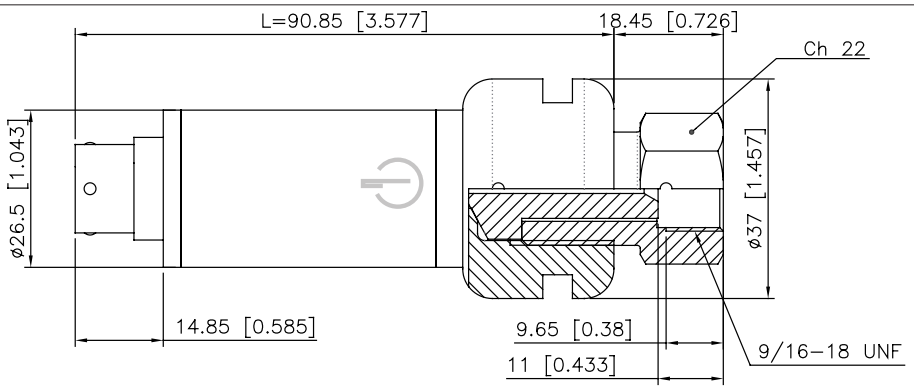
2 temperatures outside compensated range may cause zero signal drift

3 room temperature and/or temperature of electronics must not exceed 105°C

MECHANICAL DIMENSIONS - Process connections

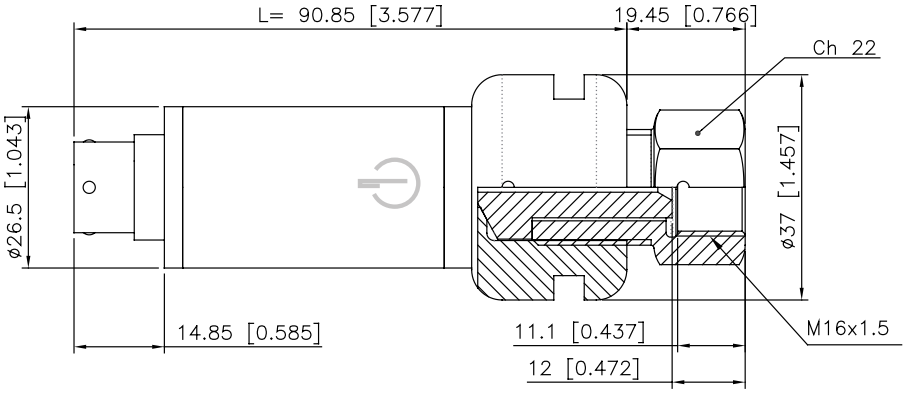
Dimensions: mm.[inches]

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



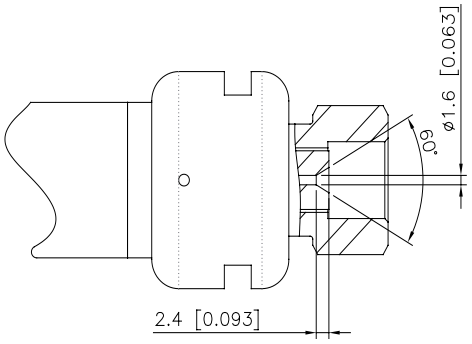
Symbol identifying point of contact of magnetic pen for activation of Digital Autozero and Span function

Connection
M16 x 1.5 female
(code **E**)



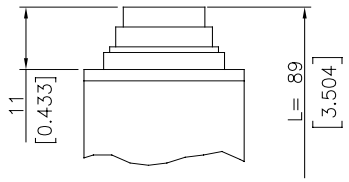
MECHANICAL DIMENSIONS – Process connections – Detail of conical seal

In high pressure applications, safety of the process connection is guaranteed entirely by the conical seal (metal on metal).
The series SMTPHADA offers two types of female connections, F250-C (D) and M16x1.5 (E), both with 60° conical seals (see drawing for mechanical details).

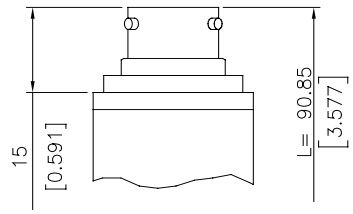


ELECTRICAL CONNECTION

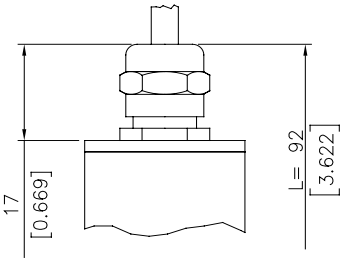
P - 7 pole connector



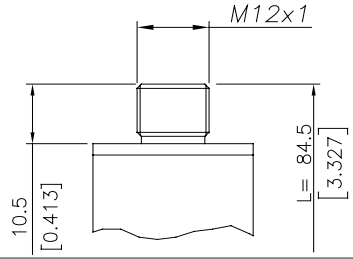
V - 6 pole connector



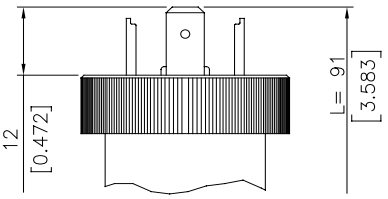
F - 4/6 pole cable



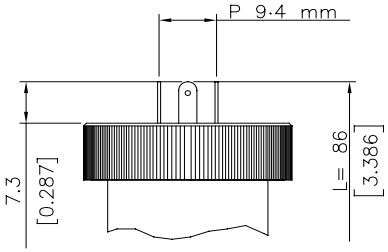
Z - 4 pole connector M12x1



E – 4 pole DIN Type A EN 175301-803

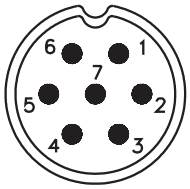


M – 4 pole MicroDin Type C-ind P 9.4 mm EN 175301-803



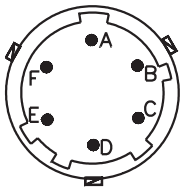
ELECTRICAL CONNECTION - Connectors

P - 7 pole connector



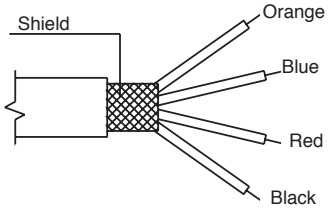
Male connector
09-0127-09-07
Protection IP67

V - 6 pole connector



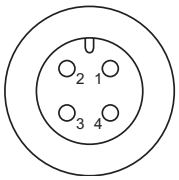
Male connector
VPT02A10-6PT2
Protection IP66

F - 4 pole cable



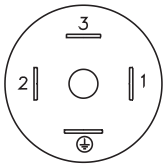
Shielded cable 4x0,25 - 1m. (output E)
Protection IP65

Z - 4 pole male connector M12 x 1



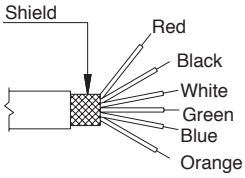
4 pin Male connector
serie 713
Protection IP67

E – EN 175301-803 Type A
M – EN 175301-803 Type C-ind



4 Pin DIN Type A
Protection IP65
4 Pin MicroDIN Tipo C-industrial
Protection IP65

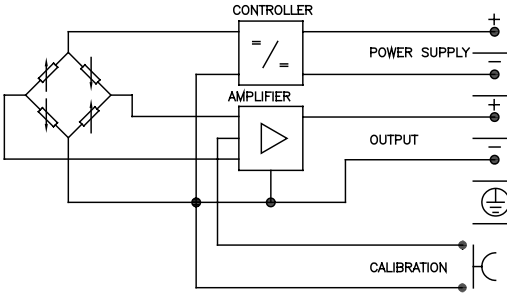
F - 6 pole cable



Shielded cable 6x0,25 - 1m
Protection IP65

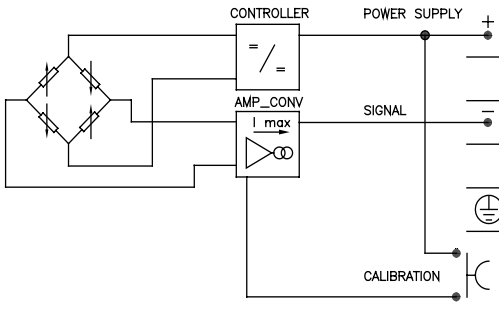
ELECTRICAL CONNECTION - Connection diagrams

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



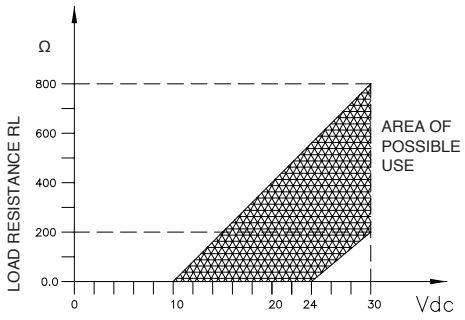
cod. V	cod. P	cod. F	cod. E/M	cod. Z
C	1	White	3	3
D	2	Green	2	2
A	3	Red	1	1
B	4	Yellow or Black	2	2
⏚	Case	Shield	⏚	Case
F	5	Orange	Not Available	Not Available
E	6	Blue	Not Available	Not Available

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	Shield	⏚	Case
E	6	Blue	Not Available	Not Available
F	5	Orange	Not Available	Not Available

LOAD DIAGRAM (Current output)



Note: The “Digital Autospan” function is activated by means of the “Calibration” contacts shown in the above diagram. For operation and complete functions, see the user manual.

DIGITAL AUTOZERO& SPAN – Technical Data

Autozero	±10%FS max with positioning within setting tolerance of sensor, at room temperature
Autozero Setting Time	1...10 seconds
Fine Zero Adjustment	Resolution 6 mV (voltage); 12 µA (current)
Fine Adjustment Amplitude	±100 mV (voltage), ±0.16 mA (current) in successive steps with max setting time of 5 seconds per step
Calibration	Output signal generation 80%FS at room temperature
Autospan Activation Time	> 1 sec. (via closing of contacts in CAL position)
Autospan	±5%FS max with positioning within setting tolerance of sensor, at room temperature
Autospan Setting Time	1...10 sec. (via closing of contacts in CAL position)
Partial Reset	Factory zero is reset
Partial Reset Setting Time	30...60 sec
Total Reset	Factory settings are reset
Total Reset Setting Time	> 60 sec.
Function Activation	Via pen with magnetic point (PKIT 312) supplied

ACCESSORIES ON REQUEST

Connectors

Connection E
3 poles Connector + ground EN175301-803 Type A **CON 006**
Prot. IP65

Connection M
3 poles Connector + ground EN175301-803 **CON 008**
Type C-ind Prot. IP65

Connection Z
4 pole female cable connector M12x1 **CON 293**
Prot. IP67

Connection Z
4 pole female cable connector, 90°M12x1 **CON 050**
Prot. IP67

Connection P
7 pole female cable connector **CON 321**
Prot. IP67

Connection P
7 pole female cable connector **CON 320**
Prot. IP40

Connection P
7 pole female cable connector, 90° **CON 322**
Prot. IP40

Connection V
6 pole female cable connector **CON 300**
Prot. IP66

EXTENSION CABLES

6-pole female connector (CON 300) + 2 m cable (6x0.25)	**C02WLS**
6-pole female connector (CON 300) + 4 m cable (6x0.25)	**C04WLS**
6-pole female connector (CON 300) + 6 m cable (6x0.25)	**C06WLS**
6-pole female connector (CON 300) + 8 m cable (6x0.25)	**C08WLS**
6-pole female connector (CON 300) + 10 m cable (6x0.25)	**C10WLS**
6-pole female connector (CON 300) + 15 m cable (6x0.25)	**C15WLS**
6-pole female connector (CON 300) + 20 m cable (6x0.25)	**C20WLS**
6-pole female connector (CON 300) + 25 m cable (6x0.25)	**C25WLS**
6-pole female connector (CON 300) + 30 m cavo (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 **SMTPHADA** ☐ ☐ ☐ ☐ ☐ ☐

OUTPUT SIGNAL	
Standard	
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**
0.1...10.1 Vdc	**C**

PRESSURE CONNECTION	
Standard	
F-250-C (9/16-18UNF female)	**D**
M16 x 1.5 female	**E**

ELECTRICAL CONNECTION	
Standard	
6 pole connector	**V**
7 pole connector	**P**
M12x1 connector (*)	**Z**
4/6 pole Shielded cable (**)	**F**
4 pole DIN Type A connector (*)	**E**
4 pole MicroDin Tipo C-ind (P 9.4) connector (*)	**M**

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

ACCURACY	
T	±0.1%FS typical ±0.2%FS max

MEASUREMENT RANGE					
	bar			**psi**	
B01M	0..1000		**P15M**	0..15000
B15C	0..1500		**P20M**	0..20000
B02M	0..2000		**P30M**	0..30000
B35C	0..3500		**P50M**	0..50000
B04M	0..4000		**P60M**	0..60000
B05M	0..5000		**P70M**	0..70000

CALIBRATION STANDARDS

Instruments manufactured are calibrated against precision pressure calibration equipment wich is traceable to International Standards.

(*) available only with Autozero function, NO Cal and NO Span
(**) 1 mt cable included in price of option.
Other lengths available on request at additional cost.

Sensors are manufactured in compliance with:
- EMC 2014/30/EU compatibility directive
- RoHS 2011/65/EU directive

Es.: **SMTPHADA - M - D - V - B05M - T**
Pressure transmitter: output signal 0...5Vdc, process connection F250-C, 6-pole connector, measurement range 0...5000 bar, accuracy class 0.1% FS.