

Pressure switch for measurement and monitoring of absolute and gauge pressure for hygienic processes

Ceraphant PTP33B



R 4012.-
11–35 pcs.

- High reproducibility and long-term stability
- Customized measuring ranges
- Flexible process integration thanks to modular connections

i Specs at a glance:

- **Product:**
Gases, vapors, liquids and dust
- **Measuring ranges:**
From 0 to +400 mbar (0 to +6 psi) to 0 to +40 bar (0 to +600 psi)
- **Accuracy:**
Standard: $\pm 0,5\%$;
Platinum: $\pm 0,3\%$
- **Filling oil:**
in accordance with FDA
- **Process temperature:**
-10 to +100 °C (+14 to +212 °F),
+135 °C (+275 °F) for one hour maximum
- **Output:**
1 × PNP, 2 × PNP,
1 × PNP + 4 to 20 mA,
1 × PNP + 4 to 20 mA, IO-Link

Application The Ceraphant is a pressure switch for the measurement of absolute and gauge pressure in gases, vapors, liquids and dust for applications with hygienic requirements. The Ceraphant can be used internationally thanks to a wide range of approvals and process connections.

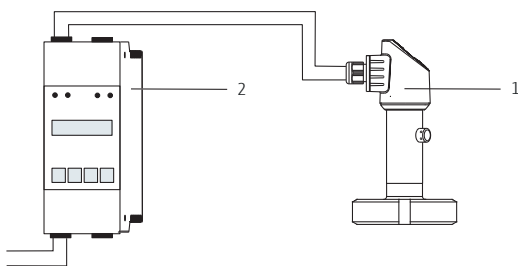
Function The process pressure deflects the metal process isolating diaphragm of the switch and a fill fluid transfers the pressure to a Wheatstone bridge (semiconductor technology). The pressure-dependent change in the bridge output voltage is measured and evaluated.

IO-Link



Complete product information:
www.e-direct.endress.com/ptp33b

Application example



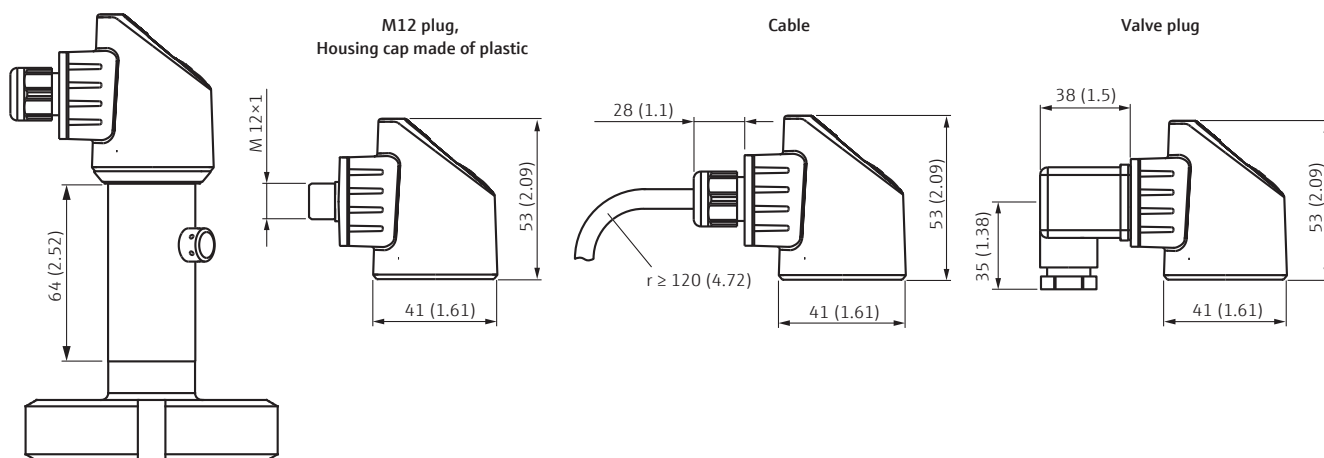
Pressure switch Ceraphant PTP33B with 1 × PNP switch output (1) with RMA42 / RIA45 (2) from E-direct

Technical data

Output		Environment	
Output signal	PNP switch output + 4 to 20 mA output (four-wire), IO-Link; PNP switch output (3-wire); 2 × PNP switch output (4-wire), IO-Link	Ambient temperature	-20 to +70 °C (-4 to +158 °F)
Signal range 4 to 20 mA	3.8 mA to 20.5 mA	Storage temperature	-40 to +85 °C (-40 to +185 °F)
Voltage drop PNP	≤2 V	Climate class	Class 3K5
Load 4 to 20 mA	$R_{Lmax} \leq (U_B - 6,5 V) / 23 mA^{1)}$	Electromagnetic compatibility	- Interference emission as per EN 61326 equipment B - Interference immunity as per EN 61326 appendix A (industrial sector) - NAMUR recommendation EMC (NE21)
Dynamic behavior	Time constant (T ₉₀) 16 ms	Process	
¹⁾ R _{Lmax} : maximum load resistance; U _B : supply voltage		Process temperature	-10 to +100 °C (+14 to +212 °F) Sterilization in place (SIP) at +135°C (+275 °F) for a maximum of one hour
Power supply		Materials	
Supply voltage	10 to 30 V DC IO-Link: 18 to 30 V DC	Materials not in contact with process	Housing: Stainless steel 316L Filling oil: NSF-H1 synthetic oil in accordance with FDA 21 CFR 178.3570
Current consumption	≤60 mA	Materials in contact with process	Process connections: 316L metal process isolating diaphragm: AISI 316L TSE Certificate of Suitability for all device components in contact with the process
Degree of protection	- Cable: IP66/67 NEMA Type 4X/6P - Plug M12: IP65/67 NEMA Type 4X - Valve plug: IP65 NEMA Type 4X	Operability	
Influence of power supply	≤0.005 % of URL/1 V	Operation with local display	4-digit measured value display, simple and complete menu guidance, comprehensive diagnostic functions, status via LEDs
Residual ripple	±5 %	IO Link	Operator-oriented menu structure for user-specific tasks
Performance characteristics		Approvals	
Reference accuracy	Standard: ±0.5 %; Platinum: ±0.3 %	3-A, EHEDG, EC1935/2004 Pressure Equipment Directive	
Thermal change of the zero output and the output span	<1 bar: <1.2 %; ≥1 bar: <1 %		
Long-term stability	1 year: ±0.2 %; 5 years: ±0.4 %		
Switch-on time	≤2 s		

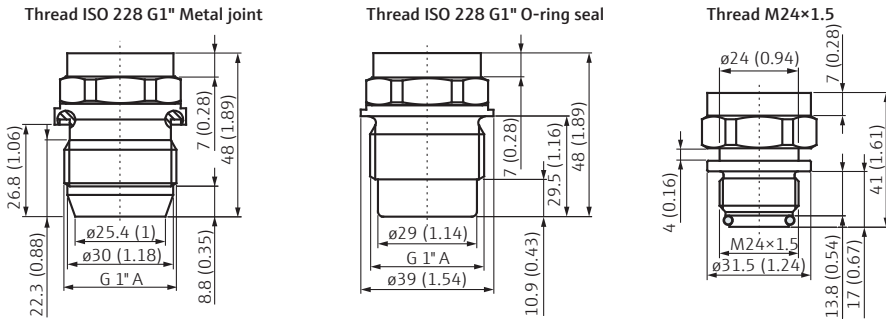
Dimensions in mm (inches)

Housing

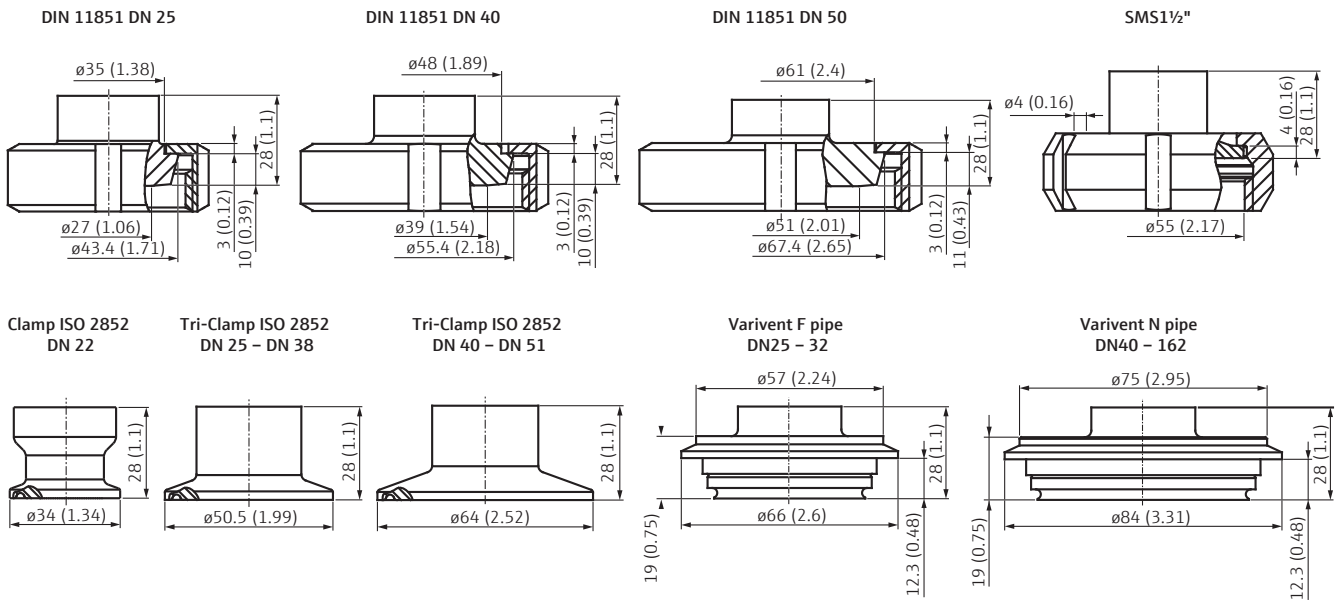


Installation according to instruction manual.

Process connections with flush-mounted, metal process isolating diaphragm

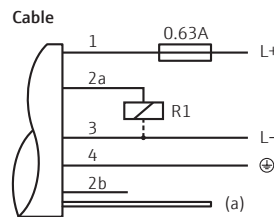
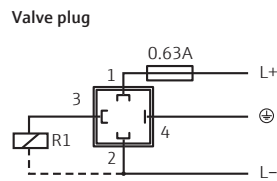
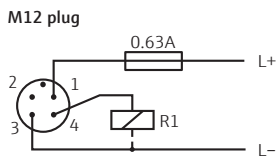


Hygienic connections



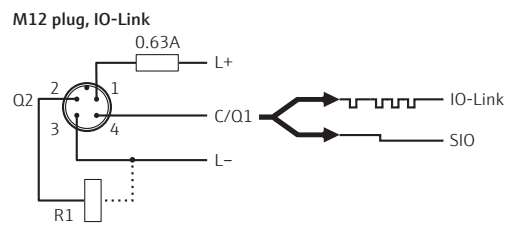
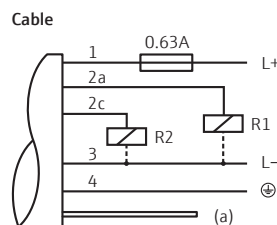
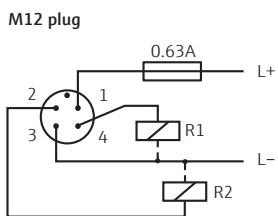
Electrical connection

1 x PNP switch output R1

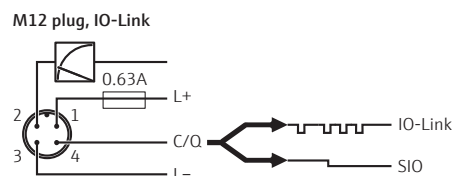
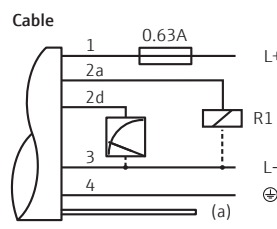
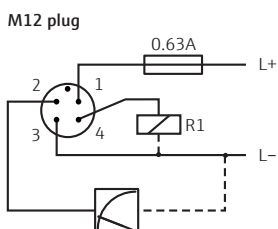


- Cable:
- 1: brown = L+
 - 2a: black = switch output 1
 - 2b: white = not assigned
 - 2c: white = switch output 2
 - 2d: white = analog output 4 to 20 mA
 - 3: blue = L-
 - 4: green/yellow = ground
 - (a): reference air hose

2 x PNP switch outputs R1 and R2



1 x PNP switch output R1 with additional analog output 4 to 20 mA (active)



Price table

Electrical Connection

Code	Plugs
M	Plug M12
U	Valve plug M16
V	Valve plug NPT $\frac{1}{2}$ "

Sensor range

Code	Range (relative)
1F	400 mbar/40 kPa/6 psi, overload: 1.6 bar/160 kPa/24 psi
1H	1 bar/100 kPa/15 psi, overload: 4 bar/400 kPa/60 psi
1K	2 bar/200 kPa/30 psi, overload: 10bar/1MPa/150 psi
1M	4 bar/400 kPa/60 psi, overload: 16bar/1,6MPa/240 psi
1P	10 bar/1 MPa/150 psi, overload: 40 bar/4 MPa/600 psi
1S	40 bar/4 MPa/600 psi, overload: 160bar/16MPa/2400 psi

Code	Range (absolute)
2F	400 mbar/40 kPa/6 psi, overload: 1,6 bar/160 kPa/24 psi
2H	1 bar/100 kPa/15 psi, overload: 4 bar/400 kPa/60 psi
2K	2 bar/200 kPa/30 psi, overload: 10bar/1MPa/150 psi
2M	4 bar/400 kPa/60 psi, overload: 16bar/1,6MPa/240 psi
2P	10 bar/1 MPa/150 psi, overload: 40 bar/4 MPa/600 psi
2S	40 bar/4 MPa/600 psi, overload: 160bar/16MPa/2400 psi

Process connection

Code	Threads M24
X2J	Thread M24, 316L, seal EPDM, 3A, EHEDG
X3J	Thread M24, 316L, seal FKM, 3A, EHEDG

Process connection

Code	Threads G1 flush-mounted
WQJ	Thread ISO 228 G1 seal metaljoint
WSJ	Thread ISO 228 G1 seal O-ring

Process connection

Code	Hygienic connections
1DJ	DIN11851 DN50 PN25
1GJ	DIN11851 DN25 PN40
1JJ	DIN11851 DN40 PN40
3AJ	Clamp ISO2852 DN22 ($\frac{3}{4}$ "
3EJ	Tri-Clamp ISO2852 DN40-51 (2")
4QJ	SMS 1- $\frac{1}{2}$ " PN25
41J	Varivent F pipe DN25-32 PN40
42J	Varivent N pipe DN40-162 PN40

Ceraphant PTP33B (Reference accuracy: 0.5 %)

Output	Process connection	Order no.	Price/pcs. in R		
			1 to 3	4 to 10	11 to 35
PNP, 3-wire	Tri-Clamp (1 $\frac{1}{2}$ "	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> GB3CJ	4892.-	4403.-	4012.-
	Threads M24	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> GB <input type="checkbox"/>	5007.-	4506.-	4105.-
	Threads G1 flush-mounted	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> GB <input type="checkbox"/>	5082.-	4574.-	4167.-
	Hygienic connections	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> GB <input type="checkbox"/>	5672.-	5104.-	4651.-
2x PNP, IO-Link, 4-wire	Tri-Clamp (1 $\frac{1}{2}$ "	PTP33B-AA8M <input type="checkbox"/> GB3CJ	5159.-	4643.-	4230.-
	Threads M24	PTP33B-AA8M <input type="checkbox"/> GB <input type="checkbox"/>	5273.-	4746.-	4324.-
	Threads G1 flush-mounted	PTP33B-AA8M <input type="checkbox"/> GB <input type="checkbox"/>	5348.-	4814.-	4386.-
	Hygienic connections	PTP33B-AA8M <input type="checkbox"/> GB <input type="checkbox"/>	5938.-	5344.-	4869.-
PNP + 4 to 20mA, IO-Link, 4-wire	Tri-Clamp (1 $\frac{1}{2}$ "	PTP33B-AA7M <input type="checkbox"/> GB3CJ	5742.-	5168.-	4709.-
	Threads M24	PTP33B-AA7M <input type="checkbox"/> GB <input type="checkbox"/>	5857.-	5271.-	4802.-
	Threads G1 flush-mounted	PTP33B-AA7M <input type="checkbox"/> GB <input type="checkbox"/>	5932.-	5339.-	4864.-
	Hygienic connections	PTP33B-AA7M <input type="checkbox"/> GB <input type="checkbox"/>	6522.-	5869.-	5348.-

* Please add code for electrical connection, sensor range and process connection.

Accessories

	Order no.	Price/pcs. in R
Weld-in adapter G1, 316L	52005087	1248.83
Weld-in adapter G1, 316L, EN10204	52010171	2092.51
Weld-in adapter G1, d=60, 316L	52001051	648.96
Weld-in adapter G1, d=60, 316L, EN10204	52011896	2295.41
Straight plug, without cable (self wired)	52006263	259.69
5 m cable with M12 \times 1 plug	52010285	121.07
M12 \times 1 plug angled	71114212	424.35

Electrical Connection

Code	Plugs
M	Plug M12
U	Valve plug M16
V	Valve plug NPT½"

Sensor range

Code	Range (relative)
1F	400 mbar/40 kPa/6 psi, overload: 1.6 bar/160 kPa/24 psi
1H	1 bar/100 kPa/15 psi, overload: 4 bar/400 kPa/60 psi
1K	2 bar/200 kPa/30 psi, overload: 10bar/1MPa/150 psi
1M	4 bar/400 kPa/60 psi, overload: 16bar/1,6MPa/240 psi
1P	10 bar/1 MPa/150 psi, overload: 40 bar/4 MPa/600 psi
1S	40 bar/4 MPa/600 psi, overload: 160bar/16MPa/2400 psi

Code	Range (absolute)
2F	400 mbar/40 kPa/6 psi, overload: 1.6 bar/160 kPa/24 psi
2H	1 bar/100 kPa/15 psi, overload: 4 bar/400 kPa/60 psi
2K	2 bar/200 kPa/30 psi, overload: 10bar/1MPa/150 psi
2M	4 bar/400 kPa/60 psi, overload: 16bar/1,6MPa/240 psi
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Process connection

Code	Threads M24
X2J	Thread M24, 316L, seal EPDM, 3A, EHEDG
X3J	Thread M24, 316L, seal FKM, 3A, EHEDG

Process connection

Code	Threads G1 flush-mounted
WOJ	Thread ISO 228 G1 seal metaljoint
WSJ	Thread ISO 228 G1 seal O-ring

Process connection

Code	Hygienic connections
1DJ	DIN11851 DN50 PN25
1GJ	DIN11851 DN25 PN40
1JJ	DIN11851 DN40 PN40
3AJ	Clamp ISO2852 DN22 (¾")
3EJ	Tri-Clamp ISO2852 DN40-51 (2")
4QJ	SMS 1-½" PN25
4I1	Varivent F pipe DN25-32 PN40
42J	Varivent N pipe DN40-162 PN40

Ceraphant PTP33B (Reference accuracy: 0.3 %)

Output	Process connection	Order no.	Price/pcs. in R		
			1 to 3	4 to 10	11 to 35
PNP, 3-wire	Tri-Clamp (1½")	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> DB3CJ	5422.-	4880.-	4446.-
	Threads M24	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> DB <input type="checkbox"/>	5536.-	4983.-	4540.-
	Threads G1 flush-mounted	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> DB <input type="checkbox"/>	5612.-	5050.-	4601.-
	Hygienic connections	PTP33B-AA4 <input type="checkbox"/> <input type="checkbox"/> DB <input type="checkbox"/>	6201.-	5581.-	5085.-
2x PNP, IO-Link, 4-wire	Tri-Clamp (1½")	PTP33B-AA8M <input type="checkbox"/> DB3CJ	5688.-	5120.-	4664.-
	Threads M24	PTP33B-AA8M <input type="checkbox"/> DB <input type="checkbox"/>	5803.-	5222.-	4758.-
	Threads G1 flush-mounted	PTP33B-AA8M <input type="checkbox"/> DB <input type="checkbox"/>	5878.-	5290.-	4820.-
	Hygienic connections	PTP33B-AA8M <input type="checkbox"/> DB <input type="checkbox"/>	6468.-	5821.-	5303.-
PNP + 4 to 20mA, IO-Link, 4-wire	Tri-Clamp (1½")	PTP33B-AA7M <input type="checkbox"/> DB3CJ	6272.-	5645.-	5143.-
	Threads M24	PTP33B-AA7M <input type="checkbox"/> DB <input type="checkbox"/>	6386.-	5747.-	5237.-
	Threads G1 flush-mounted	PTP33B-AA7M <input type="checkbox"/> DB <input type="checkbox"/>	6461.-	5815.-	5298.-
	Hygienic connections	PTP33B-AA7M <input type="checkbox"/> DB <input type="checkbox"/>	7051.-	6346.-	5782.-

* Please add code for electrical connection, sensor range and process connection.

Accessories

	Order no.	Price/pcs. in R
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Straight plug, without cable (self wired)	52006263	259.69
5 m cable with M12×1 plug	52010285	121.07
M12×1 plug angled	71114212	424.35

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