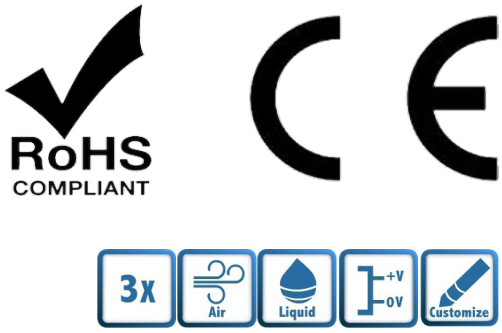
P01 Series Pressure Sensor

The P01 series pressure transducer combines the latest Application Specific Integrated Circuit (ASIC) technology with proven piezoresistive sensors. The measuring bridge is printed directly on one side of the diaphragm by means of Thick-Film technology. The rear part of the diaphragm can be exposed directly to the medium to be measured . The 303SS housing surrounds a pressure transducer designed for general use wherever a rugged, reliable pressure transducer is required.



Features

- Ceramic piezoresistive principle
- Max. measuring range 50 bar
- RoHs compliance (Lead-Free)

Advantages

- Working temperature range -25°C ...85°C
- Compatible for nearly all aggressive media
- Impact and vibration resistance
- Temperature compensated

Applications

- Industrial air compressors
- Water supply and drainage systems
- Mechanical and plant engineering

Standards

- EN 61326-1: 2021
- IEC 60068-2-6: 2007
- IEC 60068-2-30: 2005
- IEC 60068-2-2: 2007
- IEC 60068-2-1: 2007
- IEC 60068-2-52: 2017

Performance Specifications

Symbol	Charateristic	Test condition	Parameter	Unit
P_n	Pressure range (Absolute*2)*1		0...1-16	bar
	Pressure range (Sealed gage*3)*1		-1...1-50	
P_m	Prove pressure		3 times P_n	bar
P_B	Burst pressure		5 times P_n	bar
T_A	Ambient operating temperature		-25...85	°C
T_m	Media temperature Range (Air and liquid)	FPM	-26...125	°C
		EPDM	-40...125	
		NBR	-20...100	
		MVQ	-40...125	
		CR	-35...105	
		HNBR	-32...125	
I_c	Current consumption		<3	mA
	Overvoltage and reverse polarity protection		-24...30	VDC
T_R	Response time		4...10	mS
E_L	Accuracy include linearity, hysteresis and repeatability errors		0.5	% F.S
TEB	Total error band	@P_n, T_A = -25°C ...85°C	2	%
		@P_n, T_A = -10°C ...80°C	1.5	
LTS	Long term stability	Per year under reference conditions	<±0.3	% F.S
T_c	Compensated temperature range		-10...80	°C

*1 Pressure range can be customized according to requirements
*2 Absolute pressure reference: Output is proportional to the difference between applied pressure and a built-in fixed reference to vacuum (zero pressure), where the minimum operating pressure is set to absolute zero pressure (perfect vacuum)
*3 Sealed gage pressure reference: Output is proportional to the difference between applied pressure and a built-in fixed reference to 1 atmA, where the minimum operating pressure is set to 14.7 psiA (1 atmA)

Electrical Specifications

Charateristic	Ratiometric output	Current output	Regulated output	
	A	B	C	D
Output value	0.5...4.5 VDC	4...20 mA	0...10 VDC	1...5 VDC
Operating supply voltage	5±0.25 VDC	12...30 VDC	14...30 VDC	12...30 VDC

*1 Transducer will not produce valid output when supply voltage is outside of operating range.
*2 Short circuit protection between output pin and ground, and output pin and supply pin.

Pressure connection

Connector	Type	Comment
Female	7/16- 20 UNF	45° Flare Female
Male	½ -14 NPT	
	G ¼	with O-Ring
	7/16- 20 UNF	45° Flare Male
	¼ -18 NPT	
	R ¼	
	⅛ - 27 NPT	
	G½"A	with O ring
	G ⅛"	with O ring
	G½"B	with O ring
	M20x1.5	with O ring

*2 Pressure connection can be customized according to requirements

Materials

Symbol	Parameter	Value	Unit	Comment
m-PC	Pressure connection material	AISI 304		AISI 316L optional
m-S	Sensor material	Ceramic Al_2O_3		
m-PLUG	RK03FB material	PPS		IP67
	Packard Metri-Pack 150 material	PA66		IP65
	DIN43650A PG9 material	PA6		IP65
IP	Sealing grade	IP65 - IP67		Depending on the electrical connector
F_m	Mounting torgue	≤ 30	Nm	±10%
SHORT	Short circuit protected	Yes		
m	Mass	50	grams	

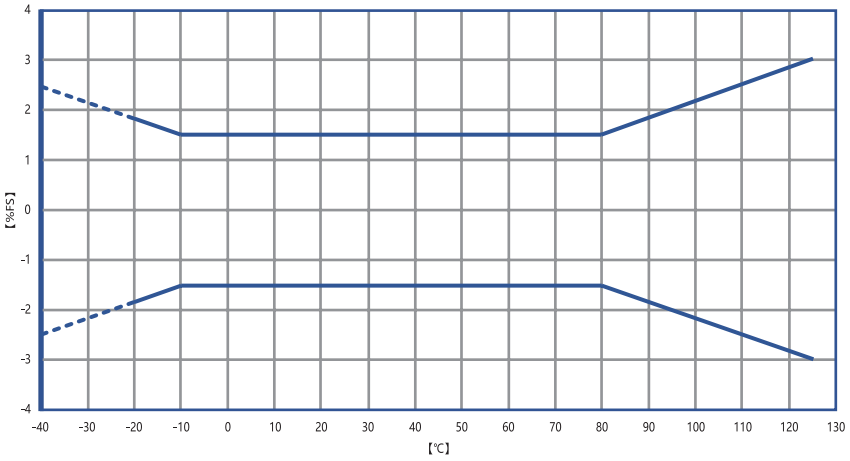
Environmental and mechanical characteristcs

Test	Standard
Electromagnetic compatibility	EN 61326-1: 2021
Damp heat, cyclic acc. IEC60068-2-30: 2005	Place the pressure sensor at 40°C ± 2°C and 93% ± 3% relative humidity environment for 48h. Remove the sensor and return it to room temperature.
Dry heat acc. IEC60068-2-2: 2007	Place the sensor in the test chamber at 85°C±2°C, connect the power supply and reading device in accordance with the specified circuit connection, keep the power on throughout the test and apply the maximum pressure specified in the drawings., test time: 168h.
Low temperature acc. IEC60068-2-1: 2007	Place the sensor in the test chamber at -30°C±2°C, connect the power supply and reading device in accordance with the specified circuit connection, keep the power on throughout the test and apply the maximum pressure specified in the drawings., test time: 168h.
Salt mist acc. IEC 60068-2-52: 2017	Place the pressure sensor at 35°C ± 2°C environment, continuous atomisation , 48h.
Vibration acc. IEC 60068-2-6	10~55 Hz with amplitude 1 mm, all 3 directions total duration 3 hours, 1h/direction, 10g

Total error band

The chart illustrates the maximum deviation across the entire medium temperature range (-40...125 °C) for the P01 series.

In the defined pressure and temperature parameters, the maximum total error remains consistently at ± 2 %FS (-25...85 °C) or ± 1.5 %FS (-10...80 °C).



Name Guide Description

P01X XXXB X XX X X

Series

P01: Sealed gage pressure sensor
P01A: Absolute pressure sensor

Pressure in bar

Sealed gage
004B: 0 - 4bar
006B: 0 - 6 bar
010B: 0 - 10bar
016B: 0 - 16bar
020B: 0 - 20bar
030B: 0 - 30bar
042B: 0 - 42bar
050B: 0 - 50bar
Customized

Absolute
001B: 0 - 1bar
001D6B: 0 - 1.6bar
002D5B: 0 - 2.5bar
004B: 0 - 4bar
006B: 0 - 6bar
010B: 0 - 10bar
016B: 0 - 16bar
Customized

Output

A: 0.5-4.5 VDC ratio output from 5 VDC excitation
B: 4-20mA from 12 to 30 VDC excitation
C: 0-10VDC output from 14 to 30 VDC excitation
D: 1 to 5 VDC output from 12 to 30 VDC excitation
Customized

Electrical connector

01: RK03FB
02: Packard Metri-Pack 150
03: DIN43650A PG9

Pressure connector

A: G¼" male with O ring
B: ¼"-18 NPT male
C: ⅛"-27 NPT male
D: 7/16"-20 UNF 45° Flare Male
E: 7/16"-20 UNF 1/4 in 45° Flare Female
F: G ⅜" with O ring
G: G½"A male with O ring
H: G½"B male with O ring
I: M20x1.5 male with O ring
J: R ¼" male
Customized

Sealing ring

0: FPM
1: EPDM
2: NBR
3: MVQ
4: CR
5: HNBR

Notes

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Name Guide Description

P01X XXXP X XX X X

Series

P01: Sealed gage pressure sensor
P01A: Absolute pressure sensor

Pressure in psi

Sealed gage
060P: 0 - 60psi
100P: 0 - 100psi
150P: 0 - 150psi
200P: 0 - 200psi
250P: 0 - 250psi
375P: 0 - 375psi
525P: 0 - 525psi
625P: 0 - 625psi
Customized

Absolute
015P: 0 - 15psi
020P: 0 - 20psi
030P: 0 - 30psi
060P: 0 - 60psi
100P: 0 - 100psi
150P: 0 - 150psi
200P: 0- 200psi
Customized

Output

A: 0.5-4.5 VDC ratio output from 5 VDC excitation
B: 4-20mA from 12 to 30 VDC excitation
C: 0-10VDC output from 14 to 30 VDC excitation
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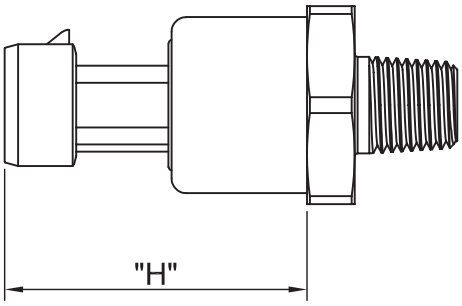
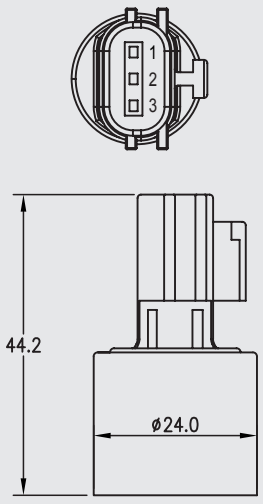
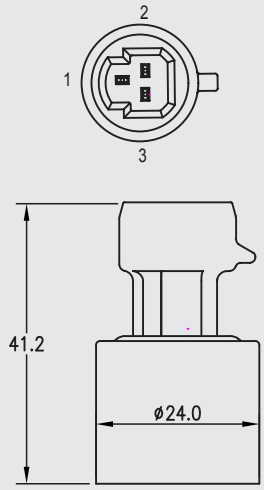
Dimensions (mm)

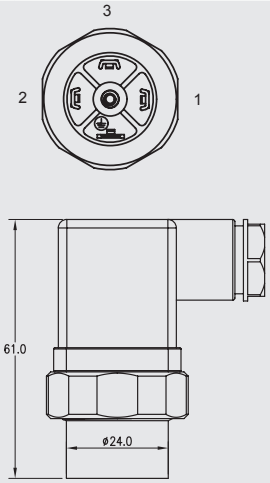
Electrical connector type dimensions



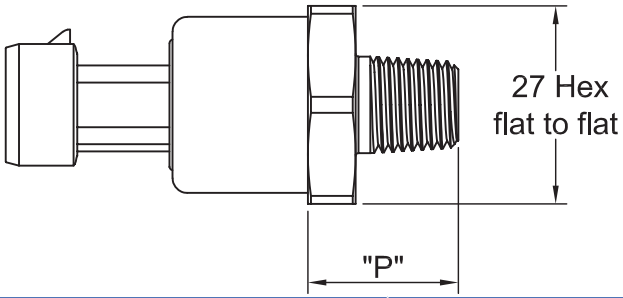
01 RK03FB			02 Packard Metri-Pack 150			03 DIN43650A PG9		
Sealing grade: IP67 **Material:** PPS			**Sealing grade:** IP65 **Material:** PA66			**Sealing grade:** IP65 **Material:** PA6		
Pin	**Voltage output (0.5 – 4.5 V, 1 – 5 V, 0 – 10 V)**	**Current output (4-20mA)**	**Pin**	**Voltage output (0.5 – 4.5 V, 1 – 5 V, 0 – 10 V)**	**Current output (4-20mA)**	**Pin**	**Voltage output (0.5 – 4.5 V, 1 – 5 V, 0 – 10 V)**	**Current output (4-20mA)**
1	GND	NULL	1	V_{OUT}	-	1	V_{DD}	+
2	V_{OUT}	-	2	GND	NULL	2	GND	-
3	V_{DD}	+	3	V_{DD}	+	3	V_{OUT}	NULL





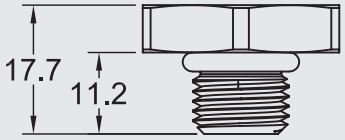


Pressure connector type dimensions



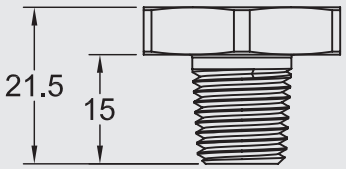
A G1/4" male with O ring

Seal: O ring



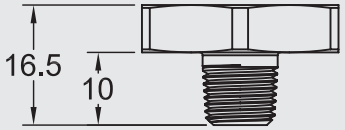
B 1/4"-18 NPT male

Seal: Pipe thread



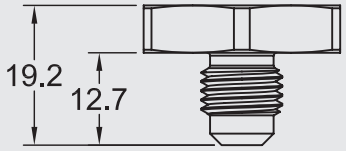
C 1/8"-27 NPT male

Seal: Pipe thread



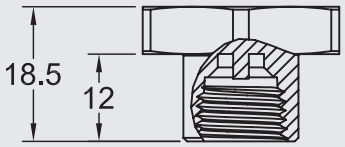
D 7/16"-20 UNF 45° Flare Male

Seal: 45° cone



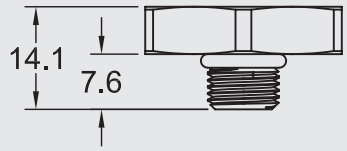
E 7/16"-20 UNF in 45° Flare Female

Seal: 45° cone



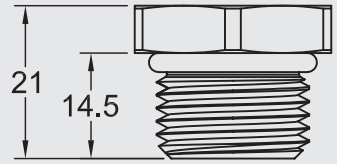
F G ⅛" with O ring

Seal: O ring



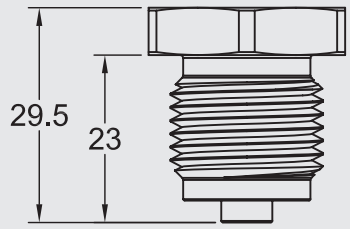
G G1/2"A male with O ring

Seal: O ring



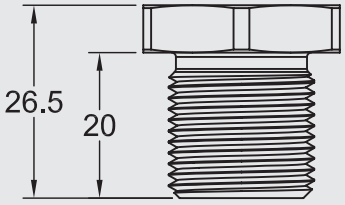
H G1/2"B male with O ring

Seal: O ring



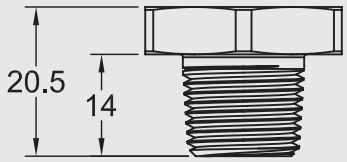
I M20x1.5 male with O ring

Seal: O ring



J R ¼" male

Mating geometry:
DIN 3852-2



Accessories

- Code: 20114-001
- Packard Metri-Pack 150 connector
- Cable: 1m standard (customization available)

- Code: 20115-002
- RK03FB socket
- Cable: 1m standard (customization available)

Safety and Environment

The product is to be installed by manufacturer trained personnel or competent person trained in accordance with manufacturer installation instructions.

With respect to applicable standards IEC 61010-1/ EN 61010-1 *safety requirements for electrical equipment for measurement, control and laboratory use part 1 general requirements*, the product should be used in limited energy secondary circuits.

Risk of electrical shock

Certain parts of the module can carry hazardous voltage during the operation process of the product because hazardous live voltage of primary conductor, power supply occurs, injury and/or serious damage will be caused if this warning is ignored.

Conducting parts must be inaccessible after installation of the product. Additional protection including shield or protective housing could be used according to IEC 60664 Insulation coordination for equipment within low-voltage supply systems.

Disconnection of the main supply will protect against possible injury and serious damage.

ESD protection

Damage from an ESD event will occur if the personnel is not well grounded when handling.

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