Delta Sensor
Produção e Comercialização
de Sistemas Industriais, Lda

Product Technical Information
DS_PPC51_2601_EN

Series T-Pascal P, Model PPC51

Pressure transmitter for process control
Threaded process connection. 0.5 % Accuracy

Application

The T-Pascal P series of transmitters are intelligent pressure transmitters with good precision and stability. The model PPC51 has a standard accuracy of 0.5 %.
Manufactured with piezoresistive measuring cell, digital temperature compensation, non-linearity correction technique, the entire product has compact size, light weight and wider pressure ranges for precise measurement and control of flow pressure.
Standard construction totally in stainless steel 316L, wide measurement ranges and customization available for perfect OEM integration.

Your Advantages

✓	Wetted parts and housing in Aisi 316L
✓	Pressure ranges up to 100 bar
✓	Current and voltage outputs
✓	Better affordable flush mount version
✓	OEM customization

Overview

Informative Signs

	Information	This symbol contains device oriented information which does not result in personal injury.
	Checking	This symbol contains procedures and other facts to get the most of the device and which do not result in personal injury.
	Caution	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in damaged device and which do not result in personal injury.
	Warning	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
	Danger	This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

Product Overview

Based on different pressure sensing technology, there are piezoresistive pressure sensors, piezo-electric pressure sensors and capacitive pressure sensors etc. Delta Sensor supplies piezoresistive pressure sensors mainly. Transmitter features includes measuring cell and circuit compensation in all ranges, negligible thermal influence, shock, vibration and interference resistance, protection of short circuit and reversed polarity to ensure the product is stable and reliable. Are also provided optional output signals and pressure ports for different and complex applications, to satisfy customer's requirements with the product good adaptability.

Featuring integrated design, great compatibility, small size, light weight and wide pressure range, T-Pascal P PPC51 pressure transmitters can be applied in many fields which involve fair accuracy required of fluids measurement.

- ☑ Pumping and compressor monitoring
- ☑ Leak detection
- ☑ Refrigeration and air conditioning equipment
- ☑ Preventing filter fouling

The T-Pascal P PPC51 compact pressure transmitter, is designed for use in almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

- ☑ Water and waste water treatment plants
- ☑ Automotive
- ☑ Industrial machinery
- ☑ Power plants
- ☑ Auxiliary services on pharmaceutical, beverages and food processing plants

The T-Pascal P PPC51 offers a compact design with a metallic measuring diaphragm installed in robust stainless steel 316L housing. Depending on required ingress protection, can be electrically connected through a M12 plug IP67, or IP65 with connector complying with EN 175301-803-A. The output is factory scaled and calibrated in users required current or voltage range.

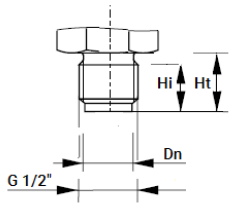
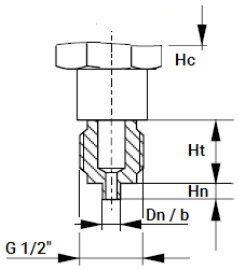
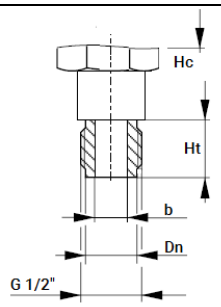
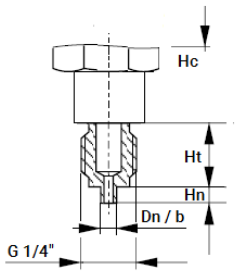
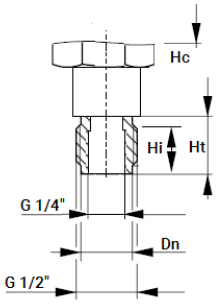
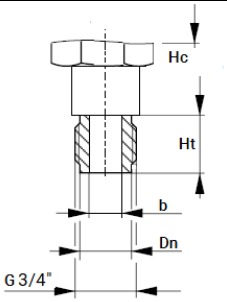
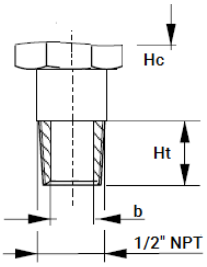
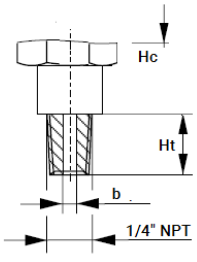
	This product is not intended to be used in oxygen service or in classified zones under ATEX directive.
	When measuring pressure in vapour or steam, install device in a siphon. This will prevent any failure due to over temperature and allow full temperature compensation.
	If necessary, clean the membrane with soft material. Do not remove any dirt with sharp object as membrane will be permanently affected. Keep membrane cap in product until moment of installation.
	Make sure the transmitter is not installed in pump inlet or at the same level of an agitator.

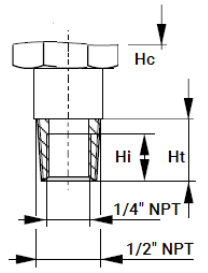
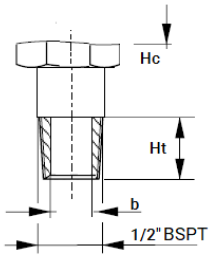
Technical Data

Device		
Application	Gauge and absolute pressure measurement	
Principle	Piezoresistive sensor	
Measuring cell	From 0-1 bar to 0-100 bar	
Pressure reference	Gauge, Absolute	
Performance		
Accuracy	±0.5 %FS (including linearity, hysteresis, repeatability)	
Stability	±0.3 %FS/year	
Thermal Drift	±0.02 %FS/°C	
Compensated temperature	-10 to 75°C	
Overpressure	1.5x FS	
Electrical Specifications		
Output signal (short-circuit protected) (polarity inversion protected)	4-20 mA	Loop power 2 wires
	0-10 Vdc	3 wires
	1-5 Vdc	3 wires
Power supply	11 to 28 Vdc	
Current comsumption	≤ 5mA (voltage output only)	
Current limitation	28 mA	
Load [RL]	RL ≤ (UB - 11V) / 0.02 A	
Output impedance	≤25 kΩ	
Insulation resistance	100 MΩ/50 V	
Mechanical Characteristics		
Materials	Measuring diaphragm	EN 10088-1; 1.4404 (AISI 316 L) See mechanical construction section
	Process connection	EN 10088-1; 1.4404 (AISI 316 L) See mechanical construction section
	Housing	EN 10088-1; 1.4404 (AISI 316 L)
	Connectors	See additional information section
	Internal seal	Viton ®, EPDM, Kalrez ®, FKM (not for flush mount version – welded diaphragm)
Dimensions	110 to 135 mm, depending on process and electrical connections	
Process connection	Flush mount version G ½”	DIN 3852-E (form A/ including Viton o-ring)
	Versions G ½”, G ¼”, G ¾”	EN 837 (form B)
	Versions ½” NPT, ¼” NPT	ASME / ANSI
	Version ½” BSPT (R ½”)	BS-21, ISO-7 e EN-1022
Impact	20 g, 11 ms	
Environmental Conditions		
Operating temperature	Min	-25°C
	Max	75°C
Storage temperature	-30 to 80°C	
Relative humidity	0 to 90 %RH	
Calibration units	bar, mbar, psi, kPa, MPa	
Vibration resistance	20 g, 20 to 5000 Hz	
Weight	0.20 to 0.35 kg (depending on process connection, electrical connection and accessories)	
Protection class (complying with EN 60529)	IP 65 with plug ISO 4400, EN 175301-803-A Form A IP67 with connector M12x1, IEC 61076-2-101	
Approvals, Certifications	RoHS 2, CE	

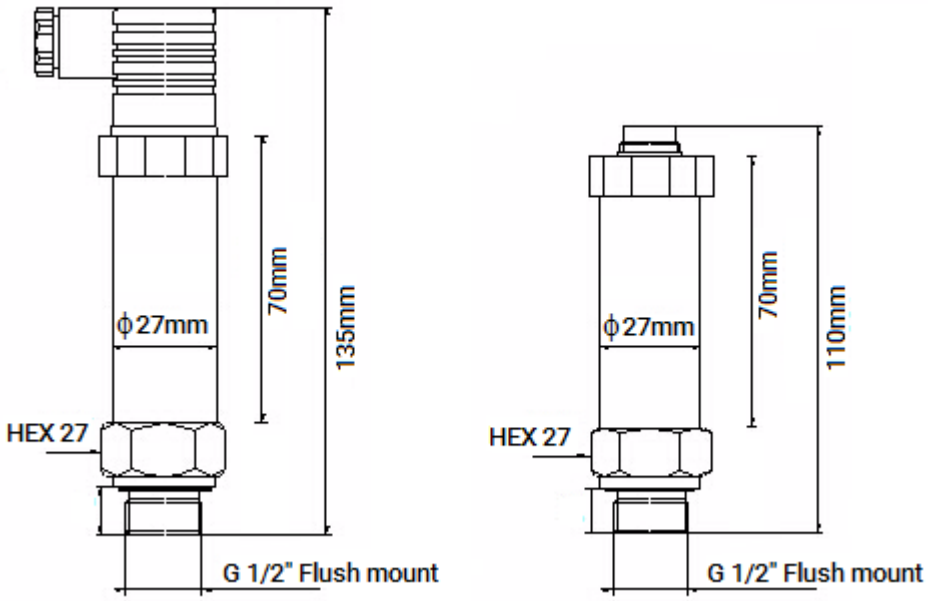
Mechanical Construction

Process Connections

Option code: F12	Process connection: G ½" flush mount	Option code: G12	Process connection: G ½"
	Seal: Viton o-ring, ISO 1179-2/ DIN 3852-11 Material: Aisi 316L Max. temperature: 100°C Nipple diameter (Dn): 18 mm Thread (Hi): 12 mm Thread height (Ht): 14 mm		Material: Aisi 316L Max. temperature: 125°C Nipple diameter (Dn): 6 mm Bore (b): 3 mm Nipple height Hn: 3 mm Thread height (Ht): 16 mm Neck Length (Hc): 28 mm
Option code: G13	Process connection: G ½"	Option code: G14	Process connection: G ¼"
	Material: Aisi 316L Max. temperature: 125°C Nipple diameter (Dn): 18mm Bore (b): 11.4 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm		Material: Aisi 316L Max. temperature: 125°C Nipple diameter (Dn): 6 mm Bore (b): 3 mm Nipple height Hn: 3 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm
Option code: G24	Process connection: G ½" M, G ¼" F	Option code: G33	Process connection: G ¾"
	Material: Aisi 316L Max. temperature: 125°C Nipple diameter (Dn): 18 mm Inner length Hi: 12 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm		Material: Aisi 316L Max. temperature: 125°C Nipple diameter (Dn): 23.4 mm Bore (b): 11.4 mm Thread height (Ht): 22 mm Neck Length (Hc): 28 mm
Option code: N13	Process connection: ½" NPT	Option code: N14	Process connection: ¼" NPT
	Material: Aisi 316L Max. temperature: 125°C Bore (b): 11.4 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm		Material: Aisi 316L Max. temperature: 125°C Bore (b): 6 mm Thread height (Ht): 15 mm Neck Length (Hc): 28 mm

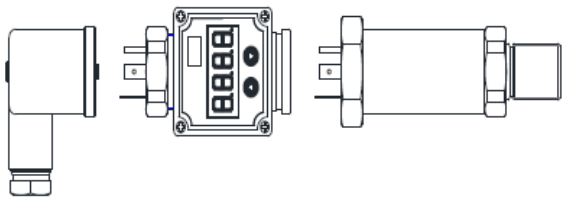
Option code: N24	Process connection: ½" MNPT, ¼" FNPT	Option code: R13	Process connection: ½" BSPT
	Material: Aisi 316L Max. temperature: 125ºC Inner length Hi: 12 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm		Material: Aisi 316L Max. temperature: 125ºC Bore (b): 11.4 mm Thread height (Ht): 20 mm Neck Length (Hc): 28 mm

Housing



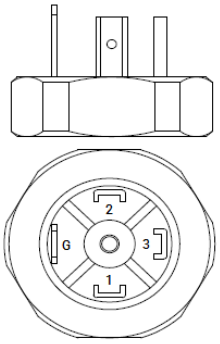
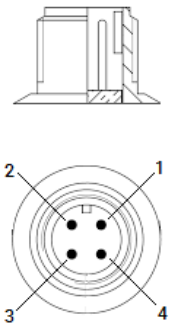
Left: device assembled with connector ISO 4400, flush mount diaphragm.
Right: device assembled with M12x1 plug, flush mount diaphragm.

⚠	With connector ISO 4400 is strongly recommended the use of a gasket to ensure the ratted ingress protection. These gaskets are not supplied on basic delivery and are available options through extended fields of order code structure, or as separate/spare parts.
ⓘ	Note that connector ISO 4400 cable socket and M12 socket are not supplied on basic delivery. These components are available options through extended fields of order code structure, or as separate/spare parts.



ⓘ	Above shown LED display is not supplied on basic delivery and is an available option through extended fields of order code structure, or as separate/spare part. Please check details at Accessories, additional information section.

Wirings

		4-20 mA		0-10 Vdc 1-5 Vdc	
ISO 4400 EN 175301-803-A Form A		1	V+	1	V+
		2	V-	2	V-
		3	Not used	3	Vout
		G	Not used	G	Not used
M12 x 1 IEC 61076-2-101		1	V+	1	V+
		2	Not used	2	Not used
		3	V-	3	V-
		4	Not used	4	Vout

	Make sure power supply is switched off during wiring procedures.
	Make sure power supply is according to specification on device label.
	Check if connection cable is according device connector requirements.
	Check if maximum load resistance is according device specifications.

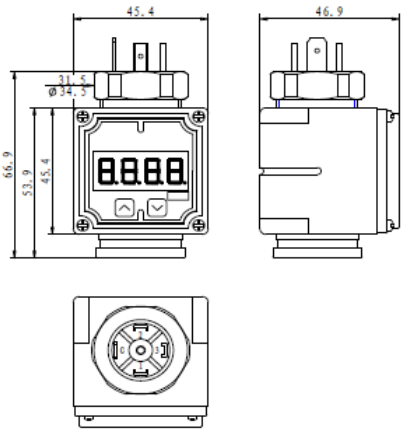
Additional Information

Accessories

Model DVA50	Functionalities
Plug-in 4-digit LED display	Programmable parameters are display zero and span, calibrated range, base point drift, decimal point, linearity correction and filter.

Electrical Specifications	
Display	LED 4 digits
Power supply	4-20mA DC loop powered
Current range	3- 25 mA
Voltage drop	≤3.8 V
Display range	-1999 to 9999
Sampling rate	3 times per second
Electrical connections	ISO 4400, EN 175301-803-A Form A; 3P+G

Performance	
Accuracy	±0.2 %FS
Thermal drift	≤80 ppm/ºC



Environmental Conditions	
Operating temperature	-30 to 85ºC
Storage temperature	-40 to 85ºC
Relative humidity	0 to 85 %RH
Shock resistance	5 g, 10 to 200 Hz
Impact	50 g, 11 ms
Weight	Approx. 70 g
Protection class (complying with EN 60529)	IP 65 with plug ISO 4400, EN 175301-803-A Form A

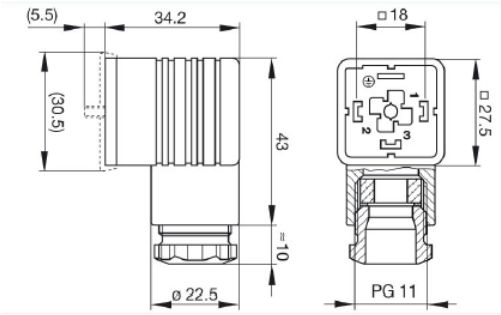
Please note this display is only available for devices with 4-20mA output.

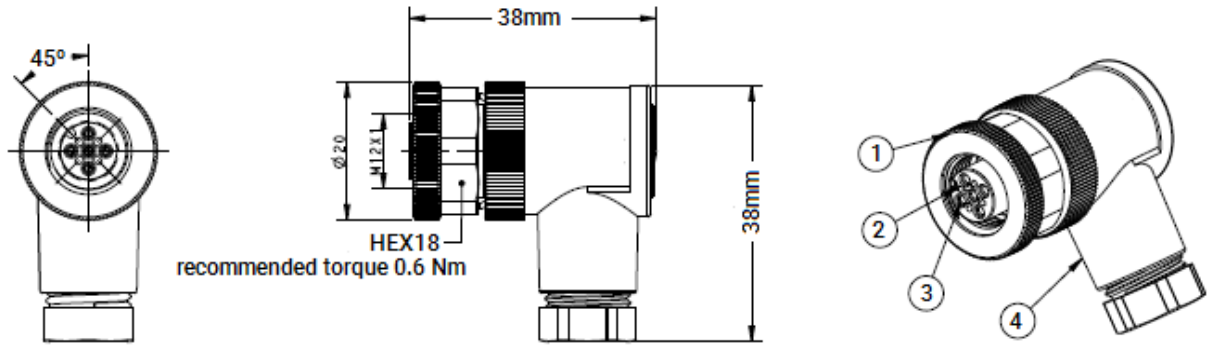
Gaskets connector ISO 4400 EN 175301-803-A Form A

Gasket type	Flat
Operating temperature	-40 to 125°C
Material	EPDM
Article number	1000646

Gasket type	Flat
Operating temperature	-30 to 90°C
Material	NBR
Article number	1001089

Gasket type	Flange
Operating temperature	-30 to 90°C
Material	NBR
Article number	1000648

Cable socket with central screw M3 x 35		
Article number: 1000645	Number of contacts	3 + PE
	Cable gland	Pg11
	Cable external diameter	6 to 9 mm
	Conductor size	≤ 1.5 mm²
	Standards	DIN EN 175 301-803-A, ISO 4400
	Housing color	Black
	Construction	Type A
	Contact surface material	Sn
	Contact bearer material	PA
	Housing material	PA
	Protection class	IP 65 (gasket necessary)
	Temperature range	-40 to 125 °C
		

Cable socket M12 x 1		
Article number: 1001010	Connector type	M12x1
	Number of contacts	5
	Cable gland	Pg9
	Cable external diameter	6 to 8 mm
	Conductor size	18 to 24 AWG ≤ 0.75 mm²
	Contact resistance	≤ 8 mΩ
	Insulation resistance	≥ 100 MΩ
	Construction	Type A
	Nut (1)	Brass
	Housing material (2)	PA
	Contact material (3)	Bronze
	Housing body (4)	PBT + GF
	Contact finish	Gold over nickel
	Protection class	IP67
	Standards	IEC 61076-2-101
	Temperature range	-40 to 85 °C
		

How to Order

Sign		Instruction
Tick	✓	Single option selection field necessary
Double tick	✓✓	Multiple option selection field available
Added extra	⊕	Not mandatory selection field

Order Code		Description	
PPC51-		Pressure transmitter Series T-Pascal P, Model PPC51	
010	✓	Process Connection; Membrane; Material	
F12		Thread ISO228 G1/2, 316L flush mount	
G12		Thread ISO228 G1/2 EN837, hole 3mm, 316L	
G13		Thread ISO228 G1/2 EN837, hole 11.4mm, 316L	
G24		Thread ISO228 G1/2M G1/4F EN837, 316L	
G33		Thread ISO228 G3/4 EN837, hole 11.4mm, 316L	
G34		Thread ISO228 G1/4 F, 316L	
N13		Thread ASME MNPT1/2, hole 11.4mm, 316L	
N14		Thread ASME MNPT1/4, hole 3mm; 316L	
N24		Thread ASME MNPT1/2 FNPT1/4, 316L	
R13		Thread BS-21 R1/2 BSPT, hole 11.4mm, 316L	
020	✓	Seal	
A		Not used; welded membrane	
E		EPDM	
F		FKM	
K		Kalrez®	
V		Viton®	
030	✓	Sensor Pressure Range	Overpressure
G01		0…1 bar/100 kPa gauge	1.5 bar/150 kPa
G04		0…4 bar/400 kPa gauge	6 bar/600 kPa
G06		0…6 bar/600 kPa gauge	9 bar/900 kPa
G10		0…10 bar/1 MPa gauge	15 bar/1.5 MPa
G16		0…16 bar/1.6 MPa gauge	24 bar/2.4 MPa
G25		0…25 bar/2.5 MPa gauge	37.5 bar/3.7 MPa
G40		0…40 bar/4 MPa gauge	60 bar/6 MPa
GA0		0…100 bar/10 MPa gauge	150 bar/37 MPa
S01		0…1 bar/100 kPa abs	1.5 bar/150 kPa
S04		0…4 bar/400 kPa abs	6 bar/600 kPa
S06		0…6 bar/600 kPa abs	9 bar/900 kPa
S10		0…10 bar/1 MPa abs	15 bar/1.5 MPa
S16		0…16 bar/1.6 MPa abs	24 bar/2.4 MPa
S25		0…25 bar/2.5 MPa abs	37.5 bar/3.7 MPa
S40		0…40 bar/4 MPa abs	60 bar/6 MPa
SA0		0…100 bar/10 MPa abs	150 bar/15 MPa
040	✓	Calibration Units	
A		kPa, MPa	
B		mbar, bar	
C		%	
P		psi	

How to Order (continuation)

050	✓	Signal Output
A		4-20 mA
V		0-10 Vdc
M		1-5 Vdc
060	✓	Electrical Wiring
P4		M12x1 plug, 4 poles, IP 67
VM		Plug ISO 4400, Type A, 18mm; PIN 3P+G; IP 65
⊕ 070	✓✓	Additional Accessories
D0		Plug-in display DVA50, 4-20mA loop powered, LED 4 digits
F4		M12x1 Socket, 4 poles, 90°, IP 67
F5		M12x1 Socket, 5 poles, 90°, IP 67
VF		Socket ISO 4400, Type A, 18mm; PIN 3P+G, 1.5mm2; IP 65
⊕ 080	✓	Gasket; Material and Temperature
E		Flat gasket for ISO 4400 connector; EPDM; -40...125°C
F		Flange gasket for ISO 4400 connector; NBR; -30...90°C
N		Flat gasket for ISO 4400 connector; NBR; -30...90°C
⊕ 090	✓	Label and Product Documentation Language
EN		English
FR		French
PT		Portuguese

Selection Example	
Process connection G½" flush mount, range of 0 to 10 bar gauge, 4-20mA output, wiring with matching pair of valve connectors	
Order code	PPC51-F12AG10BAVM+VFF

	My Notes

Contact

	Parque Empresarial Baia do Tejo, Rua 48 Nº11 Apartado 5056 2831-904 Barreiro, Portugal		+351 212 070 802 +351 212 070 803 +351 210 900 148
	38.663817, -9.066176		+351 212 070 804
	www.deltasensor.pt		commercial@deltasensor.pt