

Product Description

ES Series digital pressure switches are the perfect solution designed for use in harsh industrial conditions.

It has long-term stability and overload resistance. It provides high linearity, adjustable hysteresis and flexible use over the entire measuring range.

- Different pressure options in the range of -1...600 bar
- Pressure measurement with ± 0.5 % accuracy
- Adjustable hysteresis and window function outputs
- Flexible configurable switching output (PNP, NPN) and Relay Output
- Optional Analog 4...20 mA output
- Instant pressure reading with LED display
- Display can be rotated 180° Digitally



Areas of Application

- Machine tools
- Hydraulics and Pneumatics
- Pumps and compressors
- Machine building

Technical Specifications

Connection Type	G1/4" - G1/2" - 1/4" BSPT - 1/2" BSPT - 1/2" NPT - 1/4"NPT
Accuracy @ 25°C for 5 min	< % ± 0.5 FS
Operating temperature	-20°C...+80°C
Body Material	Aluminum Body
Output Signal	Relay Output (NO/NC), Switching(PNP, NPN), Analog(4...20 mA)

Measuring Range Specifications

Vacuum Resistance	Yes
Pressure Resistance	Examine Table 1. (Page:2)
Digital Display	
Indication range	14 segment
Measurement units	bar, mBar, psi, MPa,
Display Color	Blue (LED)
Character size	13 mm [0.51 in]
Digits	4-digits
Display	Display can be rotated 180° Digitally

Order Codes

Table 1

ES	-	-	-	-	-	-	-
Model	Sealing Type	Mechanical Connection	Connection Type	Pressure & Vacuum			Output Signal
				Code	Pressure & Vacuum Range	P max bar	Analog Output (Optional)
ES	V VITON E EPDM H HNBR If the sealing material Type is not selected, it is considered as "NBR".	A3 G1/4" A5 G1/2" S3 1/4" BSPT S5 1/2" BSPT N4 1/4"NPT N5 1/2" NPT When ordering, you must specify the Connection Type as "Male" or "Female".	F Female M Male	V0	-1...0 bar	6	K2 Switch Output (PNP,NPN) Z1 Analog Output (4...20 mA) If Z1 is not selected, analog output will not be added.
				V1	-1...1 bar	6	
				V3	-1...3 bar	15	
				V6	-1...6 bar	30	
				V10	-1...10 bar	30	
				V16	-1...16 bar	60	
				V24	-1...25 bar	75	
				M50	0..50 mbar	0,15	
				M100	0..100mbar	0,30	
				M250	0..250 mbar	0,75	
				M600	0..600 mbar	1,8	
				2,5	0 ... 2,5 bar	15	
				6	0 ... 6 bar	30	
				10	0 ... 10 bar	30	
				16	0 ... 16 bar	60	
				25	0 ... 25 bar	75	
				40	0 ... 40 bar	100	
				60	0 ... 60 bar	175	
				100	0 ... 100 bar	250	
				160	0 ... 160 bar	500	
				250	0 ... 250 bar	700	
				315	0 ... 315 bar	700	
				400	0 ... 400 bar	700	
				600	0 ... 600 bar	1050	

Electrical Connection

Connection Type	DIN 436500 A Connector
Pin Assignment	Pin assignments vary according to the output signals. Please see "Table 2" for detailed explanation.
Reverse Polarity Protection	U+ vs. U
Insulation Voltage	DC 500 V

Table 2

 DIN 436500 A	<table> <tr> <th colspan="2">K1</th></tr> <tr> <td>U+</td><td>1</td></tr> <tr> <td>U-</td><td>2</td></tr> <tr> <td>SP1</td><td>3</td></tr> <tr> <td>SP2/S+(1)</td><td>4</td></tr> </table>	K1		U+	1	U-	2	SP1	3	SP2/S+(1)	4
K1											
U+	1										
U-	2										
SP1	3										
SP2/S+(1)	4										

Pin Assignment:

- U+ Positive power supply terminal
- U- Negative power supply terminal
- SP1 1. Switching point
- SP2 2. Switching point
- S+ 4...20 mA

(1) If analog output is requested, pin "2" will be used as analog pin.

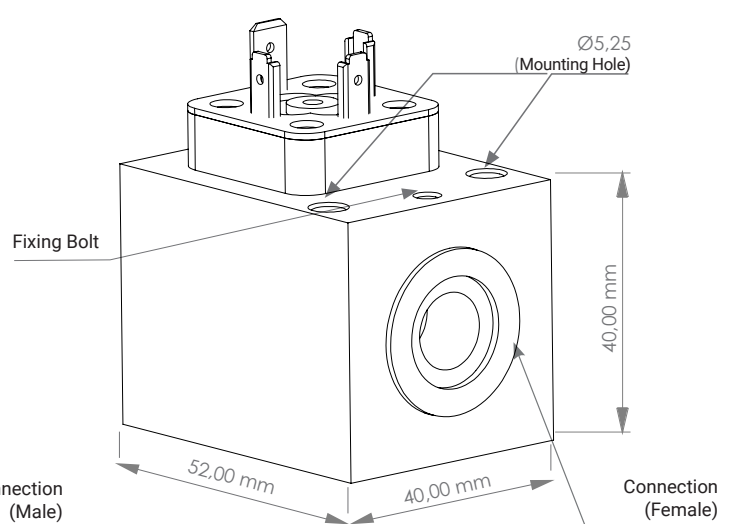
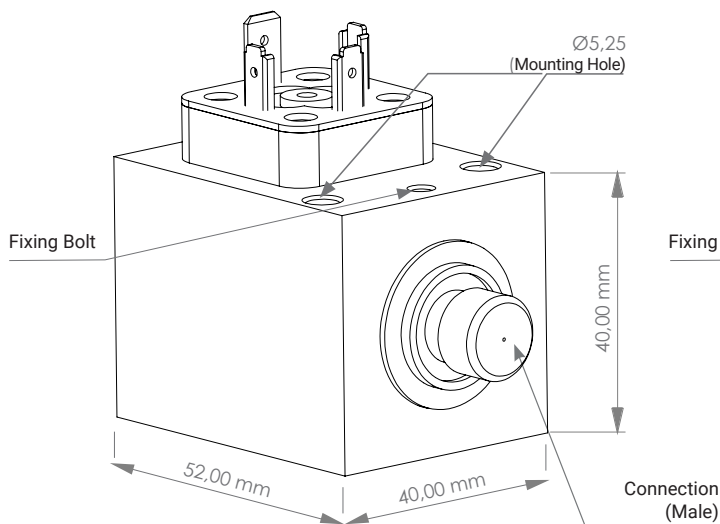
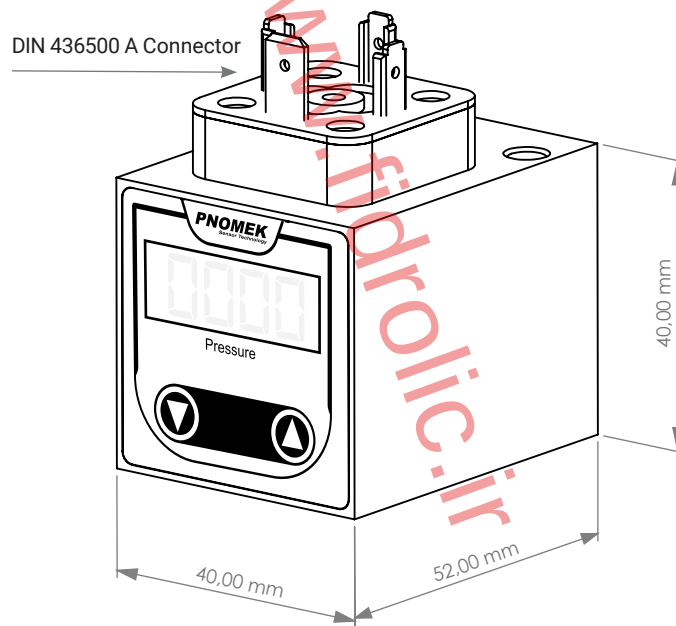
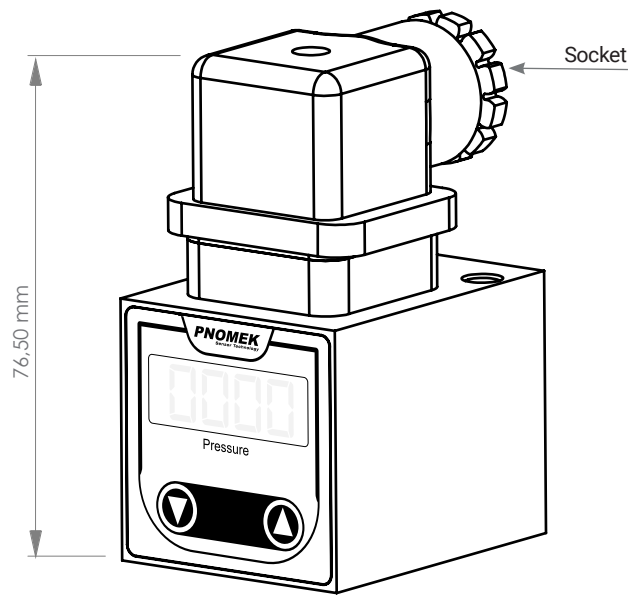
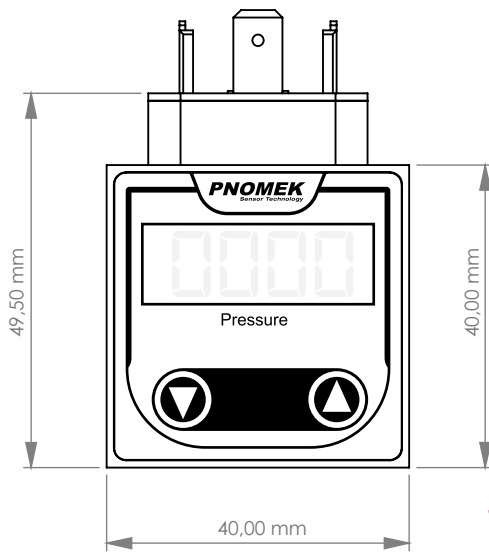
Properties of Output Signal		
Digital Output		
Switching Output 1	PNP ⁽¹⁾	
	NPN ⁽¹⁾	
	Factory Setting:PNP	
Switching Output 2	PNP ⁽¹⁾	
	NPN ⁽¹⁾	
	Factory Setting:PNP	
Analog Output	4...20 mA	
Switching Function	• Window ⁽²⁾ • Hysteresis ⁽²⁾	
	Factory setting: Hysteresis Contact function	
Setting range of the switch points	• Factory settings • Customer-specific Switching point	
	Switching point 1 and switching point 2 can be set independently → See operating instructions	
Switch hysteresis	Minimum 0.25 % of FS ⁽³⁾	
Load		
Analog Output (4 ... 20 mA)	≤ 500 Ω	
PNP	Max. 300 mAh	
NPN	Max. 300 mAh	
Switching delay time	Configurable from 0 to 65 sr	
Reset Delay Time	Configurable from 0 to 65 s	
Supply Voltage		
Product Operating Voltage Range	5 - 24 VDC	
Switching voltage	Supply voltage	
Current Consumption	Models without 4 ... 20 mA output signal	Max. 70 mA
	Models with 4 ... 20 mA output signal	Max. 95 mA
Overvoltage protection	DC 40 V	
Dynamic behaviour		
Settling time per IEC 61298-2	Analog signal	≤ 2 ms
	Switching output	≤ 2 ms
Switch-on time	2 s	

(1) For detailed explanation, refer to the page "8" of the user manual. Please review the "Table 2" on that page.

(2) For detailed explanation, see the page "12 and 13" of the user manual. Please review "Table 3" and "Table 4" on those pages.

(3) Full Scale

Technical Dimensions



Description

LP A1 series pressure switch opens or closes its electrical circuit depending on pressure rises or drops. Working pressure can be set from 7 bar to 600 bar by hand wheel on pressure switch. It has been designed suitable for using under high and shock pressures. It makes itself interesting for costumers thanks to easy adjustability and sensitivity. It has vertical fitting connection holes for bottom flange connection. It has mountable design for all axis.

- LP A1 series pressure switch can be set thanks to hand wheel on pressure switch
- Desired pressure can be set easily thanks to pressure set scale.
- It has Aluminium body material
- NBR and Teflon seal equipments.

Applications

- Hydraulic and mobile hydraulics
- Pneumatics
- Heavy-Duty machines industry
- Media; Compressed air, liquids, gases.

Technical Features

Connection Type	: Side Flange Connection
Reproducibility	: Within %1 of set pressure
Working Temperature	: -20°C...+110°C
Vibration Test (DIN EN 60068-2-6:1996)	: 20 g (Test Time 30 min.)
Shock Test (DIN EN 60068-2-27:1993)	: 30 g
Working Cycle	: 5 000 000 cycle
Viscosity Range	: Between 10 ... 800 mm ² /sn
Electrical Features	: 5A 250VAC

Notes

These values are maximum values and they can not be used at the same time. When you need to use the pressure switch in aggressive chemicals or fluids please contact with us. You must stict to rules of clearance standarts Hydraulic oils (fluids). Use filtration to blocking system errors. It is effective for long working life of pressure switches. Please avoid using out of indicated values to have a long service from pressure switch.

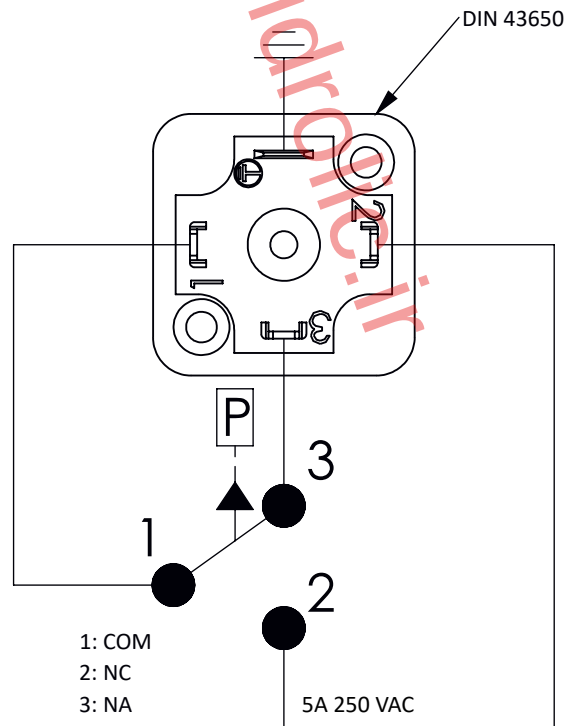


Order Codes

PRODUCT	PRODUCT CODE	PRESSURE RANGE	MAXIMUM SYSTEM PRESSURE (P _{MAX})	ELECTRICAL CONNECTION TYPE	CONNECTION TYPE
LP A1	LP A1 070	7 ... 70 bar	650 bar	NA / NC	BOTTOM FLANGE CONNECTION
	LP A1 160	10 ... 160 bar	650 bar		
	LP A1 300	20 ... 300 bar	650 bar		
	LP A1 400	20 ... 400 bar	650 bar		
	LP A1 600	50 ... 600 bar	750 bar		

Electrical Connection

Contact Connection Scheme



Switch Function

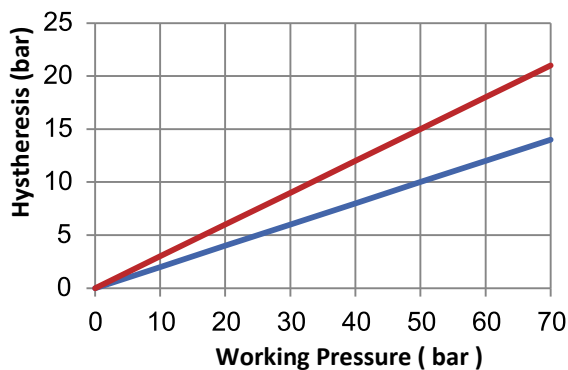
- Terminal 1 - 3 :It has current in case of pressure increasing. (NA)
- Terminal 1 - 2 :It has current in case of pressure decreasing or no pressure. (NC)

Pressure Differential Difference Graphics

Pressure Set Range

7 ... 70 bar

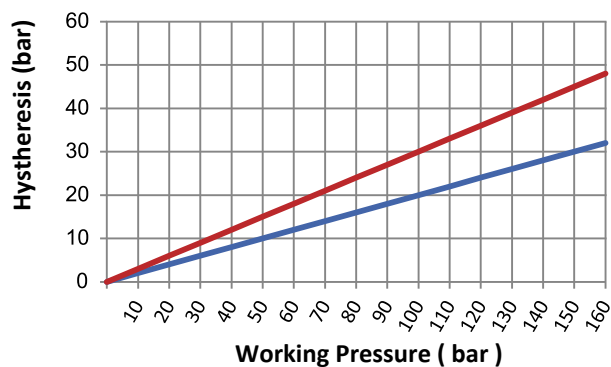
max set pressure 70 bar max system pressure 650 bar



Pressure Set Range

10 ... 160 bar

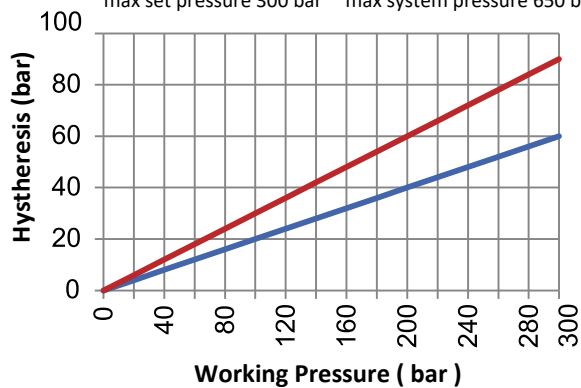
max set pressure 160 bar max system pressure 650 bar



Pressure Set Range

20 ... 300 bar

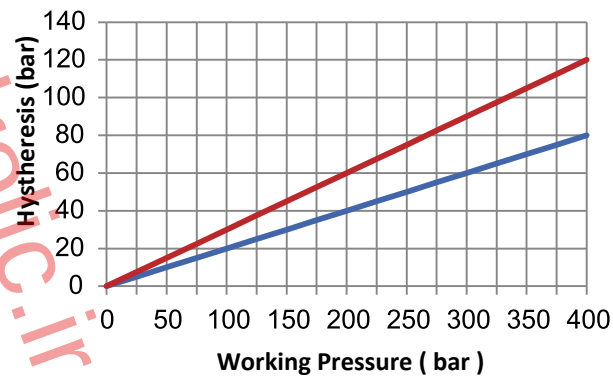
max set pressure 300 bar max system pressure 650 bar



Pressure Set Range

20 ... 400 bar

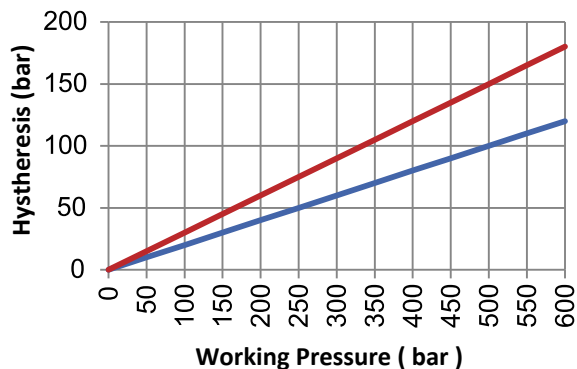
max set pressure 400 bar max system pressure 650 bar



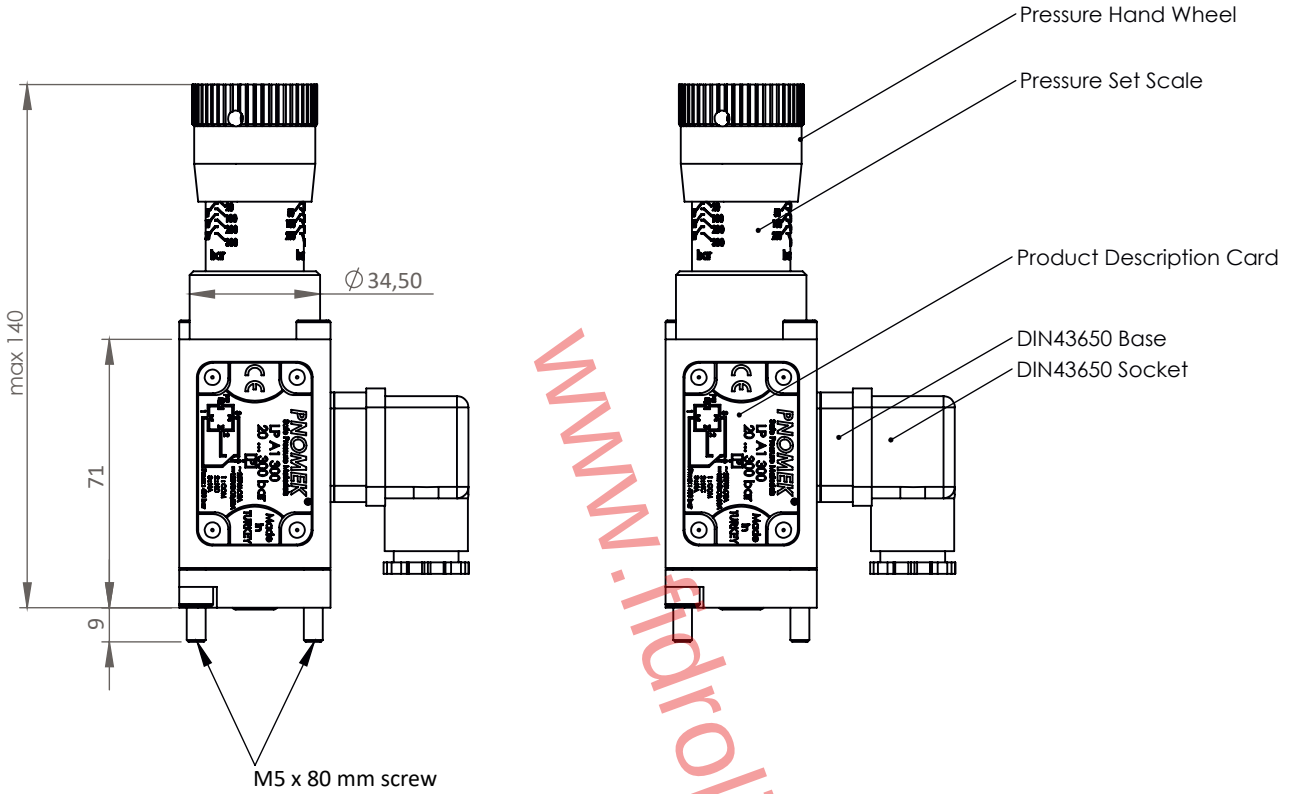
Pressure Set Range

50 ... 600 bar

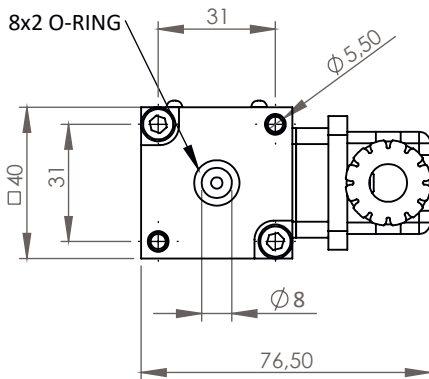
max set pressure 600 bar max system pressure 650 bar



Technical Dimensions



Connection Dimensions



Note : 2 pieces M5 X 80 hexagon metric screw has been added to LP A1 series bottom flange connection.

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Description

LP A2 series pressure switch opens or closes its electrical circuit depending on pressure rises or drops. Working pressure can be set from 7 bar to 600 bar by hand wheel on pressure switch. It has been designed suitable for using under high and shock pressures. It makes itself interesting for costumers thanks to easy adjustablity and sensitivity. It has horizontal fitting connection holes for side flange connection. It has mountable design for all axis.

- LP A2 series pressure switch can be set thanks to hand wheel on pressure switch
- Desired pressure can be set easily thanks to pressure set scale.
- It has Aluminium body material
- NBR and Teflon seal equipments.

Applications

- Hydraulic and mobile hydraulics
- Pneumatics
- Heavy-Duty machines industry
- Media; Compressed air, liquids, gases.

Technical Features

Connection Type	: Side Flange Connection
Reproducibility	: Within %1 of set pressure
Working Temperature	: -20°C...+110°C
Vibration Test (DIN EN 60068-2-6:1996)	: 20 g (Test Time 30 min.)
Shock Test (DIN EN 60068-2-27:1993)	: 30 g
Working Cycle	: 5 000 000 cycle
Viscosity Range	: Between 10 ... 800 mm ² /sn
Electrical Features	: 5A 250VAC

Notes

These values are maximum values and they can not be used at the same time. When you need to use the pressure switch in aggressive chemicals or fluids please contact with us. You must stict to rules of clearance standarts Hydraulic oils (fluids). Use filtration to blocking system errors. It is effective for long working life of pressure switches. Please avoid using out of indicated values to have a long service from pressure switch.

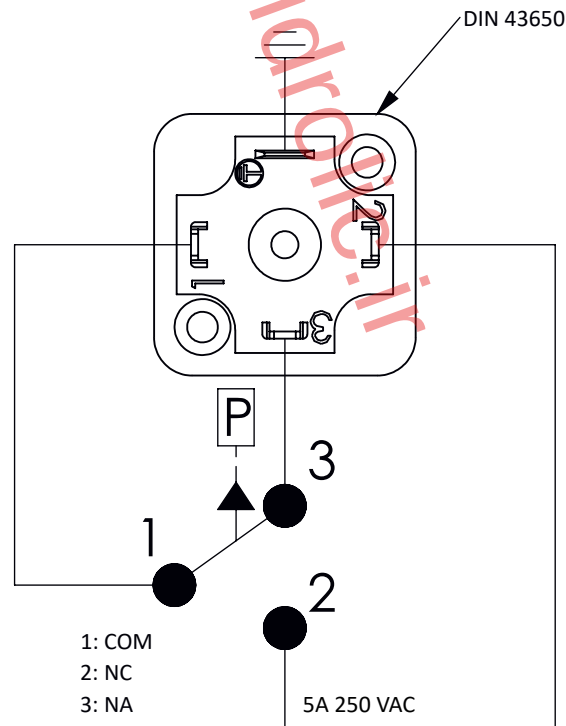


Order Codes

PRODUCT	PRODUCT CODE	PRESSURE RANGE	MAXIMUM SYSTEM PRESSURE (P _{MAX})	ELECTRICAL CONNECTION TYPE	CONNECTION TYPE
LP A2	LP A2 070	7 ... 70 bar	650 bar	NA / NC	SIDE FLANGE CONNECTION
	LP A2 160	10 ... 160 bar	650 bar		
	LP A2 300	20 ... 300 bar	650 bar		
	LP A2 400	20 ... 400 bar	650 bar		
	LP A2 600	50 ... 600 bar	750 bar		

Electrical Connection

Contact Connection Scheme



Switch Function

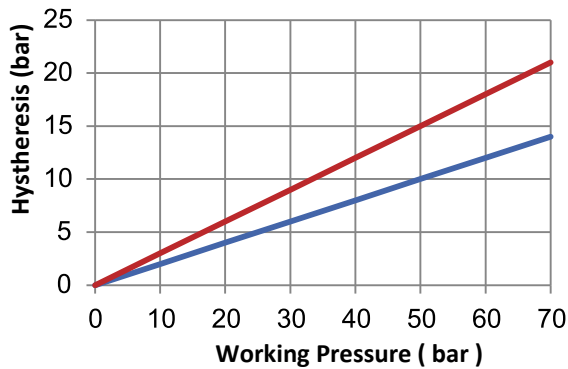
- Terminal 1 - 3 :It has current in case of pressure increasing. (NA)
- Terminal 1 - 2 :It has current in case of pressure decreasing or no pressure. (NC)

Pressure Differential Difference Graphics

Pressure Set Range

7 ... 70 bar

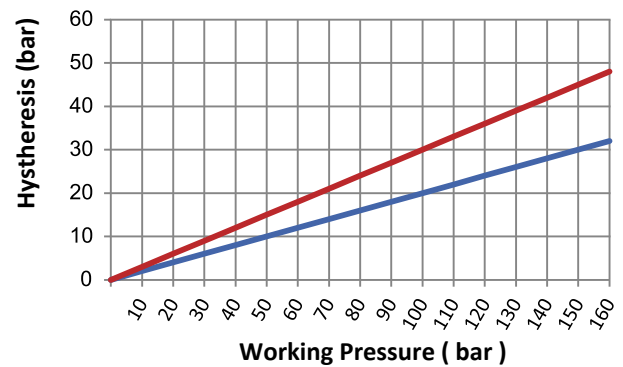
max set pressure 70 bar max system pressure 650 bar



Pressure Set Range

10 ... 160 bar

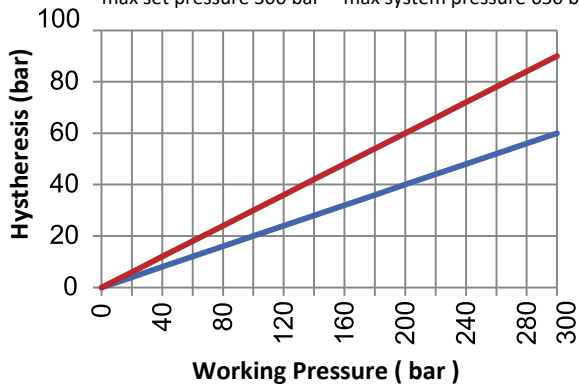
max set pressure 160 bar max system pressure 650 bar



Pressure Set Range

20 ... 300 bar

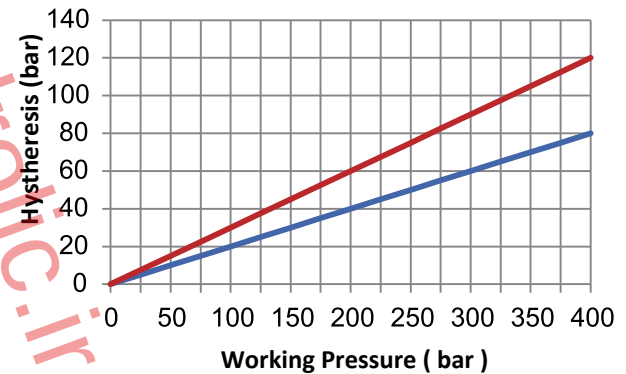
max set pressure 300 bar max system pressure 650 bar



Pressure Set Range

20 ... 400 bar

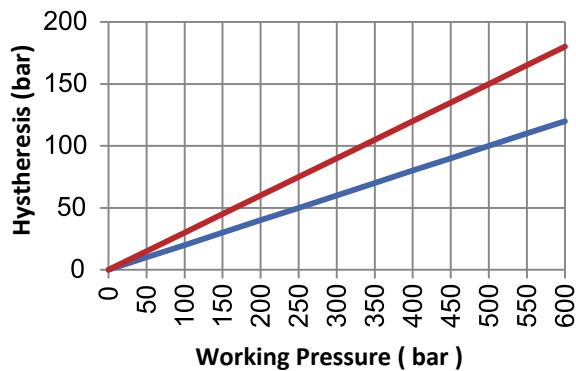
max set pressure 400 bar max system pressure 650 bar



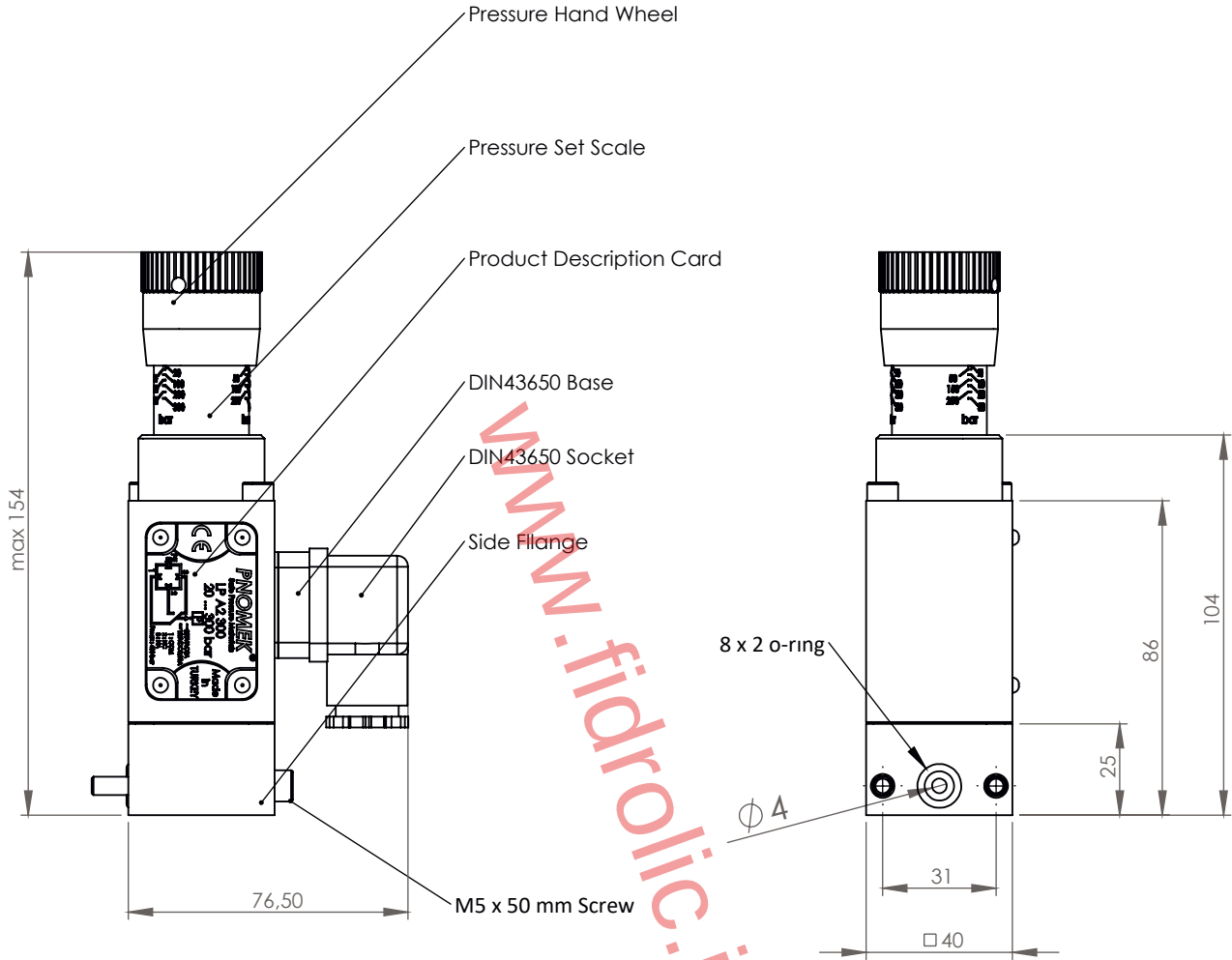
Pressure Set Range

50 ... 600 bar

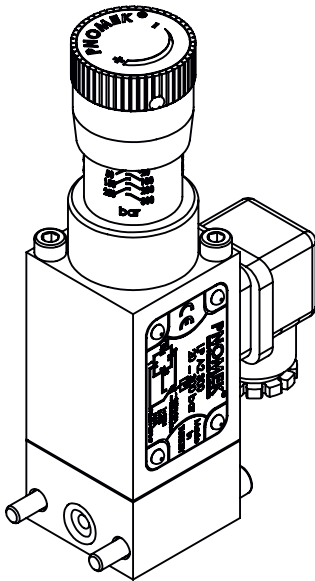
max set pressure 600 bar max system pressure 650 bar



Technical Dimensions



Not : 2 pieces M5 X 50 screws has been added with LP A2 series side flange connection pressure switch.



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Description

LP A3 series pressure switch opens or closes its electrical circuit depending on pressure rises or drops. Working pressure can be set from 7 bar to 600 bar by hand wheel on pressure switch. It has been designed suitable for using under high and shock pressures. It makes itself interesting for costumers thanks to easy adjustablity and sensitivity.

- LP A3 series pressure switch can be set thanks to hand wheel on pressure switch
- Desired pressure can be set easily thanks to pressure set scale.
- It has Aluminium body material
- NBR and Teflon seal equipments.
- It is connected to pressure line with G1/4" gland connection.

Applications

- Hydraulic and mobile hydraulics
- Pneumatics
- Heavy-Duty machines industry
- Media; Compressed air, liquids, gases.

Technical Features

Connection Type	: G1/4 connection
Reproducibility	: Within %1 of set pressure
Working Temperature	: -20°C...+110°C
Vibration Test (DIN EN 60068-2-6:1996)	: 20 g (Test Time 30 min.)
Shock Test (DIN EN 60068-2-27:1993)	: 30 g
Working Cycle	: 5 000 000 cycle
Viscosity Range	: Between 10 ... 800 mm ² /sn
Electrical Features	: 5A 250VAC

Notes

These values are maximum values and they can not be used at the same time. When you need to use the pressure switch in aggressive chemicals or fluids please contact with us. You must stict to rules of clearance standarts Hydraulic oils (fluids). Use filtration to blocking system errors. It is effective for long working life of pressure switches. Please avoid using out of indicated values to have a long service from pressure switch.

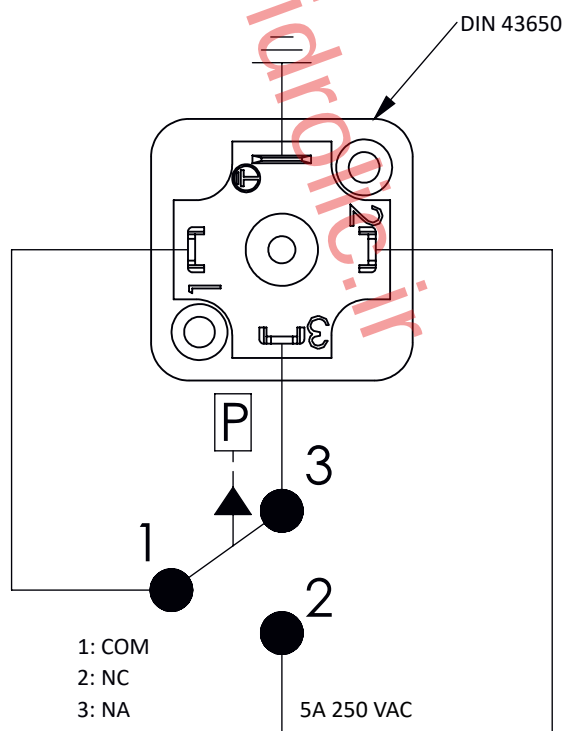


Order Codes

PRODUCT	PRODUCT CODE	PRESSURE RANGE	MAXIMUM SYSTEM PRESSURE (P _{MAX})	ELECTRICAL CONNECTION TYPE	CONNECTION TYPE
LP A3	LP A3 070	7 ... 70 bar	650 bar	NA / NC	G1/4" GLAND CONNECTION
	LP A3 160	10 ... 160 bar	650 bar		
	LP A3 300	20 ... 300 bar	650 bar		
	LP A3 400	20 ... 400 bar	650 bar		
	LP A3 600	50 ... 600 bar	750 bar		

Electrical Connection

Contact Connection Scheme



Switch Function

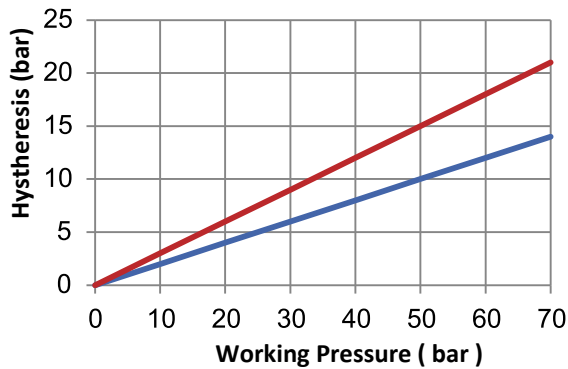
- Terminal 1 - 3 :It has current in case of pressure increasing. (NA)
- Terminal 1 - 2 :It has current in case of pressure decreasing or no pressure. (NC)

Pressure Differential Difference Graphics

Pressure Set Range

7 ... 70 bar

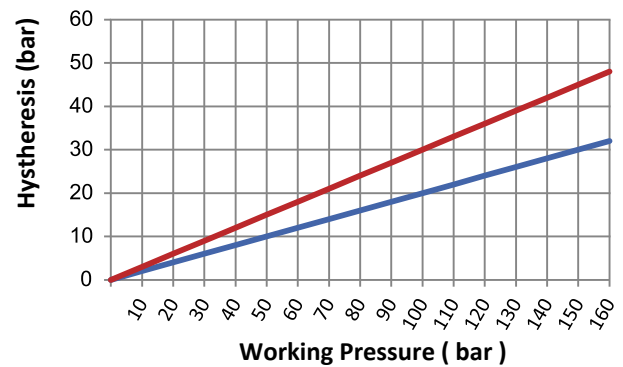
max set pressure 70 bar max system pressure 650 bar



Pressure Set Range

10 ... 160 bar

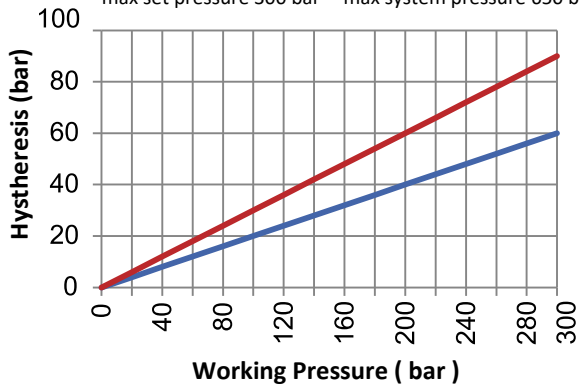
max set pressure 160 bar max system pressure 650 bar



Pressure Set Range

20 ... 300 bar

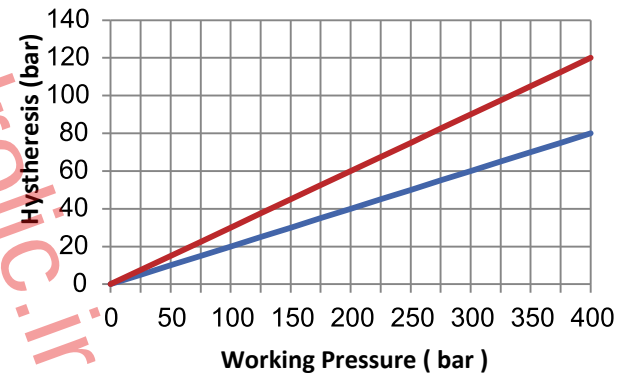
max set pressure 300 bar max system pressure 650 bar



Pressure Set Range

20 ... 400 bar

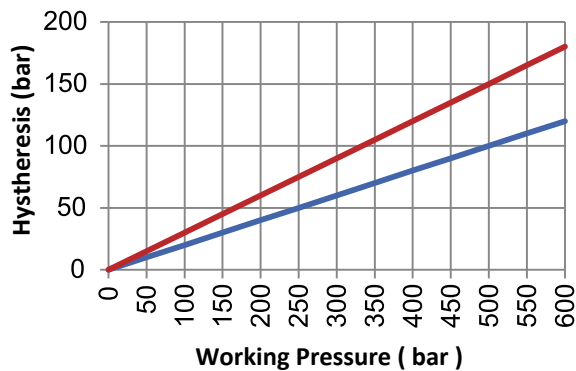
max set pressure 400 bar max system pressure 650 bar



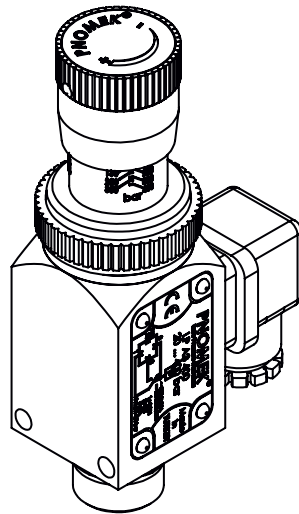
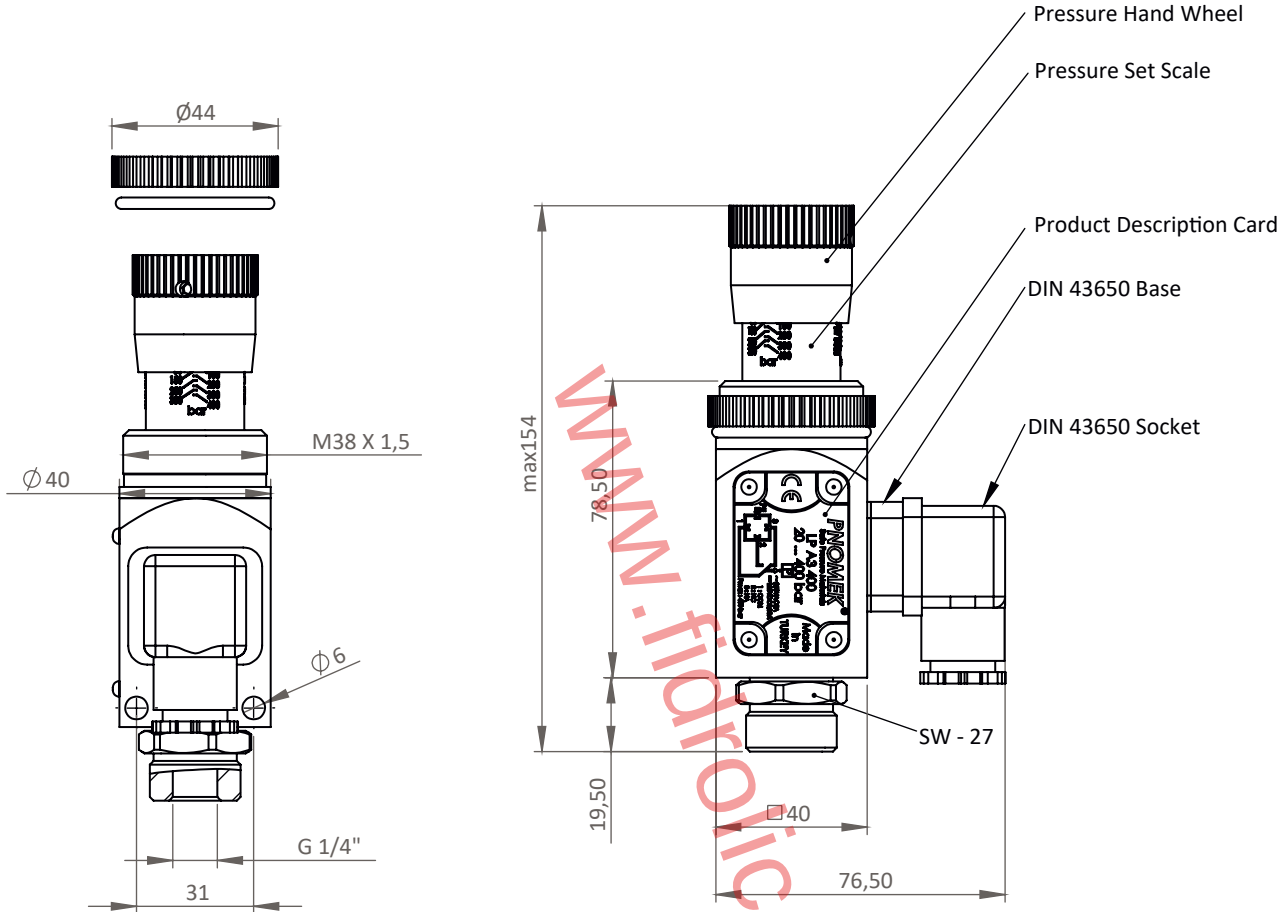
Pressure Set Range

50 ... 600 bar

max set pressure 600 bar max system pressure 650 bar



Technical Dimensions



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Product Description

NGP Series digital pressure switches are the perfect solution designed for use in harsh industrial conditions.

It has long-term stability and overload resistance. It provides high linearity, adjustable hysteresis and flexible use over the entire measuring range.

- Different pressure options in the range of -1...600 bar
- Pressure measurement with ± 0.5 % accuracy
- Adjustable hysteresis and window function outputs
- Flexible configurable switching output (PNP, NPN) and Relay Output
- Optional Analog 4...20 mA output
- Instant pressure reading with LED display
- 270° rotatable led display

Areas of Application

- Machine tools
- Hydraulics and Pneumatics
- Pumps and compressors
- Machine building

Technical Specifications

Connection Type	G1/4" - G1/2" - 1/4" BSPT - 1/2" BSPT - 1/2" NPT - 1/4"NPT
Accuracy @ 25°C for 5 min	< % ± 0.5 FS
Operating temperature	-20°C...+80°C
Body Material	316L Stainless Body
Output Signal	Relay Output (NO/NC), Switching(PNP, NPN), Analog(4...20 mA)

Measuring Range Specifications

Vacuum Resistance	Yes
Pressure Resistance	Examine Table 1. (Page:2)
Digital Display	
Indication range	14 segment
Measurement units	bar, mbar, psi, MPa,
Display Color	Blue (LED)
Character size	13 mm [0.51 in]
Digits	4-digits
Display	The display can be rotated manually through 270°



Order Codes

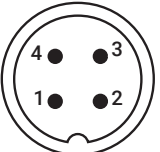
Table 1

NGP	-	-	-	-			-	-
Model	Sealing Type	Mechanical Connection	Electrical Connection Type	Pressure & Vacuum			Output Signal	Analog Output (Optional)
				Code	Pressure & Vacuum Range	P max bar		
NGP	V VITON	A3 G1/4"	T3 M12 x 1 (4 pin)	V0	-1...0 bar	6	K1 Relay Output (NO/NC)	Z1 Analog Output (4...20 mA)
				V1	-1...1 bar	6		
				V3	-1...3 bar	15		
				V6	-1...6 bar	30		
				V10	-1...10 bar	30		
				V16	-1...16 bar	60		
		A5 G1/2"		V24	-1...25 bar	75		
				M50	0..50 mbar	0,15		
				M100	0..100mbar	0,30		
				M250	0..250 mbar	0,75		
				M600	0..600 mbar	1,8		
				2,5	0 ... 2,5 bar	15		
	E EPDM	S3 1/4" BSPT		6	0 ... 6 bar	30	K2 Switch Output (PNP,NPN)	If Z1 is not selected, analog output will not be added.
				10	0 ... 10 bar	30		
				16	0 ... 16 bar	60		
				25	0 ... 25 bar	75		
				40	0 ... 40 bar	100		
				60	0 ... 60 bar	175		
		S5 1/2" BSPT		100	0 ... 100 bar	250		
				160	0 ... 160 bar	500		
				250	0 ... 250 bar	700		
				315	0 ... 315 bar	700		
				400	0 ... 400 bar	700		
				600	0 ... 600 bar	1050		
	H HNBR	N4 1/4"NPT						
If the sealing material Type is not selected, it is considered as "NBR".	N5 1/2" NPT							

Electrical Connection

Connection Type	Circular Connector M12 x 1 (4-pin)
Pin Assignment	Pin assignments vary according to the output signals. Please see "Table 2" for detailed explanation.
Reverse Polarity Protection	U+ vs. U
Insulation Voltage	DC 500 V

Table 2

 M12 x 1 (4 Pin)	K1		K2		Cable Color
	U+	1	U+	1	Brown
	U-	3	U-	3	Blue
	NC	4	SP1	4	Black
	NO/S+ ⁽¹⁾	2	SP2/S+ ⁽¹⁾	2	White

(1) If analog output is requested, pin "2" will be used as analog pin.

Pin Assignment:

- U+ Positive power supply terminal
- U- Negative power supply terminal
- SP1 1. Switching point
- SP2 2. Switching point
- S+ 4...20 mA

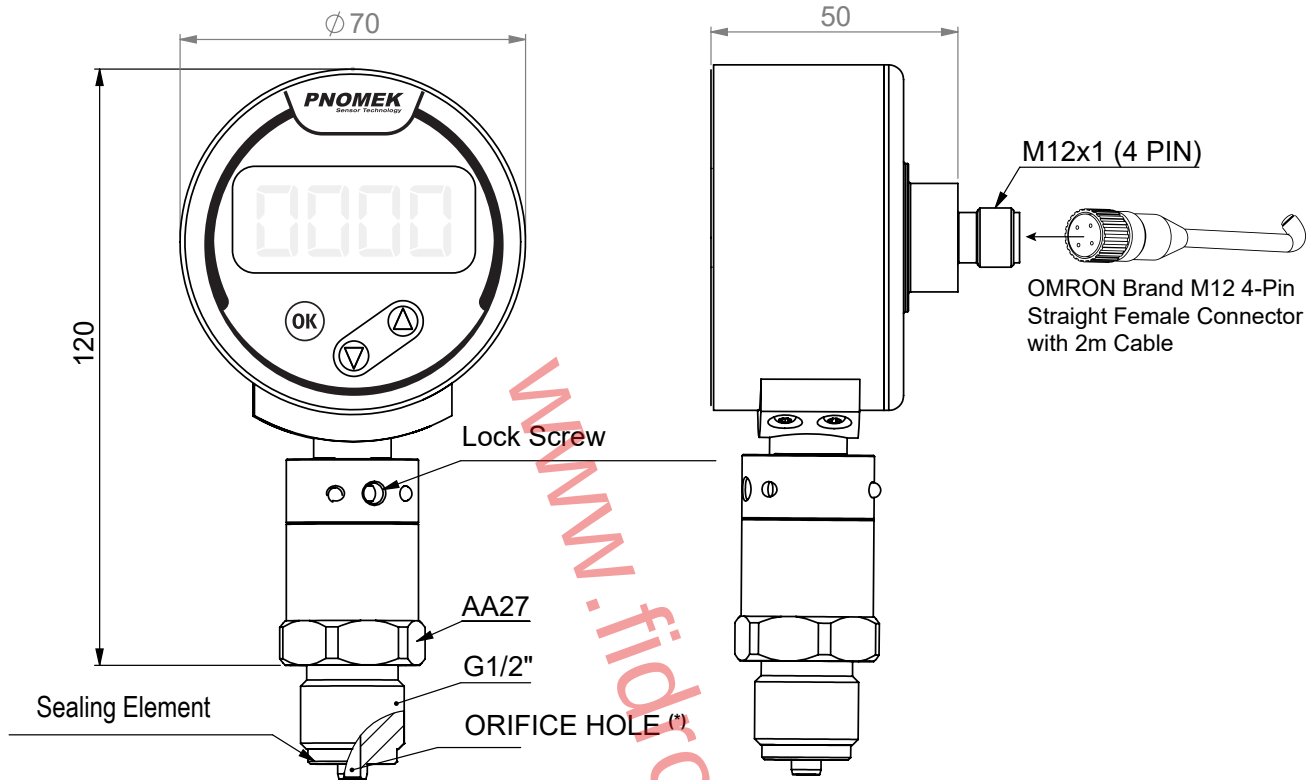
Properties of Output Signal		
Digital Output		
Switching Output 1	PNP ⁽¹⁾	
	NPN ⁽¹⁾	
	Factory Setting:PNP	
Switching Output 2	PNP ⁽¹⁾	
	NPN ⁽¹⁾	
	Factory Setting:PNP	
Relay Output	NO	
	NC	
Analog Output	4...20 mA	
Switching Function	•Window ⁽²⁾ • Hysteresis ⁽²⁾	
	Factory setting: Hysteresis Contact function	
Setting range of the switch points	• Factory settings • Customer-specific Switching point	
	Switching point 1 and switching point 2 can be set independently → See operating instructions	
Switch hysteresis	Minimum 0.25 % of FS ⁽³⁾	
Load		
Analog Output (4 ... 20 mA)	≤ 500 Ω	
NO	Max. 5A - 24DCV	
NC	Max. 5A - 24DCV	
PNP	Max. 300 mAh	
NPN	Max. 300 mAh	
Switching delay time	Configurable from 0 to 65 sr	
Reset Delay Time	Configurable from 0 to 65 s	
Supply Voltage		
Product Operating Voltage Range	5 - 24 VDC	
Switching voltage	Supply voltage	
Current Consumption	Models without 4 ... 20 mA output signal	Max. 70 mA
	Models with 4 ... 20 mA output signal	Max. 95 mA
Overvoltage protection	DC 40 V	
Dynamic behaviour		
Settling time per IEC 61298-2	Analog signal	≤ 2 ms
	Switching output	≤ 2 ms
Switch-on time	2 s	

(1) For detailed explanation, refer to the page "8" of the user manual. Please review the "Table 2" on that page.

(2) For detailed explanation, see the page "12 and 13" of the user manual. Please review "Table 3" and "Table 4" on those pages.

(3) Full Scale

Technical Dimensions



(*) For peak pressures, the Orfiz accessory is sold separately and must be specified when ordering.

270° Rotatable Screen

