P03 Series Pressure Sensor

The P03 Series pressure sensor is ideal choice for demanding air conditioning and refrigeration applications where long-term reliability and accuracy is a must. The P03 Series provides proven reliability at a competitive price.

Features

- Piezoresistive ceramic sensing element
- Output voltage proportional to pressure
- Max. measuring range 100 bar
- RoHs Compliance (Lead-Free)

Advantages

- Working temperature range -40°C - 105°C
- Compatible with R22, R407C, R410A
- 1500V insulation voltage for isolation, 50Hz, 1 min
- Overvoltage and short circuit protected

Applications

- Air conditioners
- Refrigeration systems

Standards

- IEC 60950-1: 2013
- EN 61000-4 Series
- IEC 60068-2: 2005

Absolute maximum ratings

Symbol	Parameter	Min.	Max.	Unit
$V_{DD\ Max.}$	Maximum supply voltage (not destructive)	-14.0	+20.0	VDC
P_n	Operating pressure range (Gauge)	0	100	bar
P_m	Prove pressure	2 times P_n		
P_B	Burst pressure	3 times P_n		
T_A	Ambient operating temperature	-40	+120	°C
T_m	Working media temperature	-30	+110	°C
$V_{ESD-HBM}$	ESD sensitivity HBM (Human Body Model)		8	kV

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

Specifications

Symbol	Parameter	Test condition	Min.	Type	Max.	Unit
V_{DD}	Supply voltage		4.9	5.0	5.1	VDC
I_C	Current consumption	P_n=0 without load			10	mA
P_n	Operating pressure range (Gauge)	P03-010B		10	20	bar
		P03-016B		16	32	
		P03-020B		20	40	
		P03-030B		30	60	
		P03-042B		42	84	
		P03-050B		50	100	
V_{OUT}	Output voltage	@P_n	0.5		4.5	VDC
C_L	Output load capacitive				1,000	pf
R_L	Output load resistance	V_{OUT} to GND	10			kΩ
ε_L	Linearity, hysteresis and repeatability			0.5	1	%
X	Total error band	@P_n, T_A = -35 - 110°C			3	%
T_R	Response time			5	10	mS
L_D	life cycle duration			$10*10^6$		circle

Insulation characteristics

Symbol	Parameter	Value	Unit	Comment
V_D	Insulation voltage for isolation, 50Hz, 1 min	1,500	VAC	
R_{ISO}	Isolation Resistance @500VDC	>100	MΩ	

General characteristics

Symbol	Parameter	Value	Unit	Comment
M-HSE	Housing material	Brass or SS304		
M-SR	Seal ring material	CR		Neoprene
M-WM	Wetted Materials	Al_2O_3		Ceramic
IP	Sealing grade	IP66		
F_m	Mounting torgue	30	Nm	±10%
VIBR	Random vibration	1	mm	10 - 55 Hz, XYZ 3 axis
SHORT	Short circuit protected	Yes		

Name guide description

P03 010B A 01 A

Series

P03: Piezoresistive ceramic pressure sensor

Pressure (Gauge)

010B: 0 - 10bar
016B: 0 - 16bar
025B: 0 - 25bar
030B: 0 - 30bar
042B: 0 - 42bar
050B: 0 - 50bar

Output

Null: 0.5-4.5 VDC ratio output from 5 Vdc excitation
A: Customized

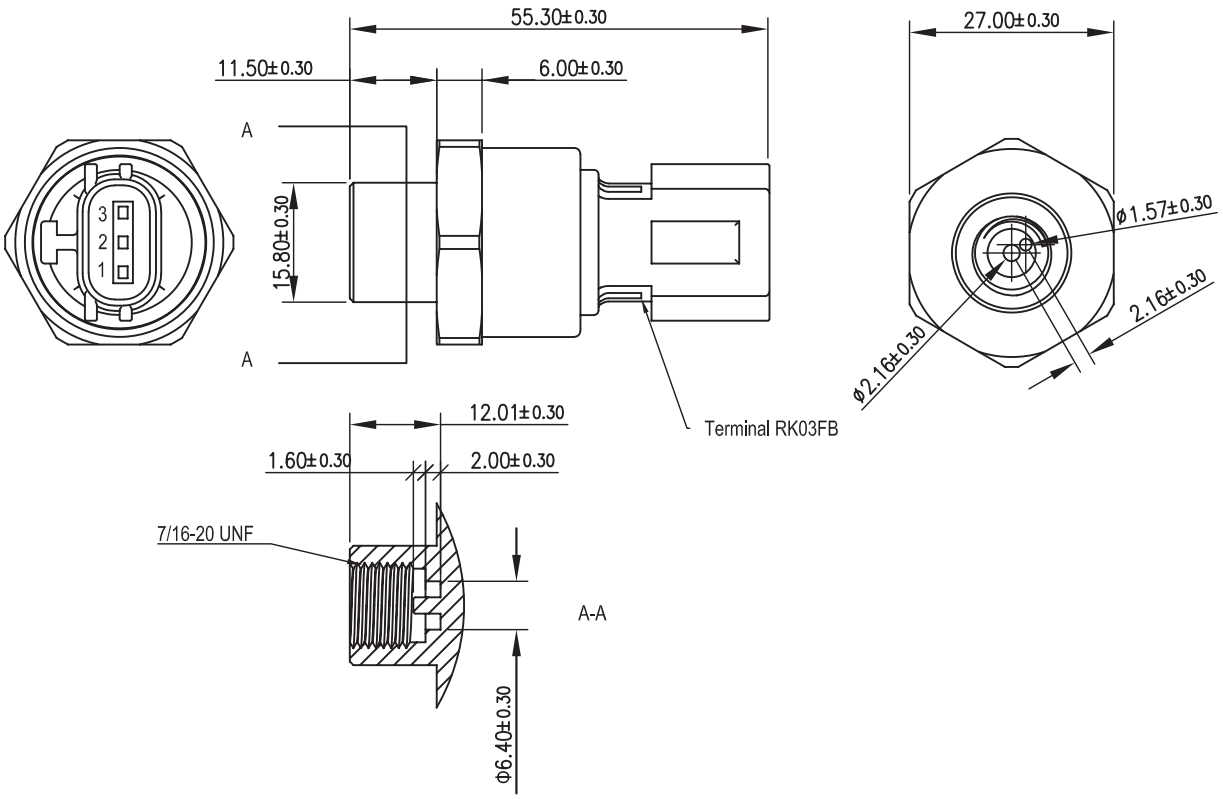
Electrical connector

Null: RK03FB
01: Customized

Pressure Connector

Null: 7/16-20 UNF female
A: G1/4" male
B: 1/8"-27 NPT male
C: Straight tube
D: L-shaped tube

Dimension (mm)



Pin	Symbol
1	V_{DD}
2	$-V_{OUT}$
3	GND

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.

Important notice

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