Differential Pressure

**Pressures/Switches, Dial**

Photohelic® switch/gages can be wired for
high and low latching circuits. That is, the equipment will hold in
the right of set points. Loss of electrical power or loss of pressure provide “fail
safe” protection.

Two phototransistor-actuated circuits and two DPDT relays permit both high
and low alarms or limit controls. Relays are de-energized when gage pointer
is to the left of respective set points; relays are energized as pointer passes to
the right of set points once activated and until manually reset. This can
be particularly useful for alarm and signal applications where control is
accomplished by another Photohelic® switch/gage or other means. Complete
wiring and operational instructions are included. Where manual reset is
required a dry circuit push button such as Dwyer Part A-601 should be used.

**Applications - Photohelic® Switch/Gages**

In typical applications, these Dwyer switch/gages control between high and
low pressure set points. When pressure changes, reaching either set point
pressure, the infrared light to the limiting phototransistor is cut off by the helix-
driven light shutter. The resulting phototransistor signal is electronically
amplified to actuate its DPDT slave relay and switching occurs. Deadband
between make and break is 1% of full scale or less — just enough to assure
positive, chatter-free operation.

Relay - Transformer Features

A plastic housing protects all electronic components. Solid-state and integrated
circuit electronics are on glass-epoxy printed circuit boards and self-
dampering terminal boards.

**Electrical Connections**

Screw terminals. Use 167°F (75°C) copper
conductors only.

**Electrical Ratings**

10A @ 28 VDC, 10A @ 120, 240 VAC.

**Switch Type**

Each setpoint has 2 form C relays (DPDT).

**Set Points Adjustment**

Adjustable knobs on face.

**Agency Approvals**

CE, CSA, UL. Optional-EXPL explosion-proof
enclosure does not possess any agency approvals.

**Options**

Single contact, right set point, for actuation on increasing or decreasing
pressure.

**Temperature**

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

**Connections**

1/8” female NPT.

**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). A36003S – 36010S; 150 psig (10.34
bar). A36020S and higher; 1.2 x full-scale pressure.

**Pressure Connection**

1/8 FEMALE NPT LOW PRESSURE CONNECTION

1/8 FEMALE NPT HIGH PRESSURE CONNECTION

**Accuracy**

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

**Power Requirements**

120 VAC, 50/60 Hz; 240 VAC & 24 VAC power
optional.

**Wetted Materials**

Consult factory.

**Standard Model**

Two phototransistor-actuated circuits and two DPDT relays permit both high
and low alarms or limit controls. Relays are de-energized when gage pointer
is to the left of respective set points; relays are energized as pointer passes to
the right of set points. Loss of electrical power or loss of pressure provide “fail
safe” protection.

**High and Low Latching Circuits**

Dwyer Photohelic® switch/gages can be wired for high-latching, low-latching,
or combination high-low latching circuits. That is, the equipment will hold in
these respective positions once activated and until manually reset. This can
be particularly useful for alarm and signal applications where control is
accomplished by another Photohelic® switch/gage or other means. Complete
wiring and operational instructions are included. Where manual reset is
required a dry circuit push button such as Dwyer Part A-601 should be used.
Check these features for dependable control

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.

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

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.

Models and Ranges - Series A3000 Photohelic® Switch/Gages

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.

OPTIONS & ACCESSORIES - Add options as a suffix. Example: A3001-LT

-SRH, Single Relay Activates on Increase
-SPR, Single Relay Activates on Decrease
-OLS, OEM model
-RMR, Remote mounted relay
-TAMP, Tamper proof knobs

See page 587 for process tubing options.