Pressure Switches

Electronic and electro-mechanical pressure switches for vacuum, pneumatic and hydraulic pressure monitoring.

KIP
NORGREN Company

72 Spring Lane
Farmington, CT 06032 USA
800-722-5547 / 860-677-0272
Fax 860-677-4999
e-mail sales@kipinc.com
www.kipinc.com

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MODEL P80

Pneumatic, Diaphragm-Style Pressure Switch

APPLICATION

Ideal for Control of Air, Neutral Gases and Light Oil

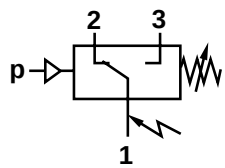
FEATURES

- **Rugged Compact Design**
- **Convenient Setpoint Adjustments**
- **High Cycle Life**
- **Vibration Resistant to 15g**
- **UL and CSA Approved Microswitch**
- **Gold Plated Contacts**

SPECIFICATIONS

Ports	1/4" NPT
Adjustment Range	28" Hg to 435 PSI (-1 to 30 bar)
Proof Pressure*	1150 PSI (80 bar)
Temperature Rating	
Ambient	14° to 175° F (-10° to 80° C)
Media	-4° to 175° F (-20° to 80° C)
Switching Element	SPDT Microswitch
Max. Switching Rate	100 cycles/minute
Repeatability	±3%; for vacuum ±4%
Electrical Connector	DIN Style Plug with Removable Cable Plug Adapter

*Note: Do not subject switch to proof pressure during normal operation. Even short pressure peeks must not exceed proof pressure.

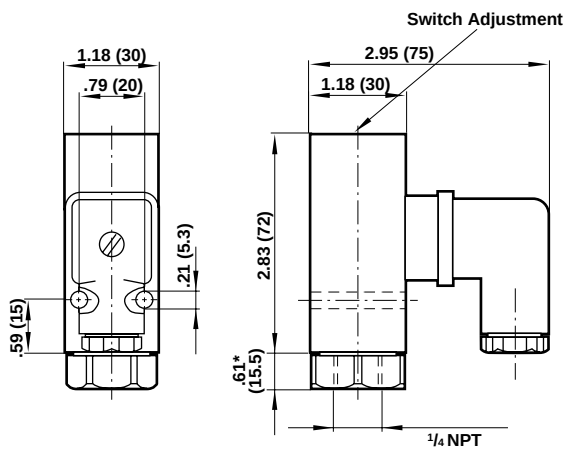


Terminals 1 - 2: Contacts open on rising pressure.
Terminals 1 - 3: Contacts close on rising pressure.

MATERIALS OF CONSTRUCTION

Housing	Aluminum
Seal	
Dynamic	Fluorocarbon / Buna-N
Static	Buna-N

PART NUMBER IDENTIFICATION



All dimensions in inches (mm)
*Note: .37 (9.5) – Part No. P80-880325, P80-880425, P80-880625

PART NUMBER	PRESSURE RANGE PSI	HYSTERESIS* PSI	
		Lower Range	Upper Range
P80-880125	-14 – 0 (-1 – 0)	2 (0.15)	3 (0.18)
P80-880225	3 – 29 (0.2 – 2)	2 (0.15)	4 (0.27)
P80-880325	7 – 120 (0.5 – 8)	4 (0.25)	9 (0.65)
P80-880425	15 – 230 (1 – 16)	4 (0.25)	13 (0.90)
P80-880625	15 – 435 (1 – 30)	15 (1.00)	73 (5.00)

Red numbers indicate measurement in bar.

*Note: Hysteresis is not adjustable. Maximum values are shown.

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MODEL P80

Making and Breaking Capacity

LOAD LEVEL*	TYPE OF CURRENT	TYPE OF LOAD	VMIN [V]	MAXIMUM PERMANENT CURRENT I_{MAX} [A] AT V			CONTACT LIFE	
				24 V	125 V	250 V	ELECTRICAL AT I_{MAX}	MECHANICAL AT I ≈ 0
Standard (relays, solenoids)	AC	Resistive	12	5	5	5	5×10^4 switching cycles	approx 10^7 switching cycles
	AC	Inductive PF ≈ .7	12	3	3	3		
	DC	Resistive	12	5	.4	_		
	DC	Inductive L/R ≈ 10 ms	12	3	.05	_		
Low (electronic circuits)	AC	Resistive	5	.34	.08	.04	2×10^5 switching cycles	approx 10^7 switching cycles
	DC	Inductive L/R ≈ 10 ms	5	.1	_	_		

*Load Level Explanation

Model P80 Pressure Switches have microswitch contacts with gold plating over silver base metal. The gold plating remains intact when "low level" voltage / current levels are observed. This feature assures highly reliable switching in low-level electronic circuits.

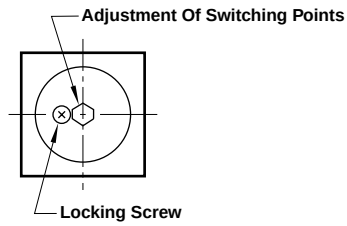
Standard applications do **not** require the gold plating – which will decay naturally when switching larger electrical loads.

Notes:

1. Reference conditions:
   30 cycles per min and 86°F (30°C) ambient.
2. Reducing load current to 50% of Imax approximately doubles contact life.

Switch Selection and Mounting Instructions

- Select a switch such that the desired switching point falls roughly in the middle of the adjustment range.
- Do not exceed switch electrical ratings. Use an appropriately sized relay when switching larger electrical loads.
- For liquid media with pressure spikes and/or pulsating pressures, install a pressure snubber.
- For outdoor applications, sufficient protection must be provided.



Adjustment of Switching Point

Either the upper **or** the lower switching point may be adjusted.
The opposite one is then fixed by the hysteresis characteristics of the switch.
Use a pressure gauge for exact adjustment. Proceed as follows:

1. Loosen locking screw.
2. Adjust the switching point using a 5-mm hexagon wrench. Clockwise rotation increases switching pressure and counter-clockwise rotation decreases switching pressure. Low-end of adjustment range is reached when top of adjustment barrel is approximately level with top of switch housing. High-end of adjustment range is reached when adjustment barrel is fully CW.
3. Re-tighten locking screw.

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MODEL H80

Hydraulic, Piston-Style Pressure Switch

APPLICATION

Ideal for Control of Hydraulic, Lubricating and Light Fuel Oils

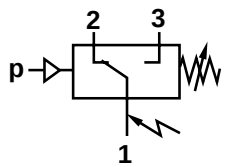
FEATURES

- **Rugged Compact Design**
- **Convenient Setpoint Adjustments**
- **High Cycle Life**
- **Vibration Resistant to 15g**
- **UL and CSA Approved Microswitch**
- **Gold Plated Contacts**

SPECIFICATIONS

Ports	1/4" NPT or 7/16-20 UNF (SAE-4)
Adjustment Range	70 to 1015 PSI (5 to 70 bar) and 150 to 2320 PSI (10 to 160 bar)
Proof Pressure*	5800 PSI (400 bar)
Temperature Rating	
Ambient	-13° to 175° F (-25° to 80° C)
Media	-13° to 175° F (-25° to 80° C)
Max. Viscosity	450 SSU (1000 mm^2/s)
Switching Element	SPDT Microswitch
Max. Switching Rate	100 cycles/minute
Repeatability	±3%
Electrical Connector	DIN Style Plug with Removable Cable Plug Adapter

*Note: Do not subject switch to proof pressure during normal operation. Even short pressure peeks must not exceed proof pressure.



Terminals 1 - 2: Contacts open on rising pressure.
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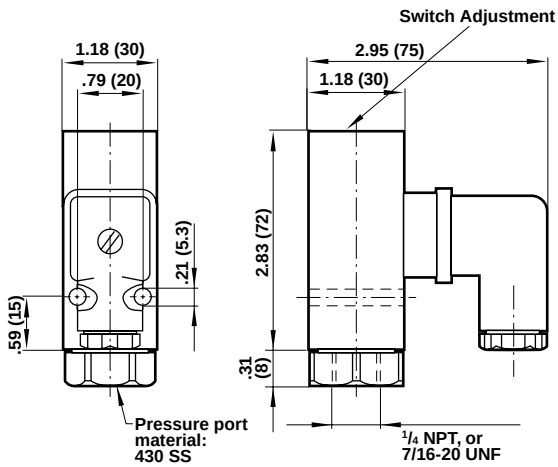

All dimensions in inches (mm)

MATERIALS OF CONSTRUCTION

Housing	Aluminum / Steel
Seal	
Dynamic	PTFE
Static	Buna-N

PART NUMBER IDENTIFICATION

PART NUMBER	PRESSURE RANGE PSI	HYSTERESIS* PSI		PORTS
		Lower Range	Upper Range	Female
H80-882104	70 – 1015 (5 – 70)	260 (18)	290 (20)	7/16 – 20 UNF
H80-882105	70 – 1015 (5 – 70)	260 (18)	290 (20)	1/4" NPT
H80-882204	150 – 2320 (10 – 160)	260 (18)	435 (30)	7/16 – 20 UNF
H80-882205	150 – 2320 (10 – 160)	260 (18)	435 (30)	1/4" NPT

Red numbers indicate measurement in bar.

*Note: Hysteresis is not adjustable. Maximum values are shown.

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MODEL H80

Making and Breaking Capacity

LOAD LEVEL*	TYPE OF CURRENT	TYPE OF LOAD	VMIN [V]	MAXIMUM PERMANENT CURRENT I_{MAX} [A] AT V			CONTACT LIFE	
				24 V	125 V	250 V	ELECTRICAL AT I_{MAX}	MECHANICAL AT I ≈ 0
Standard (relays, solenoids)	AC	Resistive	12	5	5	5	5×10^4 switching cycles	approx 10^7 switching cycles
	AC	Inductive PF ≈ .7	12	3	3	3		
	DC	Resistive	12	5	.4	_		
	DC	Inductive L/R ≈ 10 ms	12	3	.05	_		
Low (electronic circuits)	AC	Resistive	5	.34	.08	.04	2×10^5 switching cycles	approx 10^7 switching cycles
	DC	Inductive L/R ≈ 10 ms	5	.1	_	_		

*Load Level Explanation

Model H80 Pressure Switches have microswitch contacts with gold plating over silver base metal. The gold plating remains intact when "low level" voltage / current levels are observed. This feature assures highly reliable switching in low-level electronic circuits.

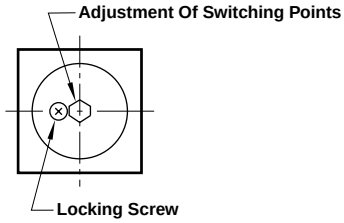
Standard applications do **not** require the gold plating – which will decay naturally when switching larger electrical loads.

Notes:

1. Reference conditions:
   30 cycles per min and 86°F (30°C) ambient.
2. Reducing load current to 50% of Imax approximately doubles contact life.

Switch Selection and Mounting Instructions

- Select a switch such that the desired switching point falls roughly in the middle of the adjustment range.
- Do not exceed switch electrical ratings. Use an appropriately sized relay when switching larger electrical loads.
- For liquid media with pressure spikes and/or pulsating pressures, install a pressure snubber.
- For outdoor applications, sufficient protection must be provided.



Adjustment of Switching Point

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3. Re-tighten locking screw.

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MODEL P30

Electronic Pressure Switch for Pneumatic Applications

APPLICATION

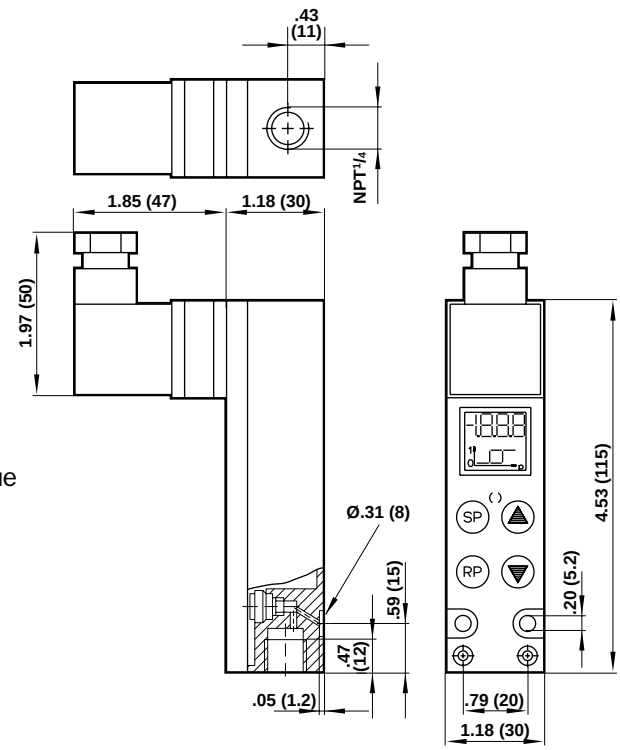
Ideal for Control of Filtered Compressed Air, Lubricated or Non-Lubricated

FEATURES

- **Real-Time LED Status Display of Pressure**
- **Adjustable Hysteresis**
- **Off-Line Calibration**
- **Fast, Accurate Response**
- **Extensive Service Life**

SPECIFICATIONS

Ports	1/4" NPT
Adjustment Range	-14 to 350 PSI (-1 to 25 bar)
Maximum Pressure	See Part Number Identification Table
Temperature Rating	
Ambient	14° to 140° F (-10° to 60° C)
Media	14° to 175° F (-10° to 80° C)
Temperature Sensitivity	
@ Zero Point	Set Point Shifts 0.4% of Final Value per 10 K
@ Set Point Pressure	Set Point Shifts 0.3% of Final Value per 10 K
Electronics	Pressure Sensor, Microprocessor Evaluation Circuitry and Solid-state Output Driver
Switching/Reset Point	Adjustable between 0 – 100% of FS Value
Linearity	< 0.5% of Final Value ± 1 digit
Electrical Connector	DIN Style Plug with Removable Cable Plug Adapter



All dimensions in inches (mm)

MATERIALS OF CONSTRUCTION

Housing	Die-Cast Zinc

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MODEL P30

Part Number Identification

PART NUMBER	SWITCHING PRESSURE RANGE – PSI	MAXIMUM PRESSURE	STEP SIZE OF DISPLAY*
P30-886125	-14 – 15 (-1 – 1)	145 (10)	0.14 (0.01)
P30-886625	0 – 145 (0 – 10)	440 (30)	0.6 – 0.7 (0.04 – 0.05)
P30-886725	0 – 350 (0 – 25)	580 (40)	1 – 2 (0.07 – 0.14)

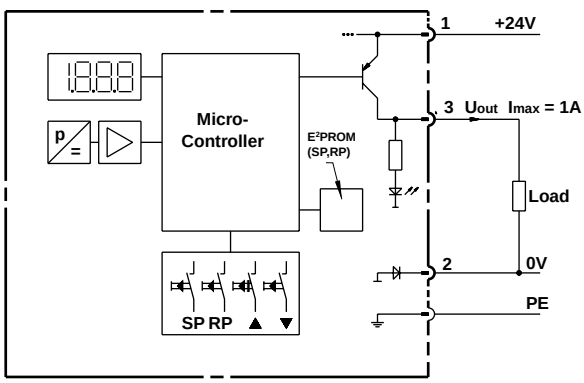
Red numbers indicate measurement in bar.

*Pressure display in PSI

Electrical Parameters

Electrical connection	DIN 43650 Table A
Power supply (polarity safe)	18 to 32V DC
Permissible residual ripple	10% (within 18 to 32V)
Current consumption	<50 mA (plus load current)

DIN 43650



Switching Output

Switching mode	Open collector PNP switched to supply (suited for inductive load)
Output voltage	Supply voltage minus 1.5V (approx)
Contact rating	I_{max} = 1A (short-circuit proof)
Switching time	< 5ms
Service life	100 million switching cycles
Switching logic	Signal “on” with rising pressure, if SP* > RP**
	Signal “on” with falling pressure, if SP < RP

* SP = Switching point

**RP = Reset point

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MODEL H30

Electronic Pressure Switch for Hydraulic Applications

APPLICATION

Ideal for Control of Air, Water, Gases, Neutral Mineral Oils and Various Heating Oils

FEATURES

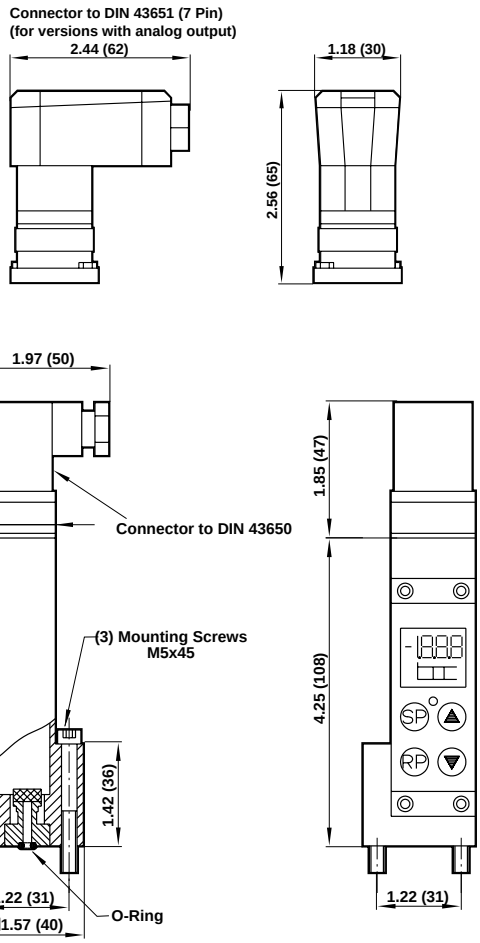
- **Real-time LED Status Display of Pressure**
- **Adjustable Hysteresis**
- **Off-line Calibration**
- **Fast, Accurate Response**
- **Extensive Service Life**
- **Analog Output (Optional)**

SPECIFICATIONS

Ports	1/4" NPT
Adjustment Range	0 to 2320 PSI (0 to 160 bar)
Proof/Burst Pressure	See Part Number Identification Table
Temperature Rating	
Ambient	14° to 140° F (-10° to 60° C)
Media	14° to 175° F (-10° to 80° C)
Temperature Sensitivity	
@ Zero Point	Set Point Shifts 0.4% of Final Value per 10 K
@ Set Point Pressure	Set Point Shifts 0.3% of Final Value per 10 K
Electronics	Pressure Sensor, Microprocessor Evaluation Circuitry and Solid-state Output Driver
Switching/Reset Point	Adjustable between 0 – 100% of FS Value
Linearity	< 0.5% of Final Value ± 1 digit
Electrical Connector	*Without* Analog Output: DIN 43650 Table A with Removable Cable Plug Adapter *With* Analog Output: DIN 43651, 7 Pin Circular Connector

MATERIALS OF CONSTRUCTION

Housing	Die-Cast Zinc
Sensor	304 Stainless Steel
O-Ring	Viton



All dimensions in inches (mm)

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MODEL H30

Part Number Identification

PART NUMBER	PRESSURE RANGE PSI	ELECTRICAL CONNECTION	PROOF/BURST PRESSURE – PSI	ANALOG OUTPUT 0-10 VOLT AND 4-20mA
H30-875005	0 – 580 (0 – 40)	DIN 43650	1450/2175 (100/150)	No
H30-875035	0 – 580 (0 – 40)	DIN 43651	1450/2175 (100/150)	Yes
H30-875105	0 – 1450 (0 – 100)	DIN 43650	2900/4350 (200/300)	No
H30-875135	0 – 1450 (0 – 100)	DIN 43651	2900/4350 (200/300)	Yes
H30-875205	0 – 2320 (0 – 160)	DIN 43650	4350/5800 (300/400)	No
H30-875235	0 – 2320 (0 – 160)	DIN 43651	4350/5800 (300/400)	Yes

Red numbers indicate measurement in bar.

Notes: Mounting plates purchased separately (see below).
For hydraulic applications with pressure spikes or surges install a pressure snubber.
All H30 pressure switches are shipped with mounting screws, o-ring and mating electrical connector.

Electrical Parameters

Electrical connection DIN 43650 Table A without analog output
DIN 43651 (7 pin), with analog output

Power supply (polarity safe) 18 to 32V DC

Permissible residual ripple 10% (within 18 to 32V)

Current consumption <50 mA (plus load current)

Switching Output

Switching mode Open collector PNP switched to supply (suited for inductive load)

Output voltage Supply voltage minus 1.5V (approx)

Analog output 0 to l0V and 4 to 20mA

Contact rating I_{max} = 1A (short-circuit proof)

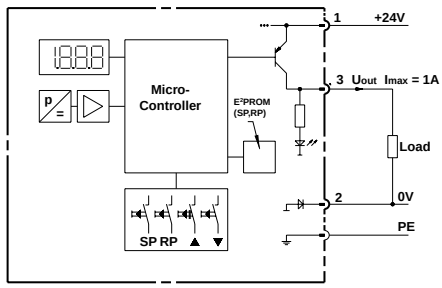
Switching time < 5ms

Service life 100 million switching cycles

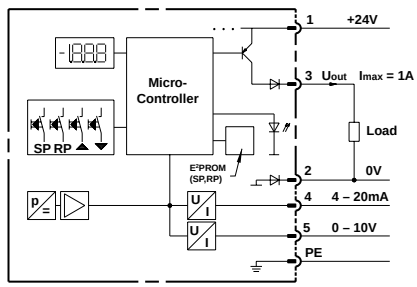
Switching logic Signal “on” with rising pressure, if SP* > RP**
Signal “on” with falling pressure, if SP < RP

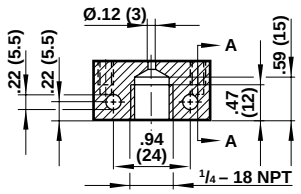
* SP = Switching point **RP = Reset point

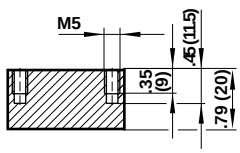
DIN 43650 **without** analog output



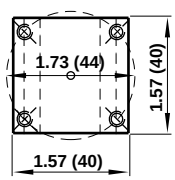
DIN 43651 **with** analog output







View on 'A'



Mounting Plates
1/4" NPT Pressure Port
Part No. H30-522232: Aluminum
Part No. H30-522260: 304 Stainless Steel
All dimensions in inches (mm)

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