

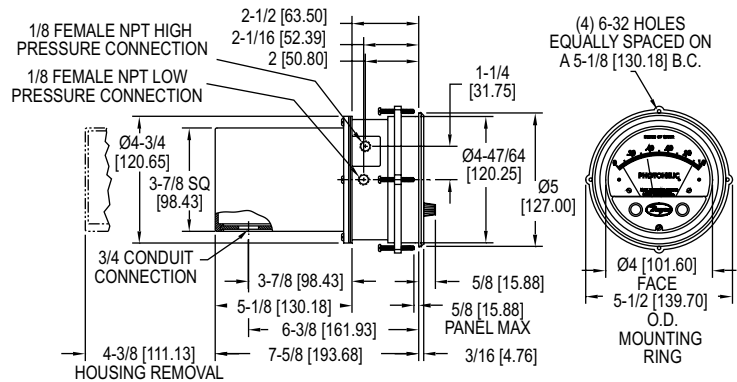
# PHOTOHELIC® PRESSURE SWITCH/GAGE

## 3-in-1 Indicating Gage, Lo-Limit and Hi-Limit Control

CALIBRATION SERVICES AVAILABLE



Set points are instantly adjusted with front knobs



The **Series A3000 Photohelic® Pressure Switch/Gage** functions as versatile, highly repeatable pressure switches combined with a precise pressure gage employing the time-proven Magnehelic® gage design. The Photohelic® switch/gage measures and controls positive, negative or differential pressures of air and compatible gases. Standard models are rated to 25 psig (1.7 bar) with options to 35 (2.4) or 80 (5.5 bar) psig. Two phototransistor actuated, DPDT relays are included for low/high limit control. Easy to adjust set point indicators are controlled by knobs located on the gage face. Individual set point deadband is one pointer width - less than 1% of full-scale. Set points can be interlocked to provide variable deadband - ideal for control of fans, dampers, etc. Gage reading is continuous and unaffected by switch operation, even during loss of electrical power. Choose from full-scale pressure ranges from a low 0-.25 in (0-6 mm) w.c. up to 30 psi (21 bar).

### BENEFITS/FEATURES

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Patented design and 1% full-scale dead band provides quick response to pressure changes means no delay in switching and chatter-free operation
- A wide range of models that can meet pressure measurement specifications from low to very high

### APPLICATIONS

- Air conditioning systems
- Clean rooms
- Fume exhaust systems

### SPECIFICATIONS

#### GAGE SPECIFICATIONS

**Service:** Air and non-combustible, compatible gases.

**Wetted Materials:** Consult factory.

**Accuracy:** ±2% of FS at 70°F (21.1°C). ±3% on -0 and ±4% on -00 models.

**Pressure Limits:** -20" Hg to 25 psig (-0.677 to 1.72 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).

**Temperature Limits:** 20 to 120°F (-6.67 to 48.9°C). Low temperature option available.

**Process Connections:** 1/8" female NPT.

**Size:** 4" (101.6 mm) dial face, 5" (127 mm) OD x 8-1/4" (209.55 mm).

**Weight:** 4 lb (1.81 kg).

#### SWITCH SPECIFICATIONS

**Switch Type:** Each set point has 2 form C relays (DPDT).

**Repeatability:** ±1% of FS.

**Electrical Rating:** 10 A @ 28 VDC, 10 A @ 120, 240 VAC.

**Electrical Connections:** Screw terminals. Use 167°F (75°C) copper conductors only.

**Power Requirements:** 120 VAC, 50/60 Hz; 240 VAC and 24 VAC power optional.

**Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.

**Set Point Adjustment:** Adjustable knobs on face.

**Compliance:** CE, CSA, UL.

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**CALIBRATION SERVICES AVAILABLE**

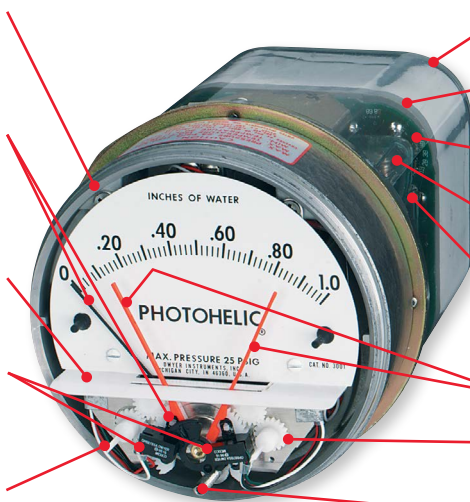
**Bezel and front cover** (with set point knobs and zero adjustment screw) removed to expose Photohelic® gage set point mechanism. Cover is clear polycarbonate plastic.

**Gage pointer and light shutter** are mounted on helix and balancing counterweight. Shutter passes through slot in optical limit switch to expose phototransistors to integral infrared light source or mask them depending on applied pressure.

**Light shield** effectively protects phototransistors from strong outside light sources yet allows free pointer movement. It also gives interior a clean "finished" look.

**Optical limit switches** are used for reliability and long service life. Attached directly to set pointers, they are individually aligned to assure precise switching accuracy.

**Semi-Flexible drive shaft** connects to set point knobs.



**Plastic enclosure** protects electronic components and electrical connections.

**Polycarbonate connection** or terminal board is self-extinguishing.

**Glass-epoxy printed circuit boards** for durability and performance.

**Load relays** are DPDT with latching feature for maximum application versatility.

**Electronics** are designed to operate on 50/60 Hz, 120 volt current with 10% over or under voltage. Special units for other voltages are available.

**Switch set pointers** show switch settings at all times.

**Spring loaded friction clutch** prevents operator damage of set point mechanism.

**Zero adjustment screw** connects to screw in cover to adjust zero pressure reading.

MODEL CHART							
Model	Range, in w.c.	Zero Center Ranges		Model	Range, mm w.c.	Zero Center Ranges	
		Model	Range, in w.c.			Model	Range, Pa
A3000-00	0-.25	A3300-0	.25-0-.25	A3000-6MM	0-6	A3300-250PA	125-0-125
A3000-0	0-.50	A3301	.5-0-.5	A3000-10MM	0-10	A3300-500PA	250-0-250
A3001	0-1.0	A3302	1-0-1	A3000-25MM	0-25	Model	Range, kPa
A3002	0-2.0	A3304	2-0-2	A3000-50MM	0-50		
A3003	0-3.0	A3310	5-0-5	A3000-80MM	0-80	A3000-1KPA	0-1
A3004	0-4.0	A3320	10-0-10	A3000-100MM	0-100	A3000-1.5KPA	0-1.5
A3005	0-5.0	A3330	15-0-15	Zero Center		A3000-2KPA	0-2
A3006	0-6.0			A3300-20MM	10-0-10	A3000-3KPA	0-3
A3008	0-8.0			A3300-30MM	15-0-15	A3000-4KPA	0-4
A3010	0-10					A3000-5KPA	0-5
A3015	0-15					A3000-8KPA	0-8
A3020	0-20					A3000-10KPA	0-10
A3025	0-25	Model	Range, in w.c. /Air Velocity, F.P.M.	Model	Range, Pascals	A3000-15KPA	0-15
A3030	0-30	A3000-00AV	0-.25/300-2000	A3000-60PA	0-60	A3000-20KPA	0-20
A3040	0-40	A3000-0AV	0-.50/500-2800	A3000-125PA	0-125	A3000-25KPA	0-25
A3050	0-50	A3001AV	0-1.0/500-4000	A3000-250PA	0-250	A3000-30KPA	0-30
A3060	0-60	A3002AV	0-2.0/1000-5600	A3000-500PA	0-500		
A3080	0-80	A3010AV	0-10/2000-12500	A3000-750PA	0-750		
A3100	0-100	Pitot tube required					
A3150	0-150						
Zero Center Ranges							
		Model				Range, kPa	
		A3300-1KPA				.5-0-.5	
		A3300-3KPA				1.5-0-1.5	
Bi-Directional Range							
A3000-00N	.05-.20						

OPTIONS	
To order add suffix:	Description
-HP	High pressure
-LT	Low temperature (-20°F)
-MP	Medium pressure
-NIST	NIST traceable calibration certificate
-OLS	OEM model
-RMR	Remote mounted relay
-SRH	Single relay activates on increase
-SRL	Single relay activates on decrease
-TAMP	Tamper proof knobs

ACCESSORIES	
Model	Description
A-298	Flat flush mounting bracket
A-601	Manual reset switch net

**Note:** Special models can be built to OEM customers' specifications with scales reading in special pressure units like ounces per square inch, inches of mercury, etc. Square Root Scales reading in FPM or SCFM are also available. Custom logos and special graduations can also be included. Contact factory for minimum quantities and pricing.

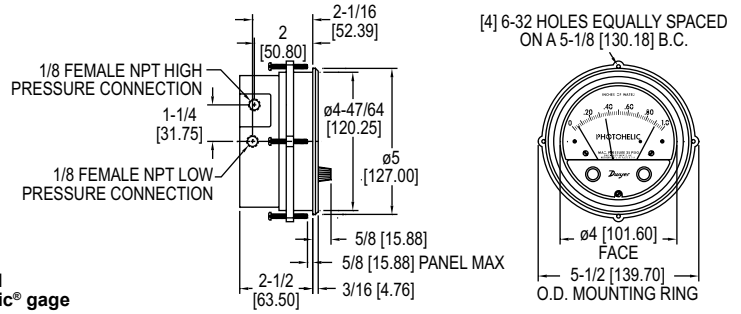
# PHOTOHELIC® SWITCH/GAGES

Combines Differential Pressure Gauge with Low/High Set-Points, Compact Size

**CALIBRATION SERVICES AVAILABLE**



Shown with optional -SS bezel  
Backward compatible\* with Magnehelic® gage



Using solid state technology, the Series 3000MR & 3000MRS Photohelic® Switch/Gages combine the functions of a precise, highly repeatable differential pressure switch with a large easy-to-read analog pressure gage employing the durable, time-proven Magnehelic® gage design. Switch setting is easy to adjust with large external knobs on the gage face. Gage reading is unaffected by switch operation - will indicate accurately even if power is interrupted. Solid state design now results in greatly reduced size and weight. Units can be flush mounted or surface mounted with hardware supplied. 3000MR models employ versatile electromechanical relays with gold over silver contacts - ideal for dry circuits. For applications requiring high cycle rates, choose 3000MRS models with SPST (N.O.) solid state relays. All models provide both low and high limit control and include 18-inch (45 cm) cable assemblies for electrical connections.

Compatible with air and other non-combustible, non-corrosive gases, they can be used in systems with pressures to 25 psig (1.725 bar). Optional construction is available for use to either 35 psig (2.42 bar) or 80 psig (5.51 bar).

**BENEFITS/FEATURES**

- Gage reading unaffected by switch operation and will continue to read pressure even during power loss
- Zero and range adjustments outside of gage means no disassembly in normal service
- Solid-state design allows for switching in high cycle rate applications without degradation
- Optional stainless steel bezel is the same installation diameter as Magnehelic® gage and simplifies field upgrade to Photohelic® switch/gage

**APPLICATIONS**

- Pneumatic conveying
- Air conditioning systems
- Clean rooms

**MODEL CHART**

Model	Range, in w.c.	Minor Divs.	Model	Range, in w.c.	Minor Divs.
3000MR-00	0-0.25	.005	3000MRS-00**	0-0.25	.005
3000MR-0	0-0.5	.01	3000MRS-0*	0-0.5	.01
3001MR	0-1.0	.02	3001MRS	0-1.0	.02
3002MR	0-2.0	.05	3002MRS	0-2.0	.05
3003MR	0-3.0	.10	3003MRS	0-3.0	.10
3005MR	0-5.0	.10	3005MRS	0-5.0	.10
3010MR	0-10	.20	3010MRS	0-10	.20
3015MR	0-15	.50	3015MRS	0-15	.50
3020MR	0-20	.50	3020MRS	0-20	.50
3030MR	0-30	1.0	3030MRS	0-30	1.0
3050MR	0-50	1.0	3050MRS	0-50	1.0
3100MR	0-100	2.0	3100MRS	0-100	2.0
3000MR-60PA**	0-60	2.0	3000MRS-60PA**	0-60	2.0
3000MR-125PA*	0-125	5.0	3000MRS-125PA*	0-125	5.0
3000MR-250PA	0-250	5.0	3000MRS-250PA	0-250	5.0
3000MR-500PA	0-500	10.0	3000MRS-500PA	0-500	10.0
3000MR-1KPA	0-1.0	.02	3000MRS-1KPA	0-1.0	.02
3000MR-3KPA	0-3.0	.10	3000MRS-3KPA	0-3.0	.10
3000MR-4KPA	0-4.0	.10	3000MRS-4KPA	0-4.0	.10
3000MR-6MM**	0-6	.20	3000MRS-6MM**	0-6	.20
3000MR-10MM*	0-10	.50	3000MRS-10MM*	0-10	.50
3000MR-25MM	0-25	.50	3000MRS-25MM	0-25	.50
3000MR-50MM	0-50	1.0	3000MRS-50MM	0-50	1.0
3000MR-100MM	0-100	2.0	3000MRS-100MM	0-100	2.0
3000MR-20CM	0-20	.50	3000MRS-20CM	0-20	.50

\*±3% of full-scale. \*\*±4% of full-scale.  
Note: To order, select either MR or MRS suffix to Series 3000 number.  
Examples: 3001MR or 3001MRS

**SPECIFICATIONS**

**GAGE SPECIFICATIONS**

**Service:** Air and non-combustible, compatible gases.  
**Wetted Materials:** Consult factory.  
**Accuracy:** ±2% of FS (3000-0 ±3% of FS). (3000-00 ±4% of FS).  
**Pressure Limit:** -20" Hg. to 25 psig (-0.677 bar to 1.72 bar). MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).  
**Temperature Limits:** 20 to 120°F (-6.67 to 48.9°C).  
**Process Connections:** 1/8" female NPT (duplicated side and back).  
**Size:** 4" (101.6 mm) dial face, 5" (127 mm) OD x 3-1/8" (79.38 mm); -SS bezel: 4-3/4" (120.7 mm) OD x 2-21/32 (67.5 mm).  
**Weight:** 1.8 lb (816 g).

**SWITCH SPECIFICATIONS 3000MR**

**Switch Type:** Each set point has 1 form C relays (SPDT).  
**Relay Contacts:** (Resistive load) 1 form C rated 1.0A @ 30 VDC, 0.3A @ 110 VDC or 0.5A @ 125 VAC.  
Gold over clad silver - suitable for dry circuits.  
**Electrical Connections:** 18" (46 cm) cable assembly with 8 conductors. Optional lengths to 100" (30.5 m).  
**Power Requirements:** 24 VDC, regulated ±10%.  
**Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.  
**Set Point Adjustment:** Adjustable knobs on face.  
**Compliance:** CE.

**SWITCH SPECIFICATIONS 3000MRS**

**Switch Type:** Each set point has a solid state relay.  
**Switching Voltage:** 20-280 VAC (47-63 Hz).  
**Switching Current:** 1.0 amp (AC) max., 0.01 mA (AC) min., (2) SPST NO.  
**Electrical Connections:** 18" (46 cm) cable assembly with 6 conductors, optional lengths to 100" (30.5 m).  
**Power Requirements:** 24 VDC, regulated ±10%.  
**Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.  
**Set Point Adjustment:** Adjustable knobs on face.  
**Compliance:** CE.

**OPTIONS**

To order add suffix:	Description
-HP	High pressure; increases maximum rated pressure to 80 psig (5.5 bar)
-LT	Low temperature option; for use under 20°F (-6.7°C)
-MP	Medium pressure; increases maximum rated pressure to 35 psig (2.41 bar)
-NIST	NIST traceable calibration certificate
-TAMP	Tamper-proof knobs; require spanner key (supplied) to change set points
-WP	Weatherproof housing option
-SS	304 brushed stainless steel bezel. *Backward compatible with standard Magnehelic® gage installation diameter

Example: 3001MR-SS

**ACCESSORIES**

Model	Description
A-298	Flat aluminum bracket for flush mounting 3000MR/MRS
A-370	Mounting bracket flush mount 3000MR/MRS bracket. Bracket is then surface mounted. Steel with gray hammertone epoxy finish
A-600	R/C snubber recommended for inductive loads like a solenoid or contactor

**ACCESSORIES - STANDARD**

**Description**  
Mounting ring, snap ring, 18" (45 cm) cable assembly, (2) 3/16" tubing to 1/8" NPT adapters, (2) 1/8" NPT pipe plugs, (4) 6-32 x 1-1/4" RH machine screws (panel mounting), (3) 6-32 x 5/16" RH machine screws (surface mounting)