

Dwyer[®]
Manufacturing Excellence
Since 1931

2017

Pressure
Temperature
Test & Data
Air Quality
Flow
Level
Process Control
Valves



ABOUT US

DWYER INSTRUMENTS IS A **GLOBAL LEADER** IN DESIGNING AND MANUFACTURING INNOVATIVE CONTROLS, SENSORS AND INSTRUMENTATION SOLUTIONS TO THE HVAC AND PROCESS AUTOMATION MARKETS.

- **Meet and exceed** customer and market expectations

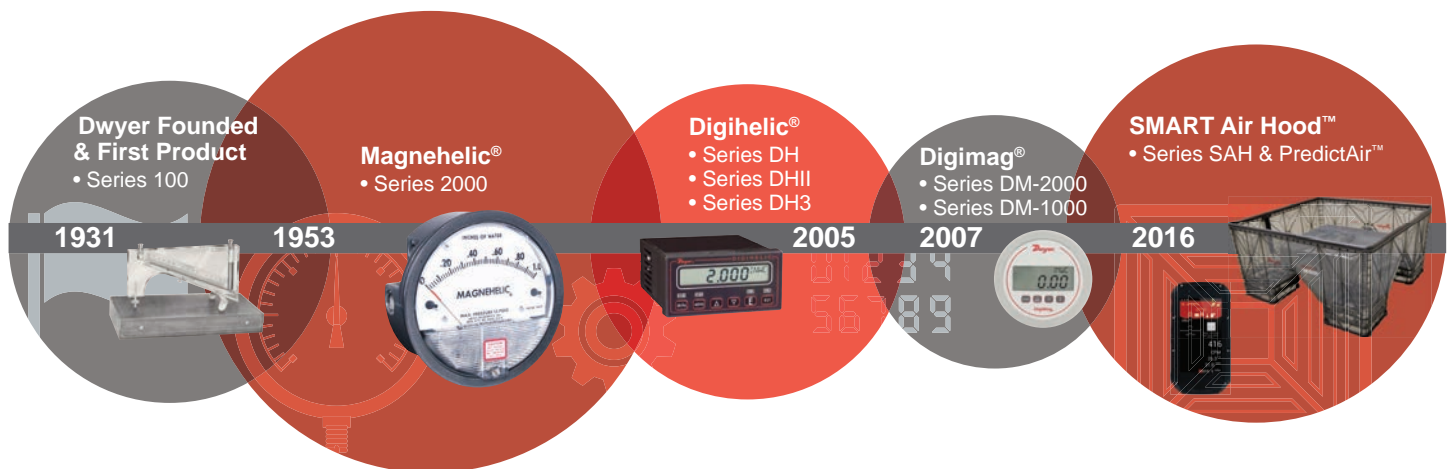
- Sustained R&D and **product development**

- Highly **automated** and **flexible manufacturing** capabilities

- Provide **high quality, reliable, and readily available** products and solutions

- **Global sales** and **marketing** presence

HISTORY



- More than **75 new products** developed since 2005

- 650 patents

ESTABLISHED DWYER BRANDS



DWYER AROUND THE GLOBE



CONTACT INFORMATION

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QUOTATION/BID REQUESTS

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INTERNATIONAL CUSTOMERS

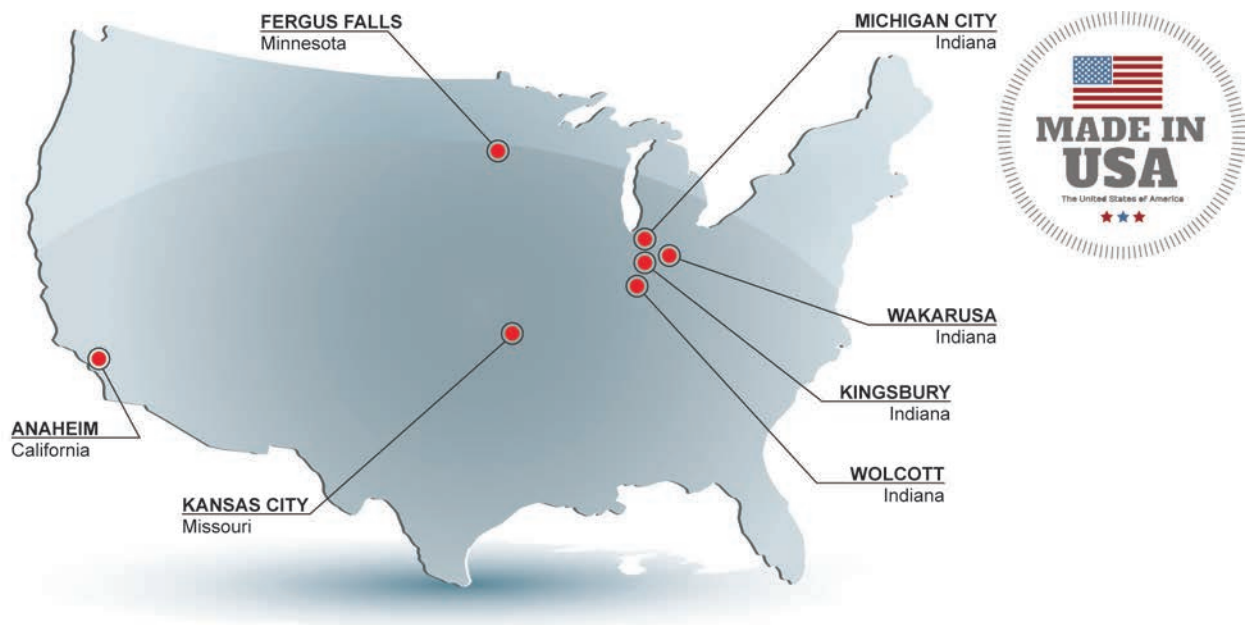
Dwyer has local distributors in over 50 countries. Contact the office of your country or contact the corporate headquarters to find your local distributor. You can also go to our website at the following address to be contacted by your local distributor:
<http://www.dwyer-inst.com/Distributors/DistContactInfo.cfm>.

MANUFACTURING EXCELLENCE

At Dwyer, it all starts with commitment to meeting the needs of our customers. We strive to make products for ease of use and dependability. With over 80 years of manufacturing expertise, we supply the highest quality products and stand behind them. Dwyer products are trusted in applications all over the world in almost every industry.



MANUFACTURING & DESIGN CENTER LOCATIONS



CUSTOMER SERVICE

REAL PEOPLE

Courteous and professional customer service representatives are available via phone and email to process and provide assistance with your order. Dwyer provides industry leading response time to answer your call quickly without making you wait.

PRICING

Contact us for formal quotes. Dwyer offers bids and project quotes. Discounts are available for particular customer types based on quantities purchased.

PRODUCT DELIVERY

LARGE INVENTORY LOCATED CENTRALLY IN THE U.S.

Dwyer is committed to get you your order quickly with more than 5,000 line items in stock in our Michigan City, Indiana headquarters and in most cases lead times less than two weeks for non-stock products.

FAST PROCESSING AND PACKING

Our dedicated shipping staff packs and ships your order the same day on stock items ordered before 2:00 PM U.S. Central Time.

FLEXIBLE SHIPPING

Dwyer offers blanket orders for OEM's to schedule out your product shipments for when you need them. Contact us for details.

TECHNICAL SUPPORT

All of our technical sales staff are degreed engineers trained to be product and industry experts. We listen to your needs and get you the answers you want quickly.

WE HELP YOU FIND A SOLUTION

- Product Selection
- Application Assistance
- Regulatory and Agency Approval Compliance
- Installation Guidance
- Maintenance and Repair
- Product Customization for OEM's

TO CONTACT A TECHNICAL SUPPORT ENGINEER

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tech@dwyermail.com



DWYER DIGITAL CATALOG

- Browse the catalog on the web or download to your computer to have access to it when offline
- Search by any word or phrase in the catalog
- Print or email pages
- Add notes to any page

DWYER CATALOG APP

- Available on iOS® and Google Play® markets
- Designed for iPad®, iPhone®, and Android® mobile devices
- Download the catalog to your mobile device and view it anytime when offline
- Search by word or phrase
- Thumbnail page navigation



PRODUCT INFORMATION

- We offer more than what is in the Dwyer catalog – more products, more options and more technical details
- Instruction manuals and catalog pages in PDF format for easy viewing and download
- Product dimensions viewable in web browser
- Product drawings in DWG format for downloading and using in CAD software
- Agency approval certificates – CE, FM, UL, CSA and ATEX

PRODUCT SEARCH

- Search by model number, keyword or series

PRODUCT CONFIGURATOR

- Create and order your own custom Dwyer product on the web
- Easy to use graphic interface lets you see all available options and select what you need for your application
- Shows option rules so that you can see what options are not compatible

VIDEO LIBRARY

- A collection of informative and instructional videos that are centered on a given product series
- Search videos according to product category
- Link to product page for further information

AND MORE!

- Product applications and technical guides
- Download product brochures and catalogs in PDF format
- Frequently asked questions
- Industry articles
- Popular products

SOCIAL MEDIA

STAY CONNECTED WITH DWYER INSTRUMENTS
THE MOST UP-TO-DATE INFORMATION DWYER HAS TO OFFER!

WWW.TWITTER.COM/DWYERINSTRUMENT

WWW.YOUTUBE.COM/DWYERINSTRUMENTS

WWW.LINKEDIN.COM/COMPANY/DWYER-INSTRUMENTS

WWW.FACEBOOK.COM/DWYERINSTRUMENTSINCORPORATED

WWW.SLIDESHARE.NET/DWYER_INSTRUMENTS



SPECIAL MODELS FOR OEM REQUIREMENTS

CUSTOMIZED FOR YOU!
OFFERED IN A WIDE VARIETY OF DESIGNS, FEATURES AND SCALES

Special instrument designs can be supplied to meet a wide range of OEM requirements and specific application needs. Custom scales and private brand identification can easily be furnished. These include: chrome or specially painted bezels, special membranes, special ranges and calibrations, dual scales, reflective scales, special cleaning and OEM identification. For specific information please contact our customer service department at 219-879-8000.



CALIBRATION & CERTIFICATE SERVICES

Dwyer Instruments, Inc.
2450 East 21st Street
Michigan City, IN 46360
Phone: (219) 879-8000
Fax: (219) 879-8001
www.dwyer-inst.com

June 10, 2007

Sample Customer
1 Sample Street
Beverly Hills, NY 12407

Also: John Doe

Subject: Your Purchase Order #
Dwyer Order #6
Dwyer Part #

CERTIFICATION OF CONFORMANCE

We certify that the material, in the quantity called for on subject purchase order conforms to the requirements and warranty of our published catalog.

David E. Good
Quality Assurance Manager

CERTIFICATE OF CONFORMANCE

A standard Certificate of Conformance is available FREE of charge at the time of order for most products. This document certifies that the product was manufactured to conform to the published specifications in Dwyer Instruments literature.

Dwyer Instruments, Inc.
2450 East 21st Street
Michigan City, IN 46360
Phone: (219) 879-8000
Fax: (219) 879-8001
www.dwyer-inst.com

June 10, 2007

Sample Customer
1 Sample Street
Beverly Hills, NY 12407

Also: John Doe

Subject: Your Purchase Order #
Dwyer Order #6

CALIBRATION CERTIFICATION

This is to certify that the gauge, Catalog No. _____, has been built and tested to conform to an accuracy of \pm _____ % of full scale as specified in Dwyer's published data.

David E. Good
Quality Assurance Manager

CERTIFICATE OF CALIBRATION

A standard Certificate of Calibration is available FREE of charge at the time of order for most products. This document certifies that the product was tested to conform to the published accuracy specification published in the specifications in Dwyer Instruments literature.

Dwyer Instruments, Inc.
Michigan City, IN USA
219-879-8000
www.dwyer-inst.com

Factory Test Report

Model No.: Sample
Serial No.: Sample

Specifications
Range: psi 0 - 1.0
Output: 4 to 20 mA
Accuracy (\pm): 0 % of FS

Equipment Used

Data

Test Point	Actual Reference	Measured Reading	Error
1	0 - 1.0	0 - 1.0	0.00%
2	0.50	0.50	0.00%
3	1.00	1.00	0.00%

Operator: GFD

FACTORY CALIBRATION CERTIFICATE

A Factory Calibration Certificate gives you assurance that the unit has been tested for performance at the time of manufacture. The certificate includes testing points with recorded test data. Factory Calibration Certificates are available for many popular products. Pricing and availability varies by product. Please consult the options listing for the product on the catalog page or see the product on our website for availability.

Dwyer Instruments, Inc.
2450 East 21st Street
Michigan City, IN 46360
Phone: (219) 879-8000
Fax: (219) 879-8001
www.dwyer-inst.com

Customer: Sample Customer
Address: PO #
City: Sample City
State: NY
Zip: 12407

Accuracy: _____ % of Reading

This certifies that the instrument listed below has been calibrated using a standard traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST).

Calibration Standard Information

Standard	Serial No.	Cal Date	Cal By
1	1	1/1/07	1
2	2	2/1/07	2
3	3	3/1/07	3
4	4	4/1/07	4
5	5	5/1/07	5
6	6	6/1/07	6
7	7	7/1/07	7
8	8	8/1/07	8
9	9	9/1/07	9
10	10	10/1/07	10

Instrument Information

Instrument	Serial No.	Cal Date	Cal By
1	1	1/1/07	1
2	2	2/1/07	2
3	3	3/1/07	3
4	4	4/1/07	4
5	5	5/1/07	5
6	6	6/1/07	6
7	7	7/1/07	7
8	8	8/1/07	8
9	9	9/1/07	9
10	10	10/1/07	10

Customer Please Note: When requesting calibration please mention the U.S. number of your instrument, other identifying data information on the calibrated instrument please mention the Certificate No.

CERTIFICATE OF NIST CALIBRATION

A Certificate of NIST Calibration is available for most indicating and transmitting instrumentation products at an additional charge. This certificate is created in our testing lab to NIST traceable test instruments and includes test points with recorded data and the reference standard. Pricing and availability varies by product. Please consult the options listing for the product on the catalog page or see the product on our website for availability. For some products customer specified test points can be specified for an additional charge.

STANDARD TERMS & CONDITIONS OF SALE

DWYER INSTRUMENTS, INC. - STANDARD TERMS AND CONDITIONS OF SALE

1. **Prices and Specifications** are subject to change without notice.
2. **Shipping dates** are approximate. They are dependent upon credit approval and subject to delays beyond our control.
3. **Terms:** Net 30 days to companies with established credit rating. In the event Buyer fails to fulfill previous terms of payment, or in case Seller shall have any doubt at any time as to Buyer's financial responsibility, Seller may decline to make further deliveries except upon receipt of cash in advance or other special arrangements.
4. **Point and Title:** All material is sold EXW Ex Works Dwyer Instruments, Inc. Title to all material sold shall pass to buyer upon delivery by Seller to carrier at shipping point.
5. **State and Local Taxes:** Any taxes which the Seller may be required to pay or collect upon or with respect to the sale, purchase, delivery, use or consumption of any of the material covered hereby shall be for the account of the Buyer and shall be added to the purchase price.
6. **Special tooling,** dies, silk screens and molds acquired specially to produce goods for Buyer remain the property of Dwyer Instruments, Inc., and may not be removed. They will be maintained in good condition for a minimum period of three years from the date of the original purchase order.
7. **Trade Compliance:** Buyer acknowledges that the products, software, and technology, including technical information and documents (collectively "Items"), of Dwyer Instruments, Inc., are subject to regulation by agencies of the U.S. government including, but not limited to, the U.S. Department of Commerce. Buyer shall comply with the Export Administration Regulations (EAR) and all applicable U.S. laws and regulations regarding the sale, delivery and transfer of said Items. Buyer shall not, without first obtaining the required licenses, authorizations or approvals from the appropriate U.S. government agency; (i) export, re-export, transfer or divert any Item directly or indirectly to any country or national resident thereof, or any person, entity or country that has restrictions imposed upon them by the U.S. government, (ii) engage in, or knowingly sell to any party engaged in activity related to the development, production, use, testing, or maintenance of Weapons of Mass Destruction, including uses related to nuclear, missile, chemical or biological warfare, or (iii) engage in, or knowingly sell to any party engaged in activity related to the development, production, use, or maintenance of any safeguarded or unsafeguarded nuclear fuel facility or components for such facilities. Buyer shall fully cooperate with Seller, without charge, in any official audit or inspection by an authorized agent, official, employee, or accredited representative of the U.S. government. Buyer shall indemnify and hold Seller harmless from, or in connection with, any violation of this Section by Buyer, its employees, consultants, agents, or customers. The obligations, requirements and claims described herein shall survive the expiration of any business relationship with Dwyer Instruments, Inc., including its divisions, subsidiaries and affiliated companies.
8. **Limited Warranty:** The Seller warrants all Dwyer Instruments and equipment to be free from defects in workmanship or material under normal use and service for a period of one year from date of shipment. Liability under this warranty is limited to repair or replacement EXW Ex Works Dwyer Instruments, Inc. of any parts which prove to be defective within that time or repayment of the purchase price at the Seller's option provided the instruments have been returned, transportation prepaid, within one year from date of purchase. All technical advice, recommendations and services are based on technical data and information which the Seller believes to be reliable and are intended for use by persons having skill and knowledge of the business, at their own discretion. In no case is Seller liable beyond replacement of equipment EXW Ex Works Dwyer Instruments, Inc. or the full purchase price. This warranty does not apply if the maximum ratings label is removed or if the instrument or equipment is abused, altered, used at ratings above the maximum specified, or otherwise misused in any way.

THIS EXPRESS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER REPRESENTATIONS MADE BY ADVERTISEMENTS OR BY AGENTS AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR GOODS COVERED HEREUNDER.
9. **Buyer's Remedies:** THE BUYER'S EXCLUSIVE AND SOLE REMEDY ON ACCOUNT OF OR IN RESPECT TO THE FURNISHING OF NON-CONFORMING OR DEFECTIVE MATERIAL SHALL BE TO SECURE REPLACEMENT THEREOF AS AFORESAID. THE SELLER SHALL NOT IN ANY EVENT BE LIABLE FOR THE COST OF ANY LABOR EXPENDED ON ANY SUCH MATERIAL OR FOR ANY SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES TO ANYONE BY REASON OF THE FACT THAT IT SHALL HAVE BEEN NON-CONFORMING OR DEFECTIVE.
10. **Acceptance:** All orders shall be subject to the terms and conditions contained or referred to in the Seller's quotation, acknowledgment, and to those listed here and to no others whatsoever. No waiver, alteration or modification of these terms and conditions shall be binding unless in writing and signed by an executive officer of the Seller. All orders are subject to written acceptance by Dwyer Instruments, Inc., Michigan City, Indiana, U.S.A.

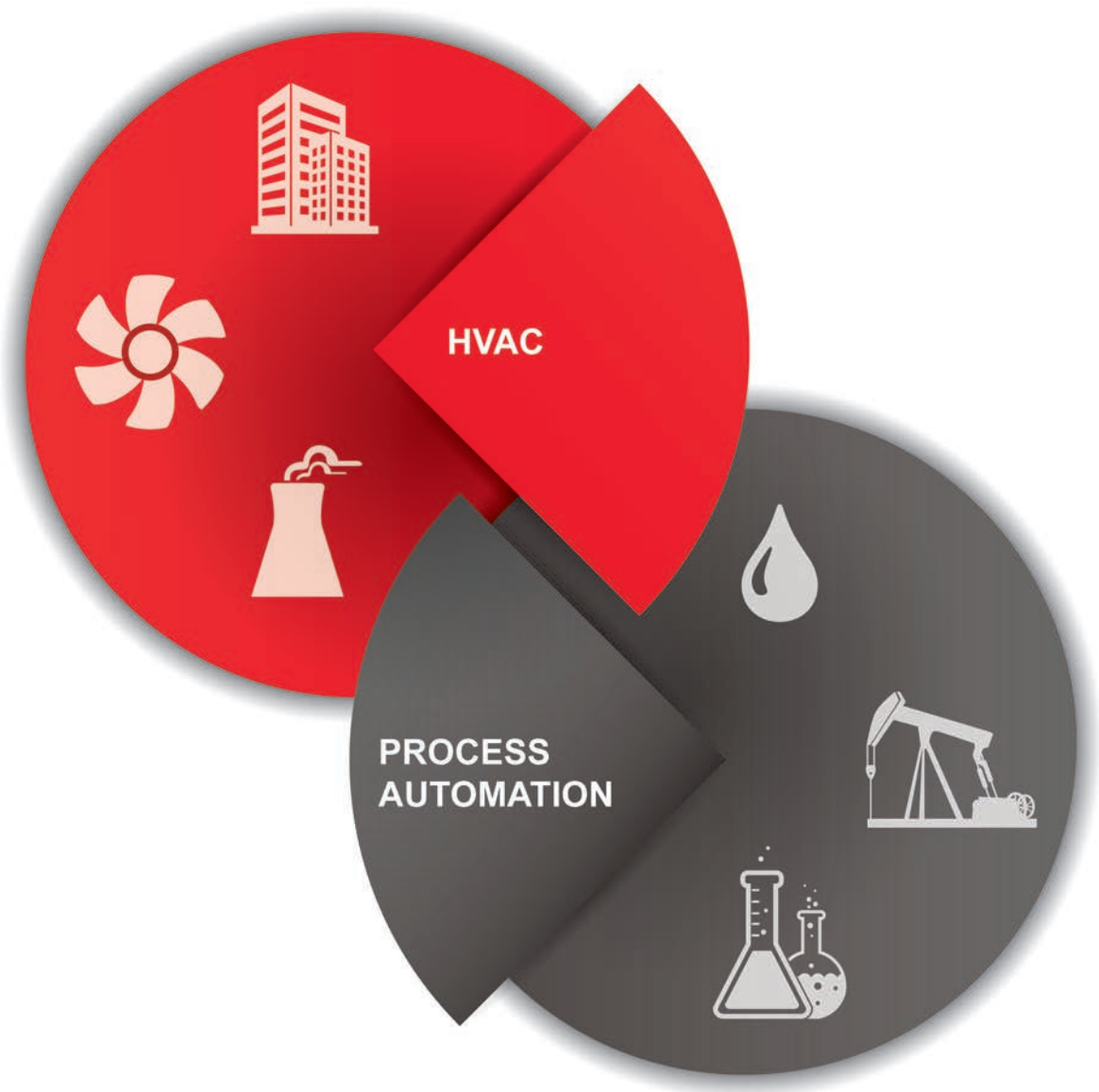
KEY MARKETS

HVAC

Building Automation | Contractor Test Instrument | Controlled Environments
Original Equipment (Chillers, Boilers, Air Handlers, Cooling Towers) | Valve Automation

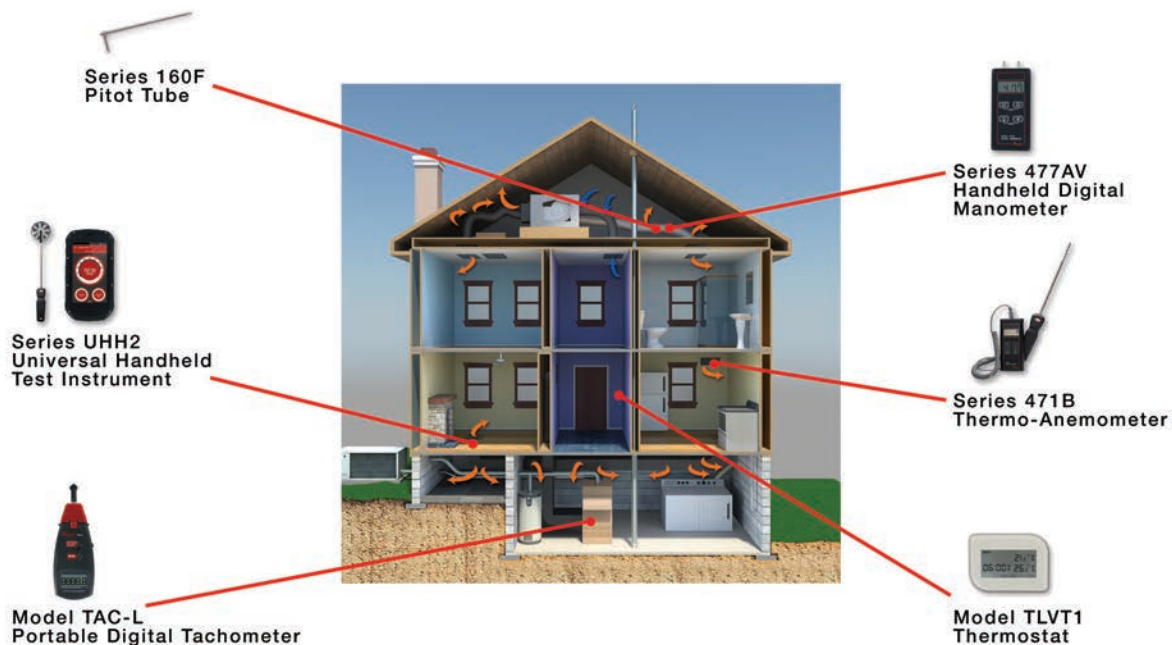
PROCESS AUTOMATION

Water and Wastewater | Pharmaceutical | Agriculture & Livestock | Industrial Process
Mining & Heavy Earth Moving | Oil, Gas & Petrochemical | Power | Valve Automation

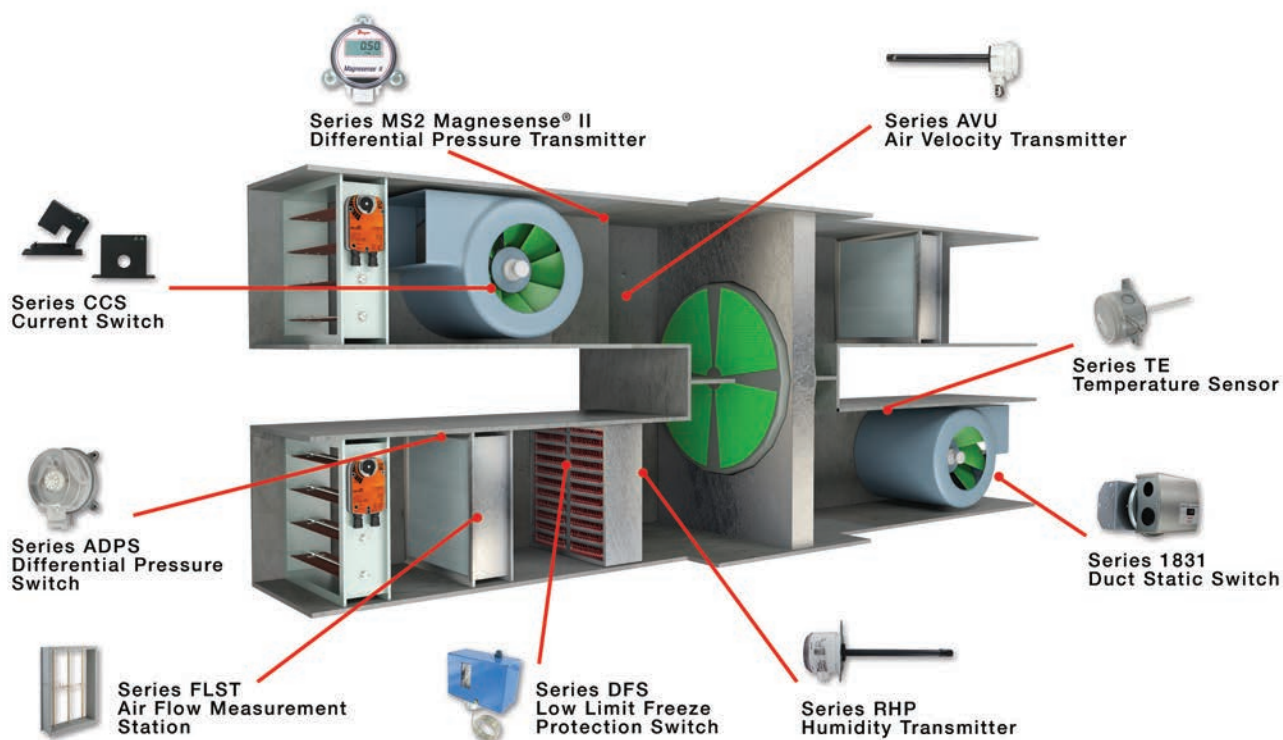


PRODUCT APPLICATIONS

HVAC TESTING

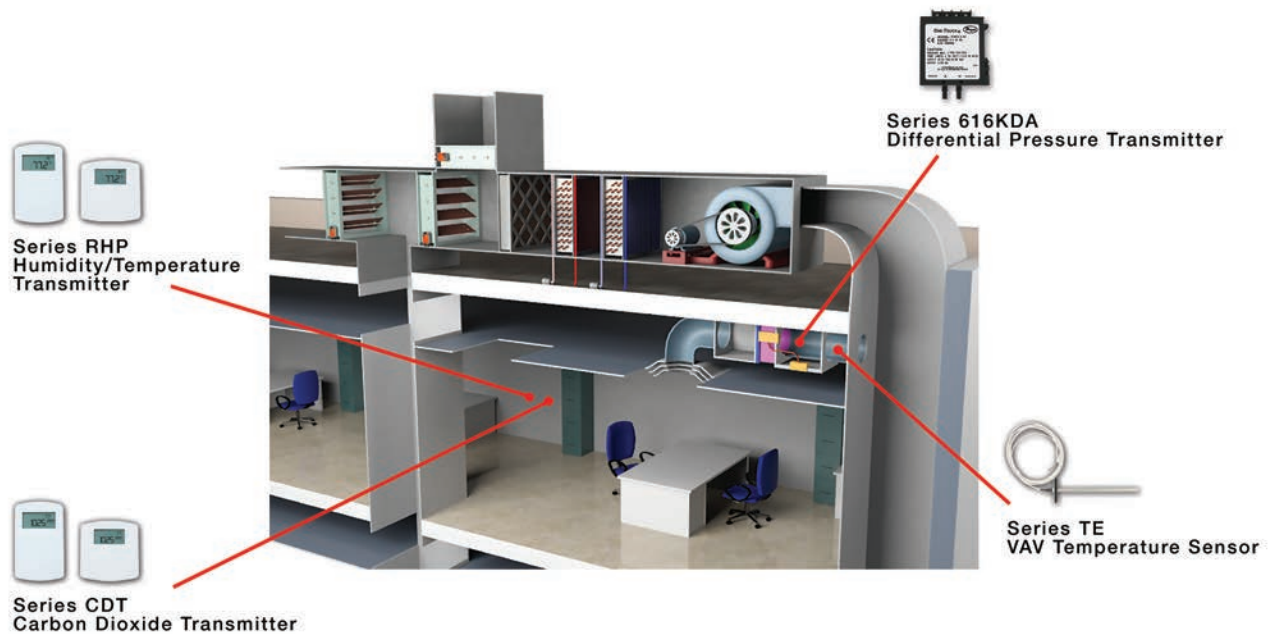


AIR HANDLER

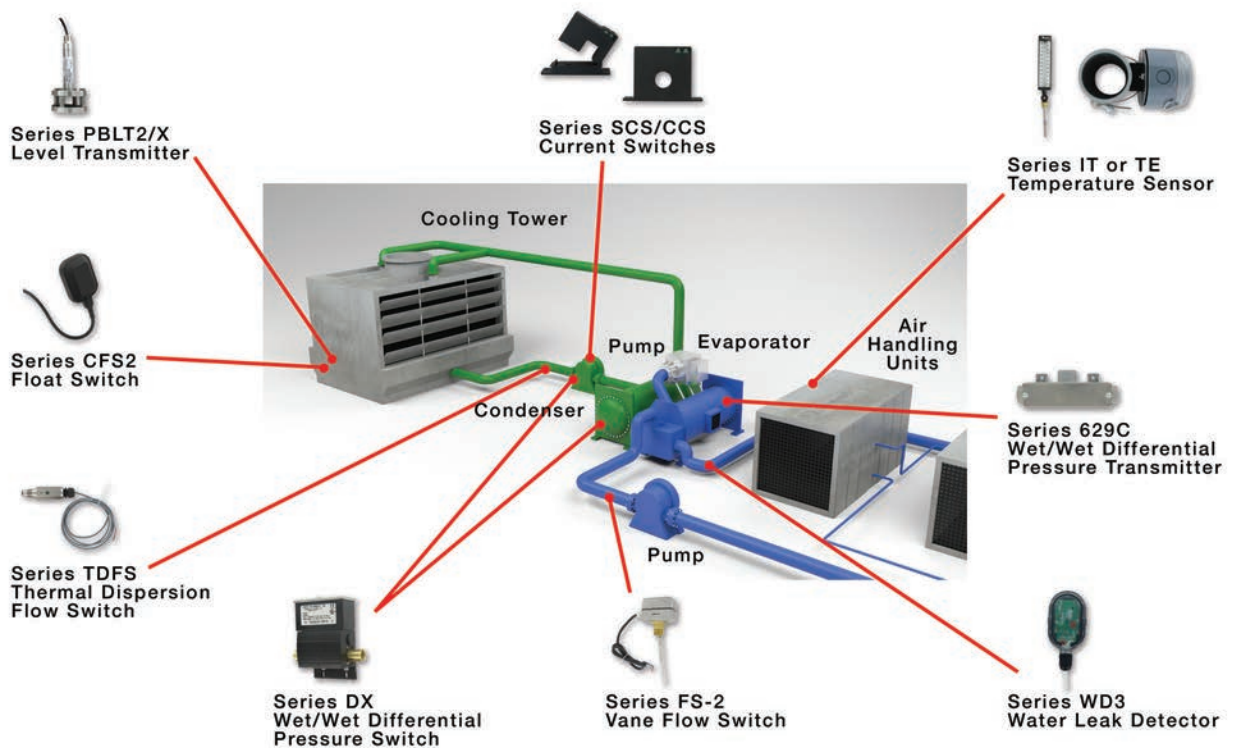


PRODUCT APPLICATIONS

TERMINAL UNIT

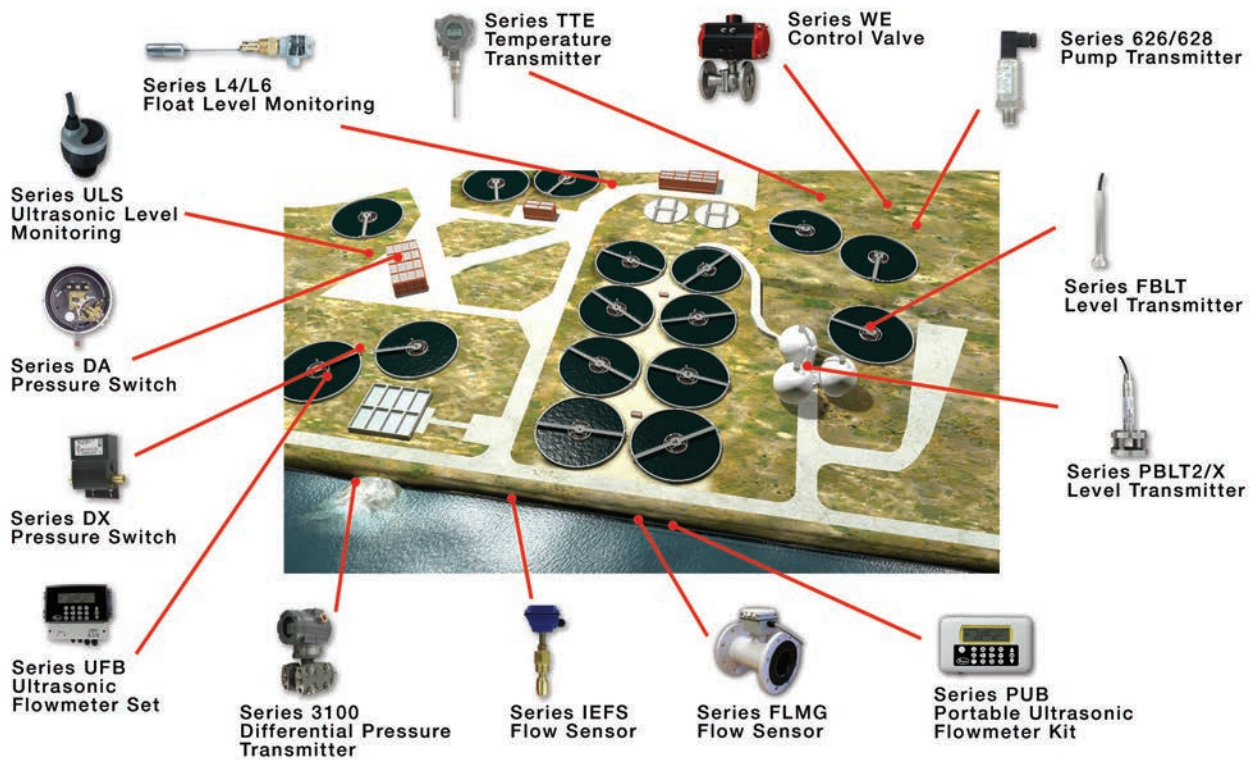


CHILLER PLANT

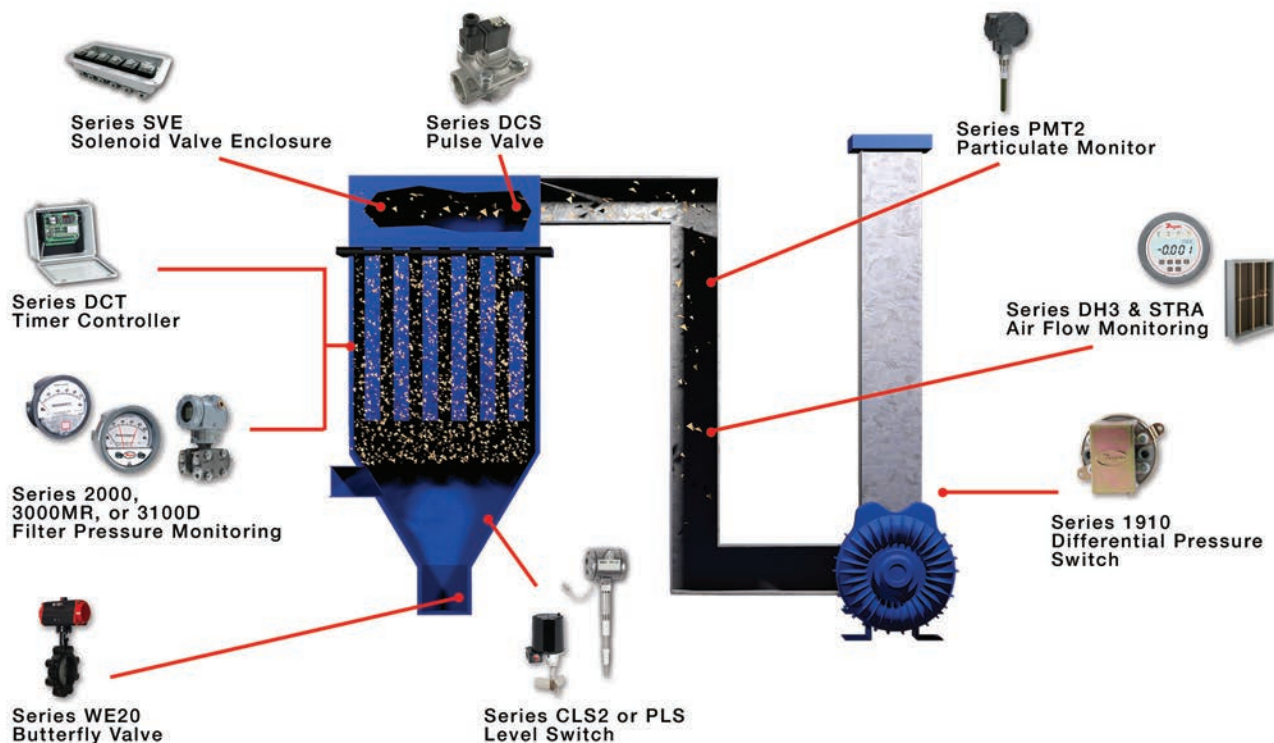


PRODUCT APPLICATIONS

WASTEWATER

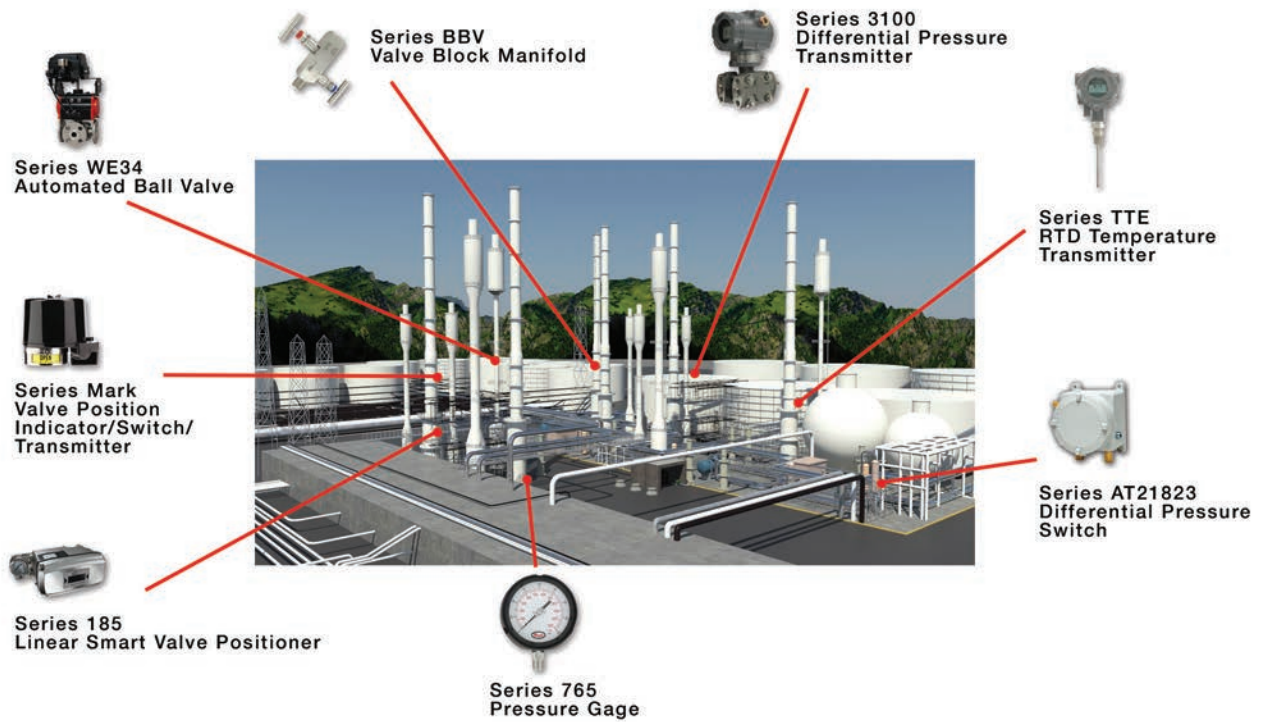


DUST COLLECTOR

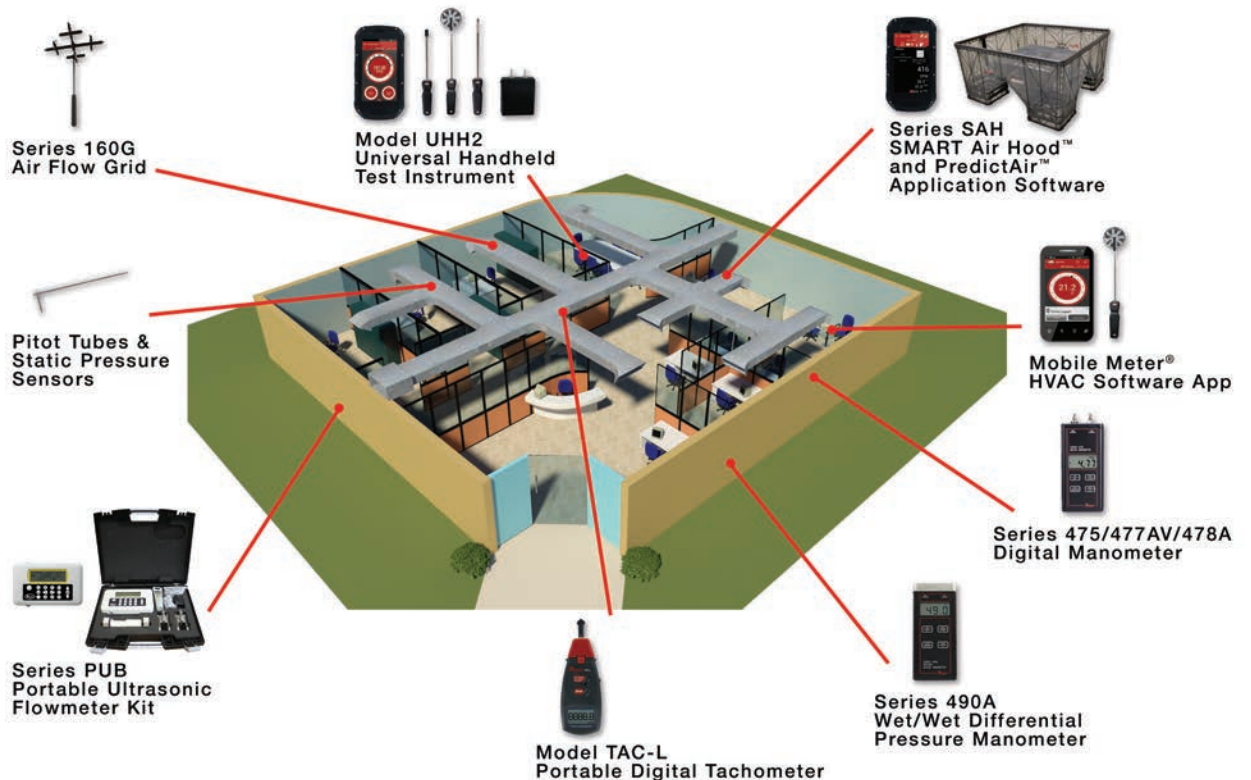


PRODUCT APPLICATIONS

MIDSTREAM REFINERY/CHEM PLANT

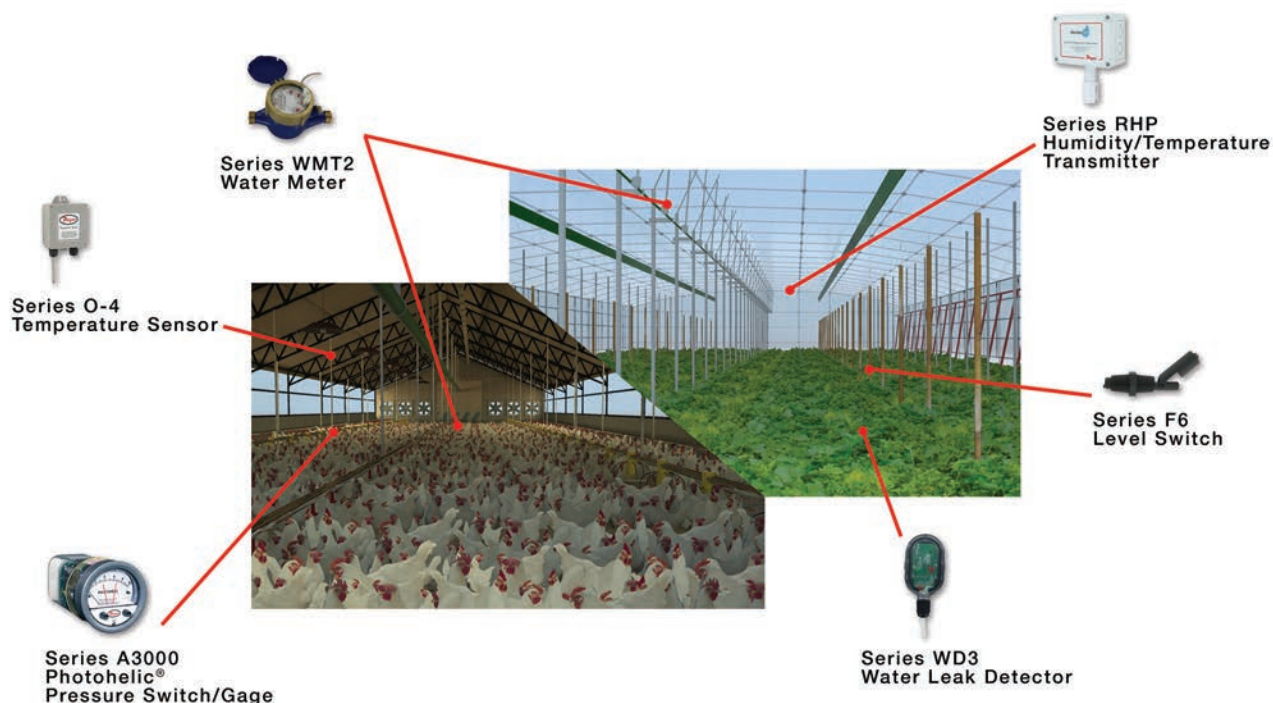


BUILDING BALANCING

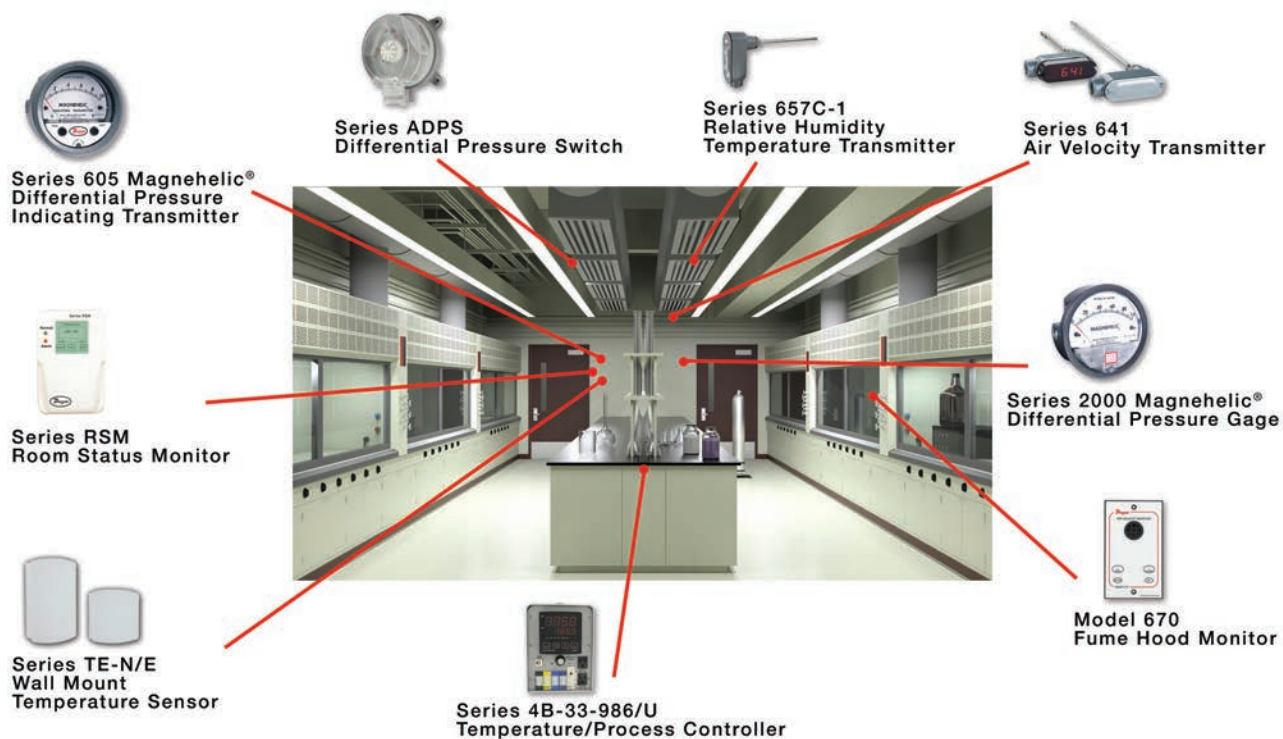


PRODUCT APPLICATIONS

POULTRY/HOG/GREENHOUSES

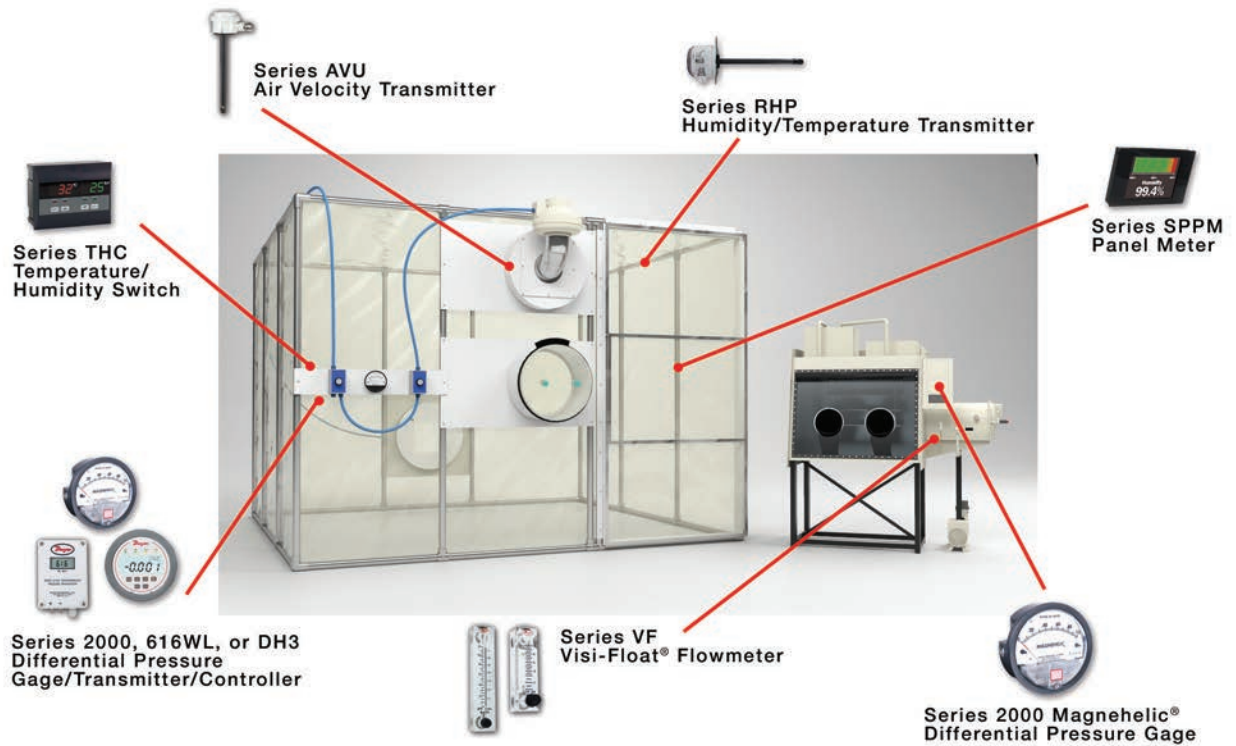


CLEAN ROOM

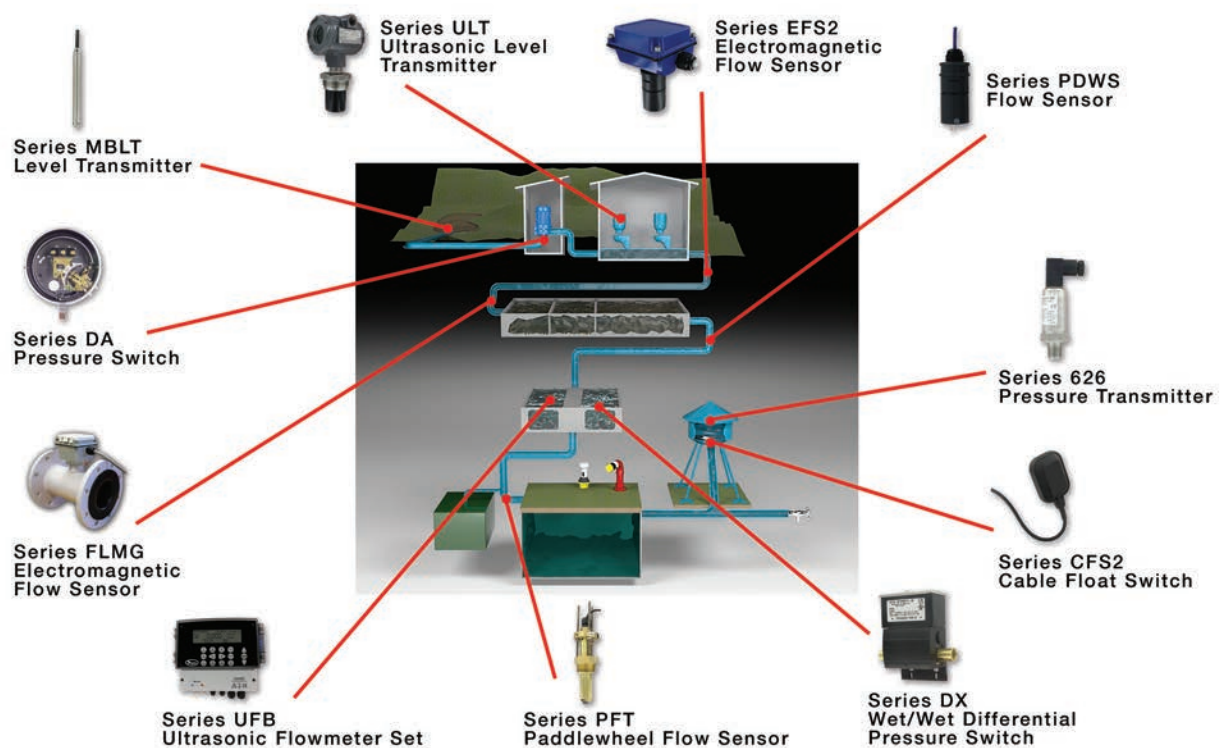


PRODUCT APPLICATIONS

CONTAINMENT CHAMBER/BOX

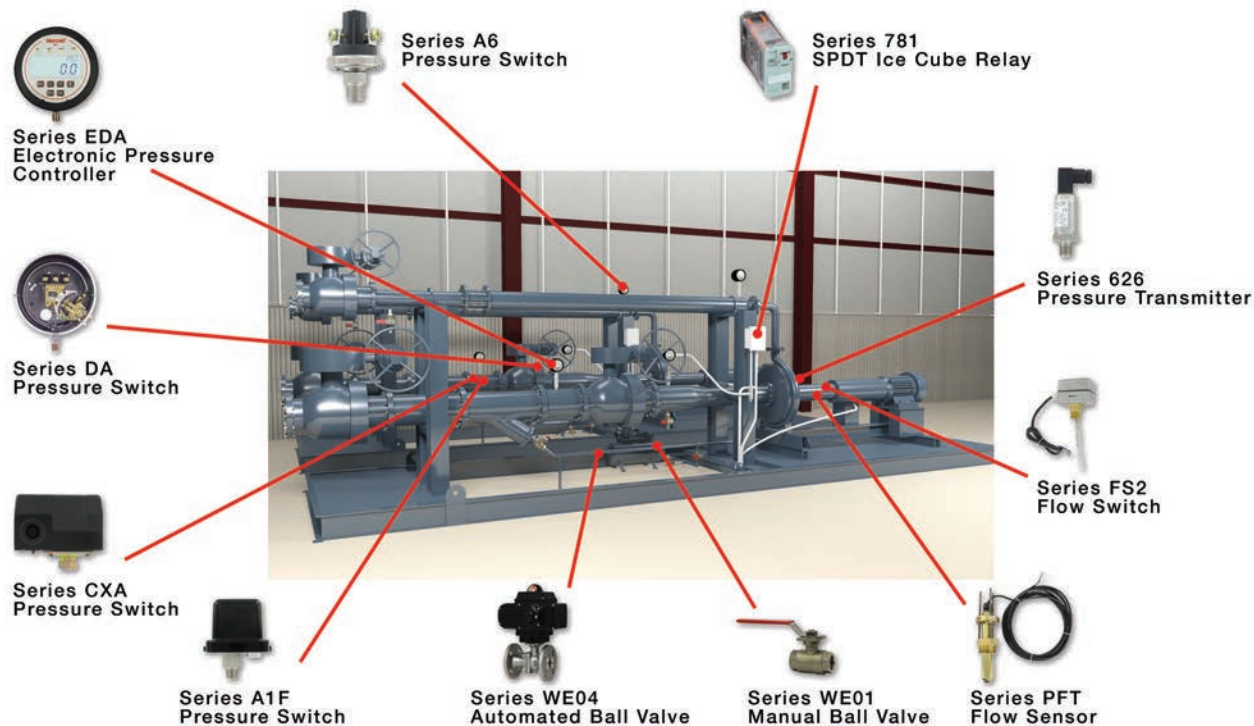


CLEAN WATER

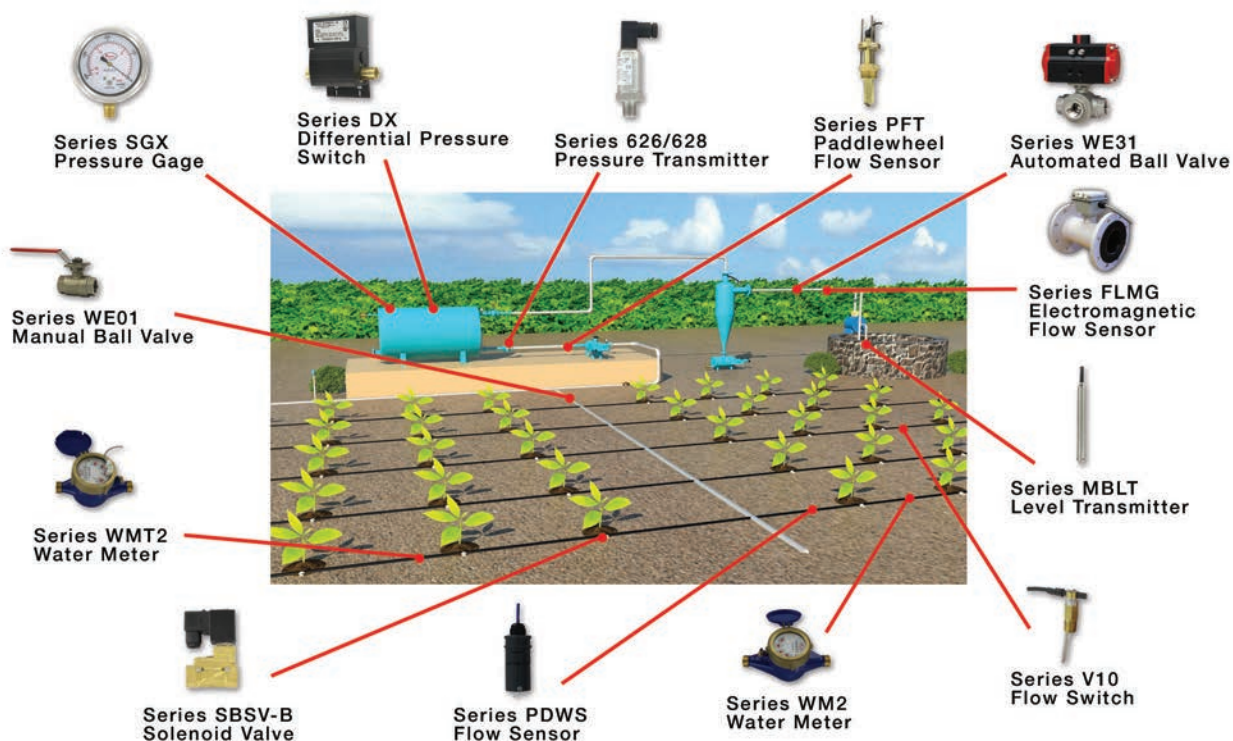


PRODUCT APPLICATIONS

PUMP SKID



IRRIGATION



PRODUCT OVERVIEW



PRESSURE

Gages/Manometers | Transmitters/Switches | Test Equipment

TEMPERATURE, HUMIDITY & GAS SENSING

Transmitters/Switches | Thermometers | Controllers/Thermostats

FLOW & AIR VELOCITY

Air Velocity Monitors/Transmitters/Switches | Flow Sensors/Monitors/Transmitters/Switches | Test Equipment

LEVEL

Indicators/Leak Detectors | Transmitters/Switches | Level/Pump Controllers

VALVES

Ball/Butterfly | Globe/Control | Position Indicators/Transmitters | Positioners/Controllers/Accessories

1-110

PRESSURE Differential Pressure Gages, Manometers (Stationary), Differential Pressure Gages/Switches (Digital & Dial), Differential Pressure Switches, Differential Pressure Transmitters (Air & Gas), Differential Pressure Transmitters (Liquids & Gas), Single Pressure Gages (Dial & Digital), Single Pressure Gages/Switches/Transmitters (Digital), Single Pressure Switches, Single Pressure Transmitters

111-160

TEMPERATURE Thermometers (Dial, Glass & Digital Solar), Thermometers with Transmitter, Temperature/Process Controllers, DIN Rail Temperature Controllers, Panel Meters/Indicators, Temperature Switches (Limit, Digital & Mechanical), Thermostats, Temperature Transmitters, Temperature Sensors

161-212

TEST & DATA Air Flow Hood, HVAC Balancing Instruments, Manometers (Portable & Air Velocity), Pitot Tubes, Air Flow Grids, Vane Anemometer, Wind Meters, Vane Thermo-Anemometers, Thermo-Anemometers, Thermo-Hygrometers, Gas Analyzers/Kits, Signal Generators/Multimeters, Calibration Pumps, Chart Recorders, Data Loggers (Temperature, Single Pressure, Indicating, USB & Wireless),

213-242

AIR QUALITY Flow Sensors, Fume Hood Monitors, Air Flow Switches, Air Velocity Transmitters, Humidity Switches, Humidity/Temperature Transmitters, Carbon Dioxide Transmitters, Gas Sensing Transmitters, Occupancy Sensors

243-320

FLOW Flowmeters (Variable Area, In-Line, Dial, Orifice Plate, Venturi & Totalizers), Flow Sensors (In-Line), Sight Flow Indicators, Flow Switches (Paddle, Thermal & Shuttle/Piston), Flow Transmitters (In-Line, Turbine, Paddlewheel, Electromagnetic & Ultrasonic), Watermeters, Mass Flowmeters/Controllers

321-364

LEVEL Level Indicators, Water Leak Detectors, Level Switches (Float, Optical, Displacer, Conductivity, Tilt, Capacitive, Tuning Fork, Paddle & Diaphragm), Level Transmitters (Submersible, Capacitive, Float & Ultrasonic), Level/Pump Controllers, Bin Vibrators/Aerators

365-404

PROCESS CONTROL Panel Meters/Indicators, Annunciators/Alarm Modules, Signal Conditioners/Isolating Transmitters, Relays, Current Transformers/Switches, Power Supplies/Transformers, Signal Converters, Power Supplies, Fan Speed Controls, Intrinsically Safe Barriers, Timers, Timer Controllers, Particulate (Dust or Broken Bag) Transmitters/Sensors, Vibration Controls, Control Enclosures

405-472

VALVES Valves (Ball, Butterfly, Globe, Angle Seat, Solenoid, Diaphragm Pulse, Check & Needle), Actuators, Manifolds, Position Indicators/Switches/Transmitters, Current to Pressure Transducers, Positioners, Volume Booster, Regulators

473-493

ACCESSORIES Filters, Siphons/Cooling Extensions, Gage Guards/Pressure Snubbers, Fittings (Stainless Steel & Nylon), Pneumatic (Valves & Fittings), Gage Tubing, Static Pressure Sensors, Miscellaneous Accessories

494-499

TECH GUIDE Glossary, Reference Tables, Trademark Acknowledgments

500-514

INDEX Detailed Product Index by Series or Model Number and Category

NEW PRODUCTS

WIRELESS COMMUNICATING ADJUSTABLE DIFFERENTIAL PRESSURE SWITCH | SERIES EWDP

- EnOcean® wireless technology communicates switch status changes where remote monitoring or powering limitations exist
- Dual scaled adjustment knob allows changes to pressure set point without the need for a gage
- Wireless capabilities for HVAC applications in temporary installations or retrofits of existing buildings



PAGE 45

COMPACT DIFFERENTIAL PRESSURE TRANSMITTER | SERIES 668B/D

- Low pressure ranges down to 0.1 in w.c. with 15 psi overpressure protection
- High accuracy at low pressure ranges allows for use in a wide variety of monitoring applications
- Two pressure connection orientations for easy device mounting to best fit pressure connections



PAGE 61

WET/WET DIFFERENTIAL PRESSURE TRANSMITTER | SERIES 629C

- Versatile, high accuracy device for liquid or gas use supports applications requiring more precise measurements
- Span and zero adjustments reduce installation and service time
- Terminal block reduces wiring difficulties saving installation time



PAGE 76

DIN RAIL MOUNT TEMPERATURE SWITCH | SERIES TSDIN

- Refrigeration control with intelligent defrost to maximize energy savings
- HACCP alarm logging to meet industry requirements
- Multiple output configurations offer models for any size refrigeration system



PAGE 130

NEW PRODUCTS

DIGITAL TEMPERATURE SWITCH | SERIES TST

- Digital temperature switch for on/off heating and cooling applications
- Internal buzzer indicates controller errors or high/low temperature alarm conditions
- Modbus communication allows for remote connections to the device



PAGE 134

DIGITAL TEMPERATURE SWITCH | SERIES TSXT

- Digital temperature switch for refrigeration applications
- Intelligent defrost and HACCP alarm logging to meet control requirements
- Capacitive touch buttons offer a robust easy to clean user interface
- Modbus communication allows for remote connections to the device



PAGE 134

TEMPERATURE TRANSMITTER | SERIES BTT-E/N

- Wall mount temperature transmitter for building HVAC applications
- Offers reliable accuracy for installations with long wire runs between the sensor and the receiver/controller



PAGE 140

SMART AIR HOOD™ BALANCING INSTRUMENT | SERIES SAH

- Patent pending Quad Flow Design Technology enables accurate readings
- Predictive Balancing that guides setting the optimal flow set point for each sequential terminal
- The ergonomic design is much lighter and easier to use than traditional air flow hoods



PAGE 174

NEW PRODUCTS

PREDICTAIR™ APPLICATION SOFTWARE

- Extensive diffuser library has flow coefficients that calibrate the Series SAH within $\pm 3\%$ of reading accuracy
- Predictive Balancing process determines the order and set points for adjusting registers in the balancing process
- Generates and shares air balancing reports directly from the handheld device



PAGE 175

100 MM VANE THERMO-ANEMOMETER TEST INSTRUMENT | SERIES 473B

- Compatible with Dwyer AP1 thermo-anemometer and RP1 thermo-hygrometer wired probes (sold separately)
- Included 100 mm vane probe is able to measure air velocity, volumetric air flow, temperature and humidity
- High contrast and backlit LCD for visibility in any condition
- Able to store up to 99 readings for later evaluation



PAGE 199

CARBON DIOXIDE/VOLATILE ORGANIC COMPOUND TRANSMITTER | SERIES CDTV

- Combination VOC and CO₂ outputs reduce labor and material costs
- VOC output is correlated to be equivalent to CO₂ measurements
- Single beam dual wavelength NDIR CO₂ sensor allows for use in 24 hour occupied spaces



PAGE 239

WIRELESS OCCUPANCY SENSOR | SERIES EOS

- EnOcean® wireless communication
- Energy harvesting, no power supply or battery necessary
- Meets North American and European RF standards



PAGE 242

NEW PRODUCTS

USB WIRELESS RECEIVER | SERIES USB-300

- Connect any EnOcean® enabled device to a PC for set-up, testing, or troubleshooting
- Compact USB design
- Meets North American and European RF standards



PAGE 242

VISI-FLOAT® ACRYLIC FLOWMETERS WITH ROTO-GEAR VALVE TECHNOLOGY | SERIES VFCR

- Provides full on/off control and precise flow adjustment in one valve design
- Interlocking and rotating gear valve design yields fine flow control and full flow adjustment
- Valve cartridge assembly easily removes for cleaning



PAGE 261

PVC ELECTRONIC TOTALIZING METER | SERIES TTMP

- PVC, in-line electronic flow totalizer provides batch or cumulative flow
- Easy to read LCD display provides instantaneous local indication of flow rate in a single, compact, low cost body
- Push button, field calibration eliminates downtime



PAGE 303

METAL ELECTRONIC TOTALIZING METER | SERIES TTMS

- Stainless steel, in-line electronic flow totalizer provides batch or cumulative flow
- Easy to read LCD display provides instantaneous local indication of flow rate in a single, compact, durable body
- Push button, field calibration eliminates downtime



PAGE 304

NEW PRODUCTS

GRAPHICAL USER INTERFACE PANEL METER | SERIES SPPM2

- Large 4.3" touch screen graphical LCD
- Fully customize the display graphics and input/output features through design studio software
- Accepts up to 4 analog inputs, 8 digital I/O, 4 PWM outputs, and 2 open collector alarms
- Development kit available to help test and prove out design projects



PAGE 372

MINIATURE CURRENT SWITCH | MODEL MSCS

- Integral DIN or panel mounting flange for faster installation
- Compact size allows for use in areas where space is an issue
- Detects changes in operating current to prevent slippage and mechanical failure



PAGE 384

SURE-SET CURRENT SWITCH | SERIES SSCS

- 9 pre-configured HP set points allow for faster and more accurate installation, which decreases the risk of electrical shock or arc flashes
- Models for 230 VAC or 480 VAC and low or high motor HP ranges provide options for multiple application purposes



PAGE 384

LOW LEAD NPT BRASS BALL VALVE | SERIES DBVL & SWBV

- Ideal for commercial or industrial use where lead content is regulated
- Blowout-proof stem provides safety in the event of overpressure
- Full port design allows for the maximum flow coefficient while still retaining minimal pressure drop



PAGE 428

<p>SELECTION GUIDE pages 2-15</p>	<p>TYPICAL APPLICATIONS pages 16-17</p>	<p>PRESSURE SENSOR ACCURACY pages 18-19</p>	 <p>Differential Pressure Gages pages 20-27, 31-33</p>	 <p>Manometers, Stationary pages 28-30</p>
 <p>Differential Pressure Gages/Switches, Digital pages 34-37</p>	 <p>Differential Pressure Gages/Switches, Dial pages 38-44</p>	 <p>Differential Pressure Switches pages 45-58</p>	 <p>Differential Pressure Transmitters, Air & Gas pages 59-71</p>	 <p>Differential Pressure Transmitters, Liquid & Gas pages 72-78</p>
 <p>Single Pressure Gages, Dial pages 79-84</p>	 <p>Single Pressure Gages, Digital pages 85-88</p>	 <p>Single Pressure Gages/Switches/Transmitters, Digital pages 89-91</p>	 <p>Single Pressure Switches pages 92-100</p>	 <p>Single Pressure Transmitters pages 101-110</p>

FEATURED PRODUCTS

DIFFERENTIAL PRESSURE TRANSMITTER ± 0.25 , ± 1 , OR $\pm 2\%$ SERIES 616KD | page 59



- Simple calibration push-button sets zero and span; saving time installing and over the service life
- Cost effective and compact device suitable for OEM applications where space, simplicity, and value are key

INDUSTRIAL PRESSURE TRANSMITTER SERIES 626 & 628 | pages 104-105



- High precision transmitter insures stability and control to meet the needs of the most demanding applications
- Wide selection of models, ranges, accuracy, connections, and outputs to meet exacting pressure measurement specifications

DIFFERENTIAL PRESSURE

Pressure Gages



SERIES	2000 - pages 20-21	DM-1000 - page 25	2-5000 - pages 26-27
Ranges	-0.05 to 0.2 in w.c./up to -10 to 50 Pa; 0 to 30 psi (0 to 30 kPa)	0.25 to 100 in w.c./60 Pa to 24.88 kPa; (Bi-directional ranges available)	0.5 in w.c. to 5 psi/125 Pa to 3 kPa
Service	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory
Housing	Die cast aluminum case and bezel	Glass filled plastic	Glass filled nylon
Lens	Clear acrylic	N/A	Clear acrylic
Accuracy	±2% FS (±3% or 4% for certain ranges)	±1% FS (2% FS for ranges 1 in w.c. and below)	±5% FS
Pressure Limits	-20" Hg to 15 psig (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).	2 psi (14 kPa) for ≤5 in w.c. 11 psi (75 kPa) for ≥10 in w.c.	30 psig (2.067 bar)
Temperature Limits	20 to 140°F (-6.67 to 60°C)	0 to 140°F (-18 to 60°C)	20 to 120°F (-6.67 to 48.9°C)
Process Connection	1/8" female NPT duplicate high and low pressure taps	1/8" (3 mm) ID tubing	Barbed for 3/16" ID tubing or 1/8" male NPT
Enclosure Rating	N/A	NEMA 4X (IP66)	N/A

DIFFERENTIAL PRESSURE

Pressure Gages/Switches






SERIES	DHII - page 34	DH - page 35	DH3 - page 36	A3000 - pages 38-39
Ranges	0.25 to 100 in w.c./60 Pa to 24.88 kPa (Bi-directional ranges available)	0.25 to 100 in w.c./60 Pa to 24.88 kPa (Bi-directional ranges available)	0.25 to 100 in w.c./60 Pa to 24.88 kPa (Bi-directional ranges available)	0 to 0.25 in w.c./0 to 60 Pa; Up to 0 to 150 in w.c./0 to 30 kPa
Service	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory	Consult factory
Housing	Aluminum, glass	ABS plastic, UL approved 94 V-0	Die cast aluminum case and bezel	N/A
Switch Type	(2) SPDT	(2) SPDT	(2) SPDT	(2) DPDT
Accuracy	±0.5% FS	±0.5% FS	±0.5% FS (±1% or ±1.5 for certain ranges)	±2% FS (±3% or 4% for certain ranges)
Pressure Limits	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	-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	32 to 140°F (0 to 60°C)	32 to 140°F (0 to 60°C)	32 to 140°F (0 to 60°C)	20 to 120°F (-6.67 to 48.9°C)
Process Connection	1/8" female NPT	Compression fitting for 1/8" ID tubing or barbed fitting for 3/16" ID tubing	1/8" female NPT	1/8" female NPT
Enclosure Rating	NEMA 4 (IP66)	NEMA 4X (IP66)	N/A	N/A

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.





DIFFERENTIAL PRESSURE

Pressure Gages

			
SERIES	4000 - page 31	PTGD - page 32	PFG2 - page 33
Ranges	0 to 5 in w.c. up to 0 to 20 psid	5 to 150 psid (0.25 to 10 bar)	5 to 25 psid
Service	Air and compatible gases and oil based liquids	Compatible gases and liquids	Liquids/gases compatible with SS, GFN, and fluoropolymer
Wetted Materials	Consult factory	Aluminum or 316 SS piston; Buna-N, PTFE, or ceramic magnet seals	Aluminum mounting block
Housing	Die cast aluminum with impregnated hard coating	Aluminum or 316 SS	Glass filled nylon
Lens	N/A	Acrylic	Polyester
Accuracy	±3% FS (±2% or 4% for certain ranges)	±2% FS	±5% FS
Pressure Limits	-20" Hg to 500 psig (-0.68 to 34.4 bar)	Aluminum: 3000 psi (206 bar); SS: 6000 psi (413 bar)	300 psig (20.7 bar)
Temperature Limits	20 to 200°F (-6.7 to 93.3°C)	N/A	200°F (93°C)
Process Connection	1/4" female NPT duplicate high and low pressure taps	1/4" female NPT	1/8" female NPT
Enclosure Rating	N/A	N/A	N/A

DIFFERENTIAL PRESSURE

Pressure Gages/Switches

				
SERIES	43000 - page 41	3000MR - page 42	3000MRS - page 42	MP - page 44
Ranges	0 to 0.5 in w.c. up to 0 to 500 in w.c.	0 to 0.25 in w.c./0 to 60 Pa; Up to 0 to 100 in w.c./0 to 4 kPa	0 to 0.25 in w.c./0 to 60 Pa; Up to 0 to 100 in w.c./0 to 4 kPa	0 to 0.5 in w.c./0 to 125 kPa; Up to 0 to 20 in w.c./0 to 3 kPa
Service	Compatible gases and liquids	Air and non-combustible compatible gases	Air and non-combustible compatible gases	Air and non-combustible, compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory	Consult factory
Housing	N/A	N/A	N/A	N/A
Switch Type	(2) DPDT	SPDT	Solid state relay	(2) SPDT
Accuracy	±3% FS (±4% for certain ranges)	±2% FS (±3% or 4% for certain ranges)	±2% FS (±3% or 4% for certain ranges)	±5% FS
Pressure Limits	-20" Hg to 500 psig (-0.677 bar to 34.5 bar)	-20" Hg to 25 psig (-0.677 bar to 1.72 bar)	-20" Hg to 25 psig (-0.677 bar to 1.72 bar)	30 psig (2.067 bar)
Temperature Limits	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 49°C)
Process Connection	1/4" female NPT	1/8" female NPT	1/8" female NPT	Barbed for 3/16" ID tubing or 1/8" male NPT
Enclosure Rating	N/A	N/A	N/A	N/A

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

LOW DIFFERENTIAL PRESSURE

Pressure Switches

				
SERIES	ADPS - page 46	EDPS - page 46	1800 - page 48	1900 - page 50
Set Point Range	.08 to 20 in w.c. (20 to 5000 Pa)	.08 to 20 in w.c. (20 to 5000 Pa)	.07 to 85 in w.c. (.017 to 21 kPa)	.07 to 20 in w.c. (.017 to 5 kPa)
Service	Compatible gases	Compatible gases	Compatible gases	Compatible gases
Wetted Materials	Silicone, PA 6.6, and Polystyrene	Silicone, PA 6.6, and materials UL 94 V-0 rated	Consult factory	Consult factory
Temperature Limits	-4 to 185°F (-20 to 85°C)	-4 to 185°F (-20 to 85°C)	-30 to 180°F (-34 to 82°C)	-30 to 180°F (-34 to 82°C)
Pressure Limits	40 in w.c. (10 kPa)	40 in w.c. (10 kPa)	10 psig (69 kPa)	45 in w.c. (11.2 kPa)
Power Requirement	None	None	None	None
Repeatability	1%	1%	2%	3%
Adjustable Deadband	No	No	No	No
Set Point Indication	Yes	Yes	No	No
Enclosure Rating	GP	UL 94 V-0 rated	GP, WP, or EXP	GP, WP, or EXP
Switch Type	SPDT	SPDT	SPDT	SPDT
Multiple Stages	No	No	No	No
Process Connection	Hose connection for 5/16" OD and 1/4" ID tubing	Hose connection for 5/16" OD and 1/4" ID tubing	1/8" female NPT	1/8" female NPT

LOW DIFFERENTIAL PRESSURE





Pressure Switches

				
SERIES	1620 - page 54	1630 - page 54	PG - page 55	1950 - page 56
Set Point Range	.15 to 24 in w.c. (.04 to 6 kPa)	.05 to 12 in w.c. (.012 to 3 kPa)	1 in w.c. to 5 psig (.25 kPa to 3.4 bar)	.03 to 20 in w.c. (.007 to 5 kPa)
Service	Compatible gases	Compatible gases	Compatible gases	Compatible gases
Wetted Materials	Consult factory	Consult factory	Fairprene, brass, steel, and aluminum	Consult factory
Temperature Limits	-30 to 130°F (-34 to 54°C)	-30 to 110°F (-34 to 43°C)	-10 to 180°F (-23 to 82°C)	-40 to 140°F (-40 to 60°C)
Pressure Limits	50 in w.c. (12.41 kPa)	10 psig (69 kPa)	Consult factory	45 in w.c. (11.2 kPa)
Power Requirement	None	None	None	None
Repeatability	1%	1%	1%	Consult factory
Adjustable Deadband	No	No	No	No
Set Point Indication	No	Yes	Yes	No
Enclosure Rating	GP, WP, or EXP	GP, WP, or EXP	GP, WP, or EXP	WP and EXP
Switch Type	(2) SPDT	SPDT	SPDT or DPDT	SPDT
Multiple Stages	Yes	No	No	No
Process Connection	1/8" female NPT	1/8" female NPT	1/8" female and 1/2" male NPT	1/8" female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.




LOW DIFFERENTIAL PRESSURE

Pressure Switches

				
SERIES	MDS - page 52	MDA - page 52	1831 - page 53	1640 - page 53
Set Point Range	.5 to 50 in w.c. (.12 to 12.5 kPa)	.1 to 100 in w.c. (.25 to 249.1 mbar)	2.5 to 23 in w.c. (.62 to 5.7 kPa)	.01 to 12 in w.c. (.003 to 3 kPa)
Service	Air or compatible fluids on "high side"	Air or compatible fluids on "high side"	Compatible gases	Compatible gases
Wetted Materials	Polycarbonate and polyurethane	Polycarbonate and polyurethane	Consult factory	Consult factory
Temperature Limits	40 to 150°F (4 to 66°C)	40 to 150°F (4 to 66°C)	-30 to 180°F (-34 to 82°C)	-30 to 110°F (-34 to 43°C)
Pressure Limits	15 psig (1 bar)	15 psig (1 bar)	10 psig (69 kPa)	10 psig (69 kPa)
Power Requirement	None	None	None	None
Repeatability	Consult factory	Consult factory	4%	Consult factory
Adjustable Deadband	No	No	No	No
Set Point Indication	No	No	No	Yes
Enclosure Rating	GP	GP	GP	GP, WP, or EXP
Switch Type	SPST NO	SPST NO	DPDT	SPDT
Multiple Stages	No	No	No	Yes
Process Connection	Hose barb for 1/8"-3/16" ID tubing	Smooth port for 1/8" ID tubing	1/8" female NPT	1/8" female NPT

LOW DIFFERENTIAL PRESSURE

Pressure Switches

			
SERIES	1950G - page 56	H3 - page 57	DX - page 58
Set Point Range	.07 to 20 in w.c. (.017 to 5 kPa)	180 in w.c. to 200 psid	2.5 to 75 psi (.17 to 5.2 bar)
Service	Compatible gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	Consult factory	Aluminum/Nitrile or SS/Fluoroelastomer	Brass and fluoroelastomer
Temperature Limits	0 to 140°F (-18 to 60°C)	-4 to 220°F (-20 to 104°F)	30 to 140°F (-1 to 60°C)
Pressure Limits	45 in w.c. (11.2 kPa)	1500 psig (103 bar)	200 psig (13.8 bar)
Power Requirement	24 VDC, 120 or 240 VAC	None	None
Repeatability	Consult factory	Consult factory	2%
Adjustable Deadband	No	No	Yes
Set Point Indication	No	No	No
Enclosure Rating	WP and EXP	EP	WP
Switch Type	SPDT	SPDT or DPDT	SPDT
Multiple Stages	No	No	No
Process Connection	1/8" female NPT	1/8" female NPT	1/4" female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

LOW DIFFERENTIAL PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers



SERIES	616KD - page 59	677B - page 60	668 - page 60	668B/D - page 61
Ranges	1 in w.c. to 5000 Pa; Bi-directional available.	.1 to 25 in w.c.; Bi-directional available	.25 to 100 in w.c.; Bidirectional available	.1 to 100 in w.c.; Bi-directional available
Accuracy	616KD-A: $\pm 0.25\%$ FS; 616KD-B: $\pm 1\%$ FS; 616KD-C: $\pm 2\%$ FS	$\pm 0.4\%$ FS	$\pm 1\%$ FS	$\pm 0.8\%$ FS
Wetted Materials	Consult factory	302 SS, glass, nickel, silicone rubber, and brass	Consult factory	Consult factory
Comp. Temp. Limits	20 to 122°F (-6.67 to 50°C)	0 to 185°F (-18 to 85°C)	0 to 150°F (-18 to 65°C)	40 to 170°F (4.4 to 77°C)
Oper. Temp. Limits	0 to 140°F (-17.8 to 60°C)	0 to 185°F (-18 to 85°C)	0 to 150°F (-18 to 65°C)	0 to 170°F (-18 to 77°C)
Output Signal	4 to 20 mA or field selectable 0 to 10/0 to 5/2 to 10/1 to 5 V	4 to 20 mA DC	4 to 20 mA	4 to 20 mA, 0 to 10 VDC, or 0 to 5 VDC
Elec. Connection	Screw-type terminal block	Screw-type terminal block	Screw-type terminal block	Screw-type terminal block
Process Connection	Barbed for 1/8" and 3/16" ID rubber or vinyl tubing	3/16" OD barbed brass pressure fittings	3/16" OD fitting for 1/4" ID tubing	3/16" OD barbed brass for 1/8" ID push-on tubing
Enclosure Rating	NEMA 1 (IP20)	NEMA 4 (IP66)	Fire retardant glass filled polyester	UL 94 V-0 rated

LOW DIFFERENTIAL PRESSURE - INDICATING

Pressure Transmitters and Transducers






SERIES	616W - page 64	DM-2000 - page 65	605 - page 66
Ranges	6 in w.c. to 2.5 kPa	.1 to 5 in w.c.; Bi-directional available	Vacuum, .5 to 50 in w.c. (60 to 1500 Pa)
Accuracy	$\pm 0.25\%$ FS, display accuracy $\pm 0.5\%$	$\pm 1\%$ FS	$\pm 0.5\%$ or $\pm 2\%$ FS
Wetted Materials	Consult factory	Consult factory	Consult factory
Comp. Temp. Limits	N/A	N/A	32 to 120°F (0 to 48.9°C)
Oper. Temp. Limits	0 to 150°F (-17.8 to 66°C)	20 to 120°F (-7 to 49°C)	20 to 120°F (-6.67 to 48.9°C)
Output Signal	4 to 20 mA (2-wire), 0 to 5 VDC, or 0 to 10 VDC (3-wire)	4 to 20 mA	4 to 20 mA
Elec. Connection	3-wire terminal block for 16 to 26 AWG	Screw-type terminal block	Screw-type terminal block
Process Connection	Barbed for 1/8" and 3/16" ID rubber or vinyl tubing	1/8" ID tubing	1/8" female NPT
Enclosure Rating	NEMA 4X (IP66)	N/A	N/A

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.



LOW DIFFERENTIAL PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers

			
SERIES	607 - page 62	607D - page 62	608 - page 74
Ranges	.10 to 25 in w.c.; Bi-directional available	.10 to 25 in w.c.; Bi-directional available	0.1 to 25 in w.c.; Bi-directional available
Accuracy	±0.5% or ±0.25% FS	±0.25% FS	±0.5% or ±0.25% FS
Wetted Materials	Consult factory	302 SS, glass, nickel, silicone rubber, and brass	Consult factory
Comp. Temp. Limits	35 to 135°F (2 to 57°C)	0 to 170°F (-18 to 77°C)	0 to 160°F (-18 to 71°C)
Oper. Temp. Limits	-20 to 160°F (-29 to 160°C)	0 to 170°F (-18 to 77°C)	-20 to 185°F (-28 to 85°C)
Output Signal	4 to 20 mA DC	4 to 20 mA	4 to 20 mA
Elec. Connection	Screw-type terminal block	Screw-type removable terminal block	Screw-type terminal block, Two 1/2" female NPT conduit
Process Connection	Barbed stainless steel for 3/16" ID tubing	Barbed fittings for 1/8" ID tubing	1/4" female NPT
Enclosure Rating	NEMA 2	N/A	NEMA 4X (IP66)

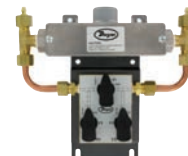
LOW DIFFERENTIAL PRESSURE - INDICATING

Pressure Transmitters and Transducers

		
SERIES	MS2 - page 68	ISDP - page 71
Ranges	0.1 in w.c. to 28 in w.c. (25 Pa to 6975 Pa) Bi-directional available	0.1 to 100 in w.c.; Bi-directional available
Accuracy	±1% or ±2% FS	±0.5% FS
Wetted Materials	Consult factory	Consult factory
Comp. Temp. Limits	N/A	32 to 140°F (0 to 60°C)
Oper. Temp. Limits	0 to 150°F (-18 to 66°C)	32 to 140°F (0 to 60°C)
Output Signal	4 to 20 mA (2-wire), 0 to 5 VDC, 0 to 10 VDC (3-wire)	4 to 20 mA DC
Elec. Connection	3-wire terminal block for 16 to 22 AWG	M-12 4-pin connector
Process Connection	3/16" I.D. tubing (5 mm ID); Max OD 9 mm	1/8" female NPT
Enclosure Rating	IP66	NEMA 4X (IP66)

WET-WET DIFFERENTIAL PRESSURE




Pressure Transmitters and Transducers



SERIES	3100 - pages 72-73	636D - page 75	629C - page 76	629C-3V - page 76
Ranges	6 in w.c. to 0-1000 psig	15 to 300 psi	5 psid to 500 psid; 0.5 to 30 bar	5 psid to 500 psid; 0.5 to 30 bar
Accuracy	±0.075% FS	±0.5% FS	±0.50% FS	±0.50% FS
Wetted Materials	316L SS	316L SS	316, 316L SS	316, 316L SS, Brass 360, Copper, Reinforced acetal copolymer
Comp. Temp. Limits	N/A	-20 to 180°F (-29 to 82°C)	0 to 175°F (-18 to 79°C)	0 to 175°F (-18 to 79°C)
Oper. Temp. Limits	-40 to 185°F (-40 to 85°C)	-40 to 212°F (-40 to 100°C)	0 to 200°F (-18 to 93°C)	0 to 200°F (-18 to 93°C)
Output Signal	4 to 20 mA or HART® Communication	4 to 20 mA or 1 to 5 VDC	2-wire: 4 to 20 mA; 3-wire: Selectable 0 to 5, 1 to 5, 0 to 10, or 2 to 10 VDC	2-wire: 4 to 20 mA; 3-wire: Selectable 0 to 5, 1 to 5, 0 to 10, or 2 to 10 VDC
Elec. Connection	(2) 1/2" female NPT conduit, screw terminal	2' (61 cm) cable, 3/4" female NPT conduit	Screw-type removable terminal block; 1/2" female NPT conduit	Screw-type removable terminal block; 1/2" female NPT conduit
Process Connection	1/4" female NPT	1/2" female NPT	1/4" female NPT	1/4" female NPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4 (IP66)	NEMA 4X (IP66)	Non-LCD designed to meet NEMA 4X (IP66)

WET-WET DIFFERENTIAL PRESSURE

Pressure Transmitters and Transducers

			
SERIES	647 - page 77	645 - page 77	WWDP - page 78
Ranges	1 in w.c. to 0-30 psid	1 to 100 psid; Bi-directional ranges available	5 to 250 psi
Accuracy	±1% FS	±0.25% FS	±1% FS
Wetted Materials	Brass, vinyl, glass-filled polyester, silicon, florosilicone	17-4 PH SS, Fluoroelastomer, Silicone	Consult factory
Comp. Temp. Limits	N/A	30 to 150°F (-1 to 65°C)	32 to 130°F (0 to 54°C)
Oper. Temp. Limits	32 to 122°F (0 to 50°C)	0 to 175°F (-18 to 80°C)	-4 to 185°F (-20 to 85°C)
Output Signal	4 to 20 mA	4 to 20 mA	Selectable 0 to 5, 0 to 10, and 0 to 5 VDC; 4 to 20 mA
Elec. Connection	Screw-type terminal block	Screw-type terminal block	1/2" conduit
Process Connection	1/8" female NPT	1/4" female NPT	1/8" female NPT internal
Enclosure Rating	N/A	NEMA 4X (IP66)	NEMA 4 (IP66)




SINGLE PRESSURE

Pressure Gages

					
SERIES	UGI/UGJ/UGK - page 79	SG1/SG3 - page 80	SGX/SGY/SGZ - pages 80 & 83	SGP/SGO - page 81	LPG4/LPG5 - page 82
Ranges	30" Hg to 300 psi (-1 to 20 bar)	30" Hg to 300 psi (-1 to 20 bar)	SGX: -160 to 235 in w.c. (-4000 to 6000 mm w.c.); SGY/SGZ: -30" Hg to 1000 psi (-1 to 70 bar)	SGO - 30" Hg to 300 psi (-100 to 2000 kPa); SGP -160 to 160 in w.c. (-4000 to 4000 mm w.c.)	-235 to 160 in w.c. (-60 to 40 kPa)
Service	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids
Wetted Materials	Brass connector, phosphor bronze tube	Brass connector, bronze tube	Brass, bronze or SS	316L SS chamber with PTFE steel diaphragm	Brass, bronze or SS
Housing	Black painted steel	304 SS	304 SS	304 SS	LPG4: Drawn Steel; LPG5: Chrome plated
Accuracy	UGI/UGJ: ±2.5% FS; UGK: ±1.5% FS	±2.5% FS	±1.5 to ±2.5% FS	±1.6% FS	LPG4 ±1.5% FS; LPG5 ±3%-2%-3% FS
Pressure Limits	100% FS	100% FS	100% FS	130% FS	100% FS
Temperature Limits	-4 to 140°F (-20 to 60°C)	-4 to 140°F (-20 to 60°C)	SGX: Ambient: -13 to 149°F (-25 to 65°C); SGY/SGZ: -4 to 140°F (-20 to 60°C)	Ambient: -13 to 149°F (-25 to 65°C)	Ambient: -40 to 140°F (-40 to 60°C); LPG5 -4 to 140°F (-20 to 60°C)
Process Connection	UGI/UGJ: 1/8" male NPT UGK: 1/4" male NPT	1/8" male NPT	1/4" male NPT	1/2" male NPT	1/4" male NPT
Enclosure Rating	N/A	N/A	NEMA 3 (IP54)	NEMA 3	N/A

DIGITAL SINGLE PRESSURE





Pressure Gages

			
SERIES	WDG - page 85	DPGA - page 86	DPGW - page 86
Ranges	50 to 5000 psig	-30" Hg to 500 psig	-30" Hg to 500 psig
Service	Compatible gases/liquids	Air and compatible gases	Compatible gases/liquids
Wetted Materials	304L SS	316L SS, silicone sensor	316L SS
Housing	Fiberglass reinforced PP plastic	ABS plastic	ABS plastic
Accuracy	±0.5% FS (≤1000 psig); ±1% FS (5000 psig)	±1% FS	±1% FS
Pressure Limits	200% FS (Burst 300% FS)	200% FS; 30 psig for vacuum models	200% FS; 30 psig for vacuum models
Temperature Limits	14 to 140°F (-10 to 60°C)	30 to 120°F (-1 to 49°C)	30 to 120°F (-1 to 49°C)
Process Connection	1/4" male NPT	1/4" male NPT	1/4" male NPT
Enclosure Rating	IP65	N/A	N/A

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.




SINGLE PRESSURE

Pressure Gages

				
SERIES	SGF - page 83	765 - page 83	7000 - page 84	7000B - page 84
Ranges	-235 to 160 in w.c. (-6000 to 4000 mm w.c.)	30" Hg to 20,000 psi (-100 to 135,000 kPa)	30 to 3000 psig	30 to 10,000 psig
Service	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids
Wetted Materials	316/316L SS	316L SS, Bourdon tube	316L SS, Inconel® Bourdon tube	Nickel plated brass or 316L SS, Inconel® Bourdon tube
Housing	304 SS	Phenolic plastic with safety blow-out back	Black polycarbonate case	Black polycarbonate case
Accuracy	±1.6% FS (≥15 in w.c.); ±2.5% FS (all other ranges)	±0.5% FS ANSI/ASME (Grade 2A)	±0.5% FS (Grade 2A)	2%-1%-2% FS (Grade A) or 0.5% FS (Grade 2A)
Pressure Limits	100% FS	110 to 125% FS	150% FS	150% FS
Temperature Limits	Ambient: -13 to 149°F (-25 to 65°C); Process: 212°F (100°C)	-40 to 200°F (-40 to 93°C)	-65 to 180°F (-53.9 to 82.2°C)	-65 to 180°F (-53.9 to 82.2°C)
Process Connection	1/4" male NPT	1/4" or 1/2" male NPT	(2) 1/4" female NPT	1/2" male NPT x 1/4" female NPT
Enclosure Rating	NEMA 3 (IP54)	IP65 (NEMA 4)	N/A	N/A

DIGITAL SINGLE PRESSURE

Pressure Gages

			
SERIES	DPG-000 - page 87	DPG-100 - page 87	DPG-200 - page 89
Ranges	-14.7 to 8000 psig	-14.7 to 8000 psig	5 to 8000 psig
Service	Compatible liquids and combustible gases	Compatible liquids and combustible gases	Liquids and non-combustible compatible gases
Wetted Materials	Type 316L SS	Type 316L SS	Type 316L SS
Housing	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction
Accuracy	±0.5% FS	±0.25% FS	±0.25% FS
Pressure Limits	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)
Temperature Limits	0 to 130°F (-18 to 55°C)	0 to 130°F (-18 to 55°C)	0 to 158°F (-18 to 70°C)
Process Connection	1/4" male NPT	1/4" male NPT	1/4" male NPT
Enclosure Rating	NEMA 4/4X (IP66)	NEMA 4/4X (IP66)	NEMA 4X (IP66)





SINGLE PRESSURE

Pressure Switches

				
SERIES	EDA - page 91	DA/DS - pages 92-93	SA1100 - page 94	1000W/E - page 95
Set Point Range	20 to 3000 psig (1.38 to 206 bar)	30" Hg VAC to 8000 psig (762 mm Hg VAC to 551 bar)	10 to 500 psig (.7 to 34 bar)	5 to 1400 psig (.48 to 96.5 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	316 SS	Brass, 403 SS, or 316 SS	Aluminum, brass, or 316 SS with Buna-N or fluorocarbon	Aluminum or 316 SS with polyamide, 316 SS, or Teflon®
Temperature Limits	20 to 140°F (-6.6 to 60°C)	-10 to 180°F (-23 to 82°C)	-30 to 180°F (-35 to 77°C)	-30 to 170°F (-35 to 77°C)
Pressure Limits	4500 psig (310 bar)	8000 psig (551 bar)	3000 psig (207 bar)	3000 psig (207 bar)
Power Requirement	12 to 30 VDC/AC	None	None	None
Repeatability	0.5%	1%	Consult factory	Consult factory
Adjustable Deadband	Yes	Yes	Yes	No
Set Point Indication	Yes	Yes	Yes	Yes
Enclosure Rating	WP	GP, WP, or EXP	WP and EXP	WP or EXP
Switch Type	(2) SPDT	SPDT or DPDT	SPDT or DPDT	SPDT or DPDT
Multiple Stages	No	Yes	No	No
Process Connection	1/4" male NPT	GP/WP: 1/4" male NPT or 1/2" male NPT; EXP: 1/2" male NPT and 1/4" female NPT	1/4" or 1/2" female NPT	1/4" female NPT

SINGLE PRESSURE





Pressure Switches

				
SERIES	AP - page 98	A2 - page 99	MVS - page 99	CXA - page 100
Set Point Range	10 in w.c. VAC to 125 psig (2.5 kPa VAC to 8.6 bar)	5 to 150 psig (.34 to 10 bar)	3 to 330 in w.c. VAC (8 to 822 mbar VAC)	15 to 150 psig (1.0 to 10.3 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	Steel and Buna-N 04 316 SS and Teflon®	Kapton® and brass	Polycarbonate and polyurethane	Silicone, steel, and SS
Temperature Limits	-30 to 150°F (-35 to 66°C)	-40 to 250°F (-40 to 121°C)	40 to 150°F (4 to 66°C)	140°F (60°C)
Pressure Limits	160 psig (11 bar)	500 psig (34 bar)	330 in w.c. (822 mbar)	204 psig (14.1 bar)
Power Requirement	None	None	None	None
Repeatability	Consult factory	5%	20%	±5 psig (.3 bar)
Adjustable Deadband	No	No	No	Yes
Set Point Indication	Yes	No	No	No
Enclosure Rating	GP, WP, or EXP	GP or submersible	GP	GP
Switch Type	SPDT or DPDT	SPST	SPDT	SPST NO or NC
Multiple Stages	No	No	No	No
Process Connection	1/4" female NPT	1/8" male NPT	Consult factory	1/4" female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.






SINGLE PRESSURE

Pressure Switches

				
SERIES	A1F - page 96	A1PS/A1VS - page 97	APS/AVS - page 97	A6 - page 98
Set Point Range	2 to 450 psig (.14 to 10.3 bar)	28" Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)	28" Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)	.5 to 150 psig (.03 to 10.3 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	Fluorocarbon and 316 SS	Zinc and Buna-N	17-4 PH SS and 303 SS	Polyimide with brass or 304 SS
Temperature Limits	-40 to 175°F (-40 to 80°C)	-31 to 185°F (-35 to 85°C)	-65 to 225°F (-54 to 107°C)	-40 to 248°F (-40 to 120°C)
Pressure Limits	750 psig (51 bar)	600 psig (41 bar)	750 psig (51 bar)	500 psig (34 bar)
Power Requirement	None	None	None	None
Repeatability	Consult factory	Consult factory	Consult factory	±10%
Adjustable Deadband	No	No	No	No
Set Point Indication	Yes	Yes	Yes	No
Enclosure Rating	GP or WP	GP	GP	GP or WP
Switch Type	SPDT	SPDT	SPDT	(1) SPST NO and (1) SPST NC
Multiple Stages	No	No	No	No
Process Connection	1/4" female and 1/2" male NPT	1/4" male NPT	1/8" mail NPT	1/4" male NPT

HIGH SINGLE PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers

					
SERIES	681 - page 100	644 - page 101	682 - page 102	672 - page 102	673 - page 103
Ranges	1 to 100 psi	Vacuum, 15 to 1000 psig	25 to 10,000 psi	10 to 400 in w.c.	Compound, 1 to 1000 psi
Accuracy	±0.20% FS	±0.05% FS	±0.13% FS	±0.25% FS	±0.25% FS
Wetted Materials	316L SS	17-4 PH SS	17-4 PH SS	318 Duplex SS, Ceramic, fluoroelastomer	17-4 PH SS
Comp. Temp. Limits	20 to 180°F (-7 to 80°C)	-4 to 140°F (-20 to 60°C)	-4 to 176°F (-20 to 80°C)	-5 to 140°F (-20 to 60°C)	4 to 212°F (-20 to 100°C)
Oper. Temp. Limits	-40 to 260°F (-40 to 125°C)	-40 to 185°F (-40 to 85°C)	-40 to 260°F (-40 to 125°C)	-40 to 212°F (-40 to 100°C)	-40 to 260°F (-40 to 125°C)
Output Signal	4 to 20 mA	0 to 10 VDC (4-wire) or 4 to 20 mA (2-wire)	4 to 20 mA	4 to 20 mA or 0 to 5 VDC	4 to 20 mA
Elec. Connection	15 ft (4.5 m) multi-conduit cable	3' cable or 6-pin male bayonet connector	2 ft (61 cm) multi-conductor cable	Large DIN 43650 connector with mating plug	2 ft (61 cm) multi-conductor cable
Process Connection	1-1/2" or 2" sanitary clamp	1/4" male NPT	1/4" male or female NPT or BSPT	1/4"-18 male NPT	1/4" male NPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)

HIGH SINGLE PRESSURE - INDICATING

Pressure Transmitters and Transducers

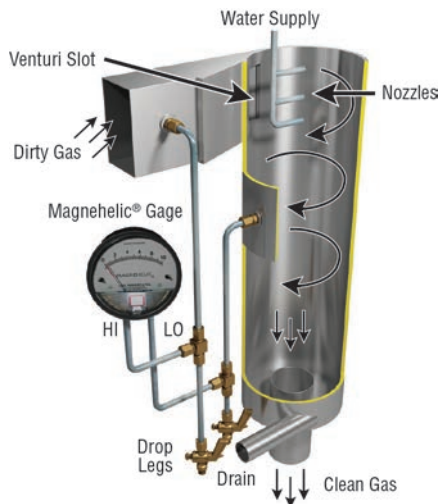
					
SERIES	DSGT - page 89	EDA - page 91	626/628-CB - pages 104-105	IWP - page 107	3200G - pages 108-109
Ranges	30 to 20,000 psig & compound ranges	20 to 3000 psig	Up to 300 psia, 8000 psig, 16 bar abs, 550 bar	30 to 1000 psig	-14.5 psig to 8500 psig
Accuracy	±0.25% FS	±1% FS	626: ±0.25% FS; 628: ±1% FS	±0.5% FS	±0.075% FS
Wetted Materials	17-4 SS, 316 SS	316L SS	316, 316L SS	304 and 316 SS	316L SS
Comp. Temp. Limits	N/A	32 to 122°F (0 to 50°C)	0 to 175°F (0 to 79°C)	-22 to 203°F (-30 to 95°C)	N/A
Oper. Temp. Limits	14 to 140°F (-10 to 60°C)	20 to 140°F (-6.6 to 60°C)	0 to 200°F (0 to 94°C)	32 to 158°F (0 to 70°C)	-40 to 185°F (-40 to 85°C)
Output Signal	4 to 20 mA	4 to 20 mA, 1 to 6 VDC, 1 to 5 VDC, 0 to 5 VDC, or 0 to 10 VDC	4 to 20 mA	4 to 20 mA	4 to 20 mA or HART® Communication
Elec. Connection	3' flying leads	Screw-type removable terminal blocks with (2) 1/2" female NPT conduit connections	Terminal block, 1/2" female NPT conduit	1/2" female NPT	(2) 1/2" female NPT conduit, screw terminal
Process Connection	1/2" male NPT	1/4" male NPT, 1/4" male BSPT, or 7/16" SAE	1/4" male or female NPT or BSPT	1/2" female NPT	1/2" female NPT
Enclosure Rating	NEMA 4X	NEMA 4X (IP66)	NEMA 4X (IP66)	IP65	NEMA 4X (IP66)

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

HIGH SINGLE PRESSURE - NON-INDICATING

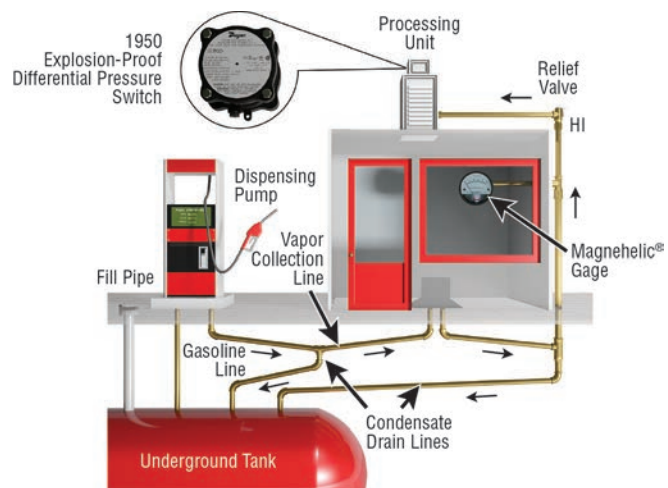
Pressure Transmitters and Transducers

					
SERIES	FDT - page 103	626/628-GH - pages 104-105	628CR - page 106	636 - page 107	IS626 - page 110
Ranges	100 to 10,000 psi	Up to 300 psia, 8000 psig, 16 bar abs, 550 bar	30 to 500 psig; 4 to 400 bar	15 to 300 psi	15 to 8000 psig; 15 to 30 psia
Accuracy	±0.5% FS	626: ±0.25% FS; 628: ±1% FS	±1% FS	±0.30% FS	±0.25% FS; 0.5% FS for absolute ranges
Wetted Materials	316 and 15-5 SS	316, 316L SS	Ceramic, 316L SS, fluoro-elastomer	316L SS	316 and 316L SS
Comp. Temp. Limits	0 to 170°F (-18 to 77°C)	0 to 175°F (0 to 79°C)	0 to 175°F (-18 to 79°C)	-20 to 180°F (-29 to 82°C)	0 to 176°F (-18 to 80°C)
Oper. Temp. Limits	-40 to 200°F (-40 to 93°C)	0 to 200°F (0 to 94°C)	0 to 185°F (-18 to 79°C)	-40 to 212°F (-40 to 100°C)	0 to 176°F (-18 to 80°C)
Output Signal	4 to 20 mA or 0 to 5 VDC	4 to 20 mA	4 to 20 mA	4 to 20 mA or 1 to 5 VDC	4 to 20 mA
Elec. Connection	4-pin	Cable, DIN connector, or 4-pin M12	Cable or DIN connector	2 ft (61 cm) cable, 3/4" female NPT conduit	3' cable or 4-pin M-12 connector
Process Connection	7/16-20 UNF male flush diaphragm; 1/4" male NPT	1/4" male or female NPT or BSPT	1/4" male NPT or 1/4" male BSPT	1/2" female NPT	1/4" male or female NPT or BSPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)



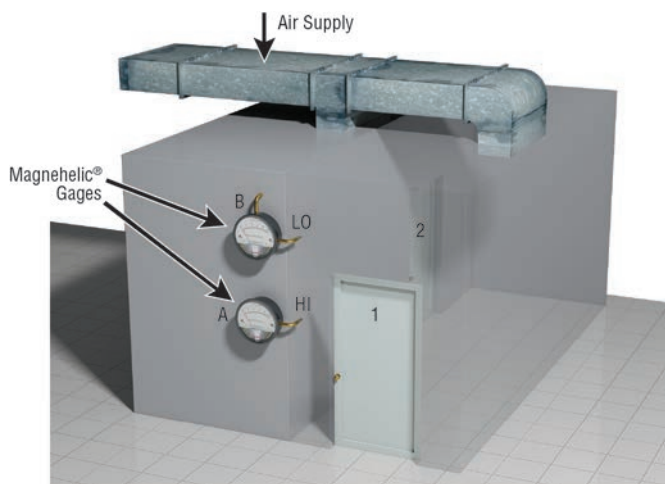
Differential pressure gage assists operator in adjusting venturi pressure drop in dust scrubber.

This scrubber design removes unwanted dust or particulate matter from air or gas using an adjustable throat venturi. To adjust the pressure drop across the venturi, a jack-screw-actuated sliding vane varies the slot width. A permanently mounted Dwyer® Magnehelic® differential pressure gage indicates the venturi pressure drop while the operator adjusts to the desired or design setting. Where water may possibly enter the gage sensing lines, as in this application, drop legs with drain valves are needed to permit draining the lines at their lowest point. Good engineering practice dictates that the Magnehelic® gage always be mounted above the sensing tap when possible to prevent moisture accumulation in the lines and gage. At minimum, mount the gage above the lowest point in the sensing lines.



Gasoline vapor recovery system.

Some area pollution control agencies require that 90% or more of gasoline vapor vented at service stations when fuel is dispensed must be prevented from venting to atmosphere. Using a dual hose dispenser, this vapor recovery system is a vacuum assist, vapor burnoff type. The blower creates a low vacuum at the nozzle, routing vapor from the automobile tank to underground storage tanks. As uncondensed vapor pressure reaches 2 in to 3 in w.c. pressure, a Dwyer 1950 Series explosion-proof differential pressure switch activates a rooftop burnoff unit, which ignites excess vapor. The Magnehelic® differential pressure gage mounted on the station wall monitors tank pressure to verify system operation. The gage is calibrated in inches of gasoline, from +6 to -2. This allows the operator to determine the necessary level correction due to tank pressure prior to dipsticking the tanks through the fill pipe.



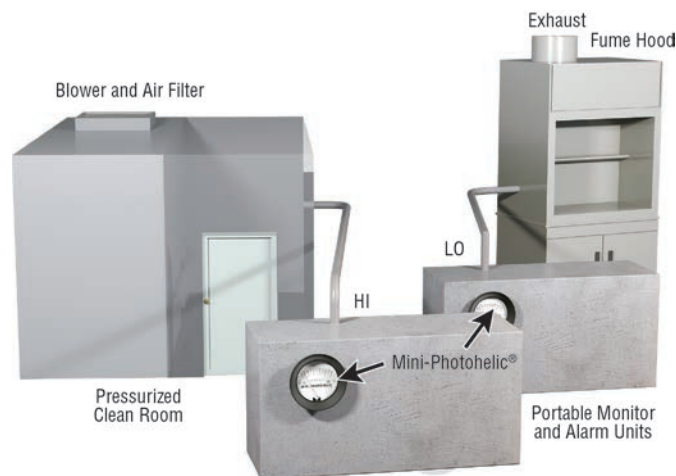
Dwyer® gages indicate pressurization of special rooms.

A zero-center Dwyer® Magnehelic® differential pressure gage with an 0.25 in w.c. range either side of zero makes an effective monitor for proper operation of room pressurization systems. In the example, differential gage B has its high pressure port open to room 2 and its low pressure port to room 1; gage A has its high pressure port open to room 1 and its low pressure port open to the atmosphere. With the makeup air supply damper adjusted properly, room 2 will be a higher pressure than room 1 which is at higher than atmospheric pressure; both gages will read positive. Should the air supply to room 2 be obstructed, gage B will read negative. If the air supply fails entirely, both gages will read zero. For even better security, a Photohelic® switch/gage will provide automatic alarm or start-up of a backup system.



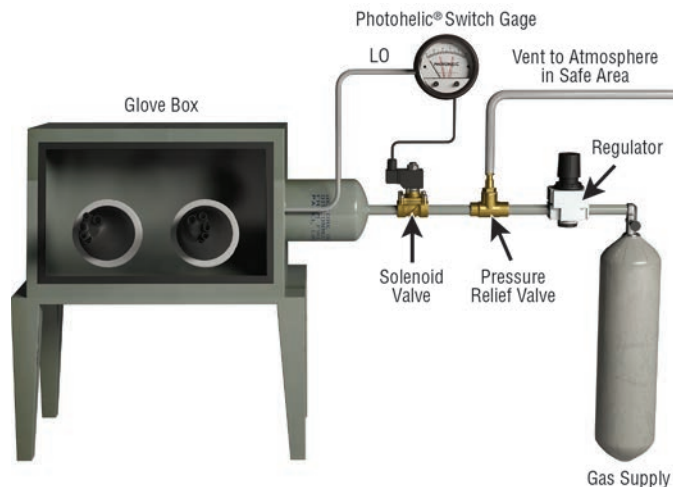
Filling scuba diver air tanks.

The Dwyer® Series DPG with oxygen cleaning and 5000 psi range is used in gas blending applications for filling scuba diver's air tanks. The DPG is the master mixing gage in this manifold apparatus. Two or three gases may be blended with the manifold to produce the appropriate blend of breathable gas depending on the diver and the depths they will reach. With the flow adjustment knobs and the 0.25% full scale accuracy DPG, precise tank charging rates are maintained.



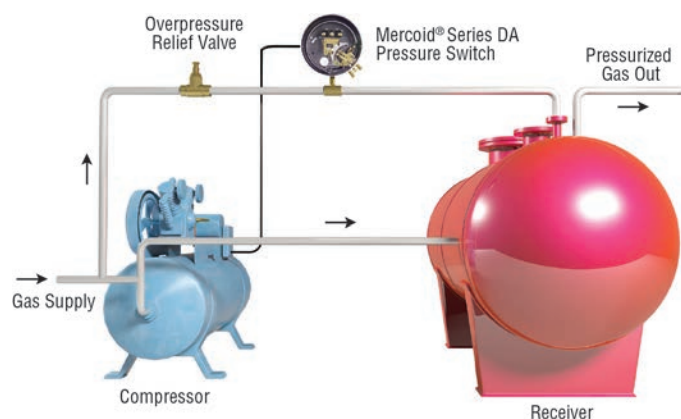
Compact switch/gage monitors pressure, actuates alarm.

This portable pressure monitor alarm utilizes a Dwyer® Mini-Photohelic® differential pressure switch/gage to monitor either positive pressure, as in a clean room, or negative pressure, as in a fume or paint spray hood. It sounds an alarm, both audible and visual, when pressure exceeds either a preset high or low limit. The unit can be used temporarily to verify proper operation after initial installation. Or it can be mounted permanently for continuous monitoring. In applications where a single fixed alarm pressure level is sufficient, a differential pressure switch can be used instead.



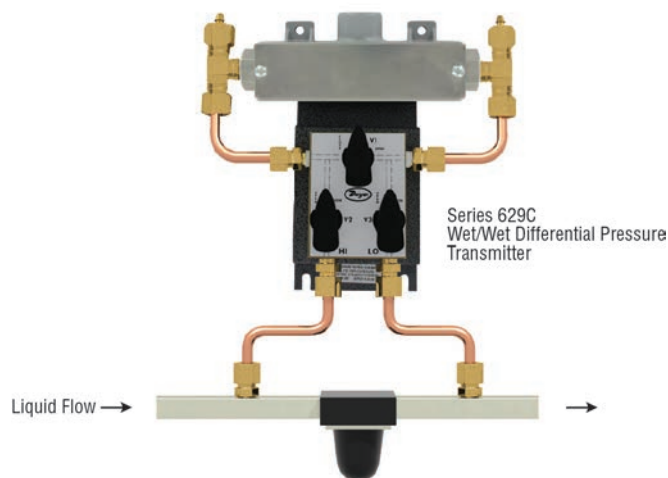
Zero-center switch/gage controls the inert atmosphere in glove box.

A controlled inert atmosphere "glove-box" is used in the fields of physical chemistry and metallurgy for handling and welding special or hazardous materials. A Dwyer® Photohelic® differential pressure switch/gage serves as an automatic and readily adjustable pressure control for the helium, argon or nitrogen gas used in the system. The box is first evacuated, then pressurized with the required gas. Therefore, a zero-center Photohelic® switch/gage is used, permitting both pressure and vacuum to be read and controlled by a single gage. Use of the low pressure gage connection (rear chamber of gage) and a Buna-N diaphragm is suggested to minimize leaks from or to the atmosphere.



Mercoid® Series DA pressure switch maintains desired gas pressure in tank.

Demand for compressed gas varies in this gas line. So a Mercoid® Series DA adjustable deadband pressure switch is included to turn the compressor on at low pressure and off when the maximum pressure is reached.



Three-valve manifold simplifies installation of wet/wet differential pressure transmitter.

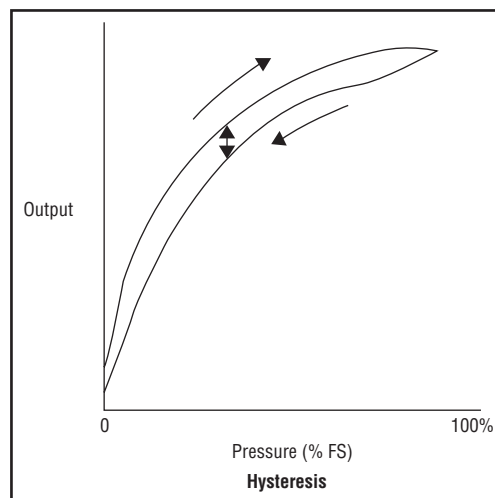
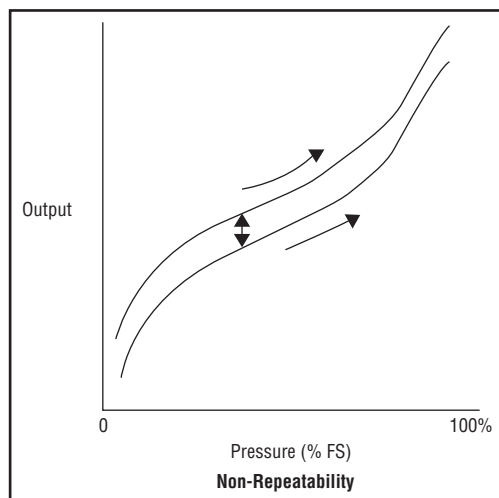
When using differential pressure transmitters in fluid applications, it is essential to periodically make sure that there is no air in the system, as this can cause erroneous readings. Unfortunately, the necessary three-valve bleed system is often expensive and large, making installation difficult and bulky. For this reason, Dwyer Instruments, Inc. offers the 3V option on all 629C Wet/Wet Differential Pressure Transmitters. This compact, lightweight, and economical bleed manifold is shipped factory-installed on the 629C, eliminating the hassle of constructing a custom apparatus. The 629C, when combined with the three-valve option, makes for an ideal setup to monitor hydraulic filter clogging or other fluid pressure sensing applications.

PRESSURE SENSOR ACCURACY

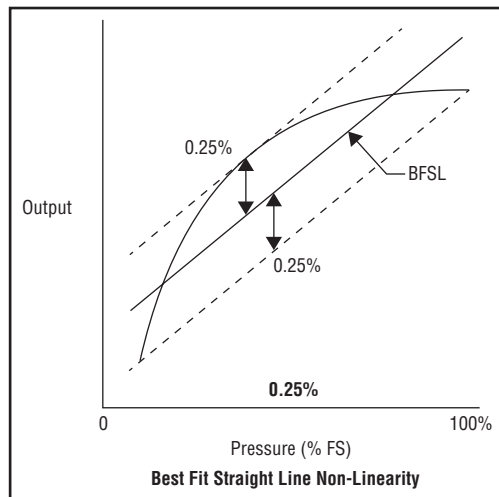


What is accuracy? The International Electrotechnical Commission (IEC) definition of accuracy is maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure. Unfortunately when it comes to defining accuracy for a pressure sensor it's more complicated. Accuracy has a large effect on the cost of a pressure sensor or even more importantly, the quality or efficiency of the process it is measuring. It is important to understand what factors determine accuracy and what questions to ask when selecting a sensor so that an apples-to-apples comparison can be made instead of apples-to-oranges.

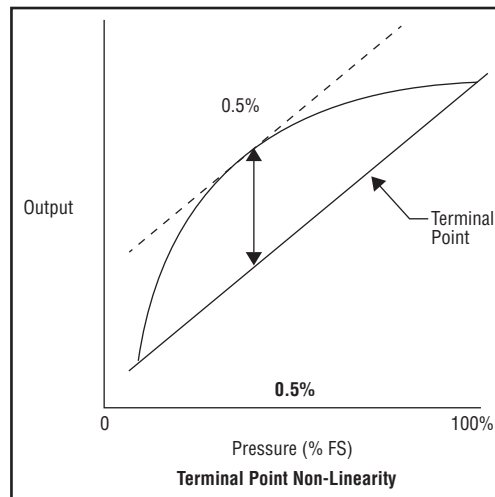
Even though there isn't a defined standard for pressure sensor accuracy there is an IEC standard that defines factors that make-up accuracy. IEC 61298-2 states that accuracy must include Hysteresis, Non-Repeatability and Non-Linearity. Non-Repeatability and Hysteresis are well defined. Hysteresis is the maximum difference in sensor output at a pressure when that pressure is first approached with pressure increasing and then approached with pressure decreasing during a full span pressure cycle. Non-Repeatability is the maximum difference in output when the same pressure is applied, consecutively, under the same conditions and approaching from the same direction.



Where manufactures start to differentiate is with Non-Linearity. IEC 61298-2 lists three methods of Non-Linearity, the two most popular methods used by sensor manufactures are the Best Fit Straight Line Non-Linearity and Terminal Point Non-Linearity. Usually the method of non-linearity used will be specified with the sensors accuracy as BFSL or Terminal Point Method. Why is it important to understand the difference between these two methods? Based on the Non-Linearity characteristics of a sensor, it could have two vastly different Non-Linearity percentages. The following diagram shows how the same sensor can have two Non-Linearity percentages.



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PRESSURE SENSOR ACCURACY

IEC 61298-2 identifies which factors make up accuracy (Non-Linearity, Non-Repeatability, Hysteresis) but the IEC standard does not specify how these factors are combined into a single accuracy. The methods in which the values are combined have a substantial impact on the total accuracy. Some manufactures simply sum the three factors while others use mathematical equations such as Root of the Sum Squared or Root of the Mean Squared to combine Non-Linearity, Non-Repeatability, and Hysteresis into a total accuracy percentage. The following examples show how the same transmitter can have three accuracy percentages depending on which equation is used.

Non-Linearity – 0.5% BFSL
Non-Repeatability – 0.05% FS.
Hysteresis – 0.1% FS.

$$RSS = \sqrt{(Non-Linearity)^2 + (Hysteresis)^2 + (Non-Repeatability)^2}$$

$$RSS = \sqrt{(0.50)^2 + (0.10)^2 + (0.05\%)^2}$$

$$RSS = 0.51\%$$

Root of the Sum Squared

$$RMS = \sqrt{\frac{(Non-Linearity)^2 + (Hysteresis)^2 + (Non-Repeatability)^2}{3}}$$

$$RMS = \sqrt{\frac{(0.50)^2 + (0.10)^2 + (0.05\%)^2}{3}}$$

$$RMS = 0.30\%$$

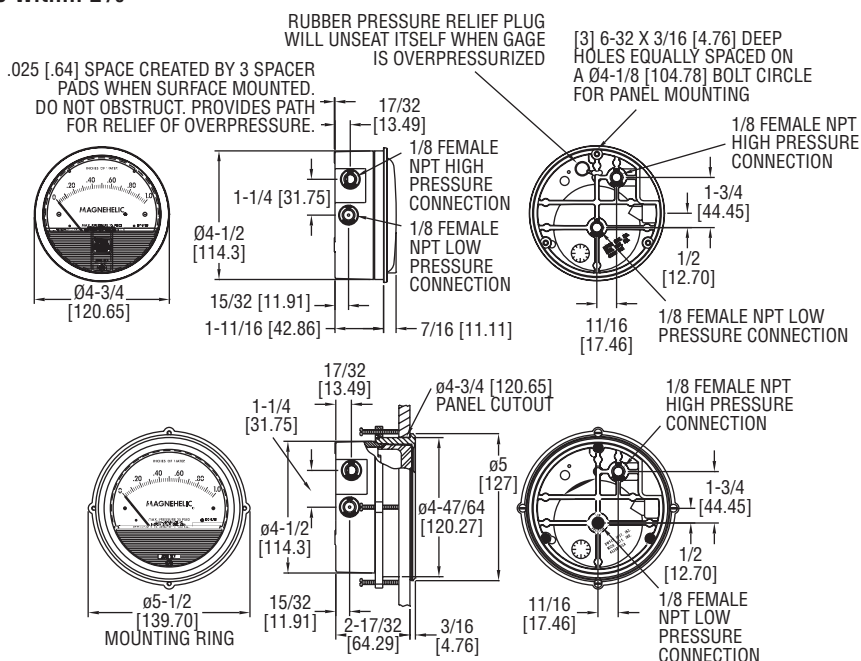
Root of the Mean Squared

Sum = Non-Linearity + Hysteresis + Non-Repeatability
Sum = 0.5 + 0.1 + 0.05
Sum = 0.65%
Summed Factors

So why is this important? Accuracy has a price. The cost of a pressure sensor is a function of its accuracy, the more accurate the sensor the more expensive it will be. From a manufacturing point of view, the wrong sensors can cause expensive quality or efficiency problems. That is why it is important to understand how manufacturers calculate accuracy and recognize what parameters to look at when comparing pressure sensors. By understanding how manufacturers calculate accuracy, you will be able to make a more informed decision when evaluating pressure sensors, ensuring the next sensor you select will have the required accuracy at the right price for the application.

MAGNEHELIC® DIFFERENTIAL PRESSURE GAGES

Indicate Positive, Negative or Differential, Accurate within 2%



Select the **SERIES 2000** Magnehelic® Gage for high accuracy--guaranteed within 2% of full scale--and for the wide choice of 81 models available to suit your needs precisely. Using Dwyer's simple, frictionless Magnehelic® gage movement, it quickly indicates low air or non-corrosive gas pressures--either positive, negative (vacuum) or differential. The design resists shock, vibration and over-pressures.

FEATURES/BENEFITS

- Easy to read gage through undistorted plastic face permits viewing from far away
- Patented design provides quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combine to provide long-service life and minimized down-time

APPLICATIONS

- Filter monitoring
- Air velocity with Dwyer pitot tube
- Blower vacuum monitoring
- Fan pressure indication
- Duct, room or building pressures
- Clean room positive pressure indication

SPECIFICATIONS

Service: Air and non-combustible, compatible gases (natural gas option available). Note: May be used with hydrogen. Order a Buna-N diaphragm. Pressures must be less than 35 psi.

Wetted Materials: Consult factory.

Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.

Accuracy: $\pm 2\%$ of FS ($\pm 3\%$ on -0, -100PA, -125PA, -10MM and $\pm 4\%$ on -00, -60PA, -6MM ranges), throughout range at 70°F (21.1°C).

Pressure Limits: -20 in Hg to 15 psig† (-0.677 to 1.034 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).

Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. ①

Temperature Limits: 20 to 140°F* (-6.67 to 60°C). -20°F (-28°C) with low temperature option.

Note: For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

*Low temperature models available as special options.

Size: 4" (101.6 mm) diameter dial face.

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

Process Connections: 1/8" female NPT duplicate high and low pressure taps - one pair side and one pair back.

Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).

Standard Accessories: Two 1/8" NPT plugs for duplicate pressure taps, two 1/8" pipe thread to rubber tubing adapter, and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for three adapters in MP & HP gage accessories.)

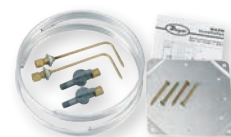
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II). Note: -SP models not RoHS approved.

ACCESSORIES

Model	Description
A-432	Portable kit; combine carrying case with any Magnehelic® gage of standard range, except high pressure connection. Includes 9 ft (2.7 m) of 3/16" ID rubber tubing, standhang bracket and terminal tube with holder
A-605	Air filter gage accessory kit; adapts any standard Magnehelic® gage for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft (1.5 m) lengths of 1/4" aluminum tubing, two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves
A-605B	Air filter gage accessory kit; air filter kit with two plastic open/close valves, two 4" steel static tips, plastic tubing and mounting flange
A-605C	Air filter gage accessory kit; air filter kit with two plastic open/close valves, two plastic static tips, plastic tubing and mounting flange



A-432



A-605

MAGNEHELIC® DIFFERENTIAL PRESSURE GAGES

Indicate Positive, Negative or Differential, Accurate within 2%

Bezel provides flange for flush mounting in panel.

Clear plastic face is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

Precision litho-printed scale is accurate and easy to read.

Calibrated range spring is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

Red tipped pointer of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.

Pointer stops of molded rubber prevent pointer over-travel without damage.

"Wishbone" assembly provides mounting for helix, helix bearings and pointer shaft.

Jeweled bearings are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.

Helix is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

Zero adjustment screw is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.

O-ring seal for cover assures pressure integrity of case.

OVERPRESSURE PROTECTION

Blowout plug is comprised of a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (1.7 bar). To provide a free path for pressure relief, there are four spacer pads which maintain 0.023" clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

The blowout plug is not used on models above 180" of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.

The blowout plug should not be used as a system overpressure control. High supply pressures may still cause the gage to fail due to over pressurization, resulting in property damage or serious injury. Good engineering practices should be utilized to prevent your system from exceeding the ratings of any component.

Die cast aluminum case is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

Silicone rubber diaphragm with integrally molded O-ring is supported by front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

Samarium Cobalt magnet mounted at one end of range spring rotates helix without mechanical linkages.

MODEL CHART

Model		Range, Inches of Water	Model	Range, PSI	Model	Range, MM of Water	Model	Range, kPa	Dual Scale Air Velocity Units For use with pitot tube	
2000-00N†**	0.05-0.2	2201	0-1	2000-6MM†**	0-6	2000-0.5KPA	0-0.5	Model	Range, in w.c./ Velocity F.P.M.	
2000-00†**	0-25	2202	0-2	2000-10MM†*	0-10	2000-1KPA	0-1			
2000-0†*	0-50	2203	0-3	2000-15MM	0-15	2000-1.5KPA	0-1.5			
2001	0-1.0	2204	0-4	2000-25MM	0-25	2000-2KPA	0-2			
2002	0-2.0	2205	0-5	2000-30MM	0-30	2000-2.5KPA	0-2.5			
2003	0-3.0	2210*	0-10	2000-50MM	0-50	2000-3KPA	0-3			
2004	0-4.0	2215*	0-15	2000-80MM	0-80	2000-4KPA	0-4			
2005	0-5.0	2220*	0-20	2000-100MM	0-100	2000-5KPA	0-5			
2006	0-6.0	2230**	0-30	2000-125MM	0-125	2000-8KPA	0-8			
2008	0-8.0	Model	Range, CM of Water	2000-150MM	0-150	2000-10KPA	0-10			
2010	0-10			2000-200MM	0-200	2000-15KPA	0-15			
2012	0-12			2000-250MM	0-250	2000-20KPA	0-20			
2015	0-15			2000-300MM	0-300	2000-25KPA	0-25			
2020	0-20			Zero Center Ranges		2000-30KPA	0-30			
2025	0-25			2300-6MM†**	3-0-3	Zero Center Ranges				
2030	0-30			2300-10MM†*	5-0-5	2300-1KPA	1.5-0.5			
2040	0-40			2300-20MM†*	10-0-10	2300-2KPA	1-0-1			
2050	0-50			Model		2300-2.5KPA	1.25-0.1.25			
2060	0-60			2000-60NPA†**	10-0-50	2300-3KPA	1.5-0-1.5			
2080	0-80			2000-60PA†**	0-60	Dual Scale English/Metric Models				
2100	0-100			2000-100PA†*	0-100	Model	Range, in w.c.	Range, Pa or kPa		
2120	0-120	2000-125PA†*		0-125	2000-00D†**	0-25	0-62 Pa			
2150	0-150	2000-250PA	0-250	2000-0D†*	0-0.5	0-125 Pa				
2160	0-160	2000-300PA	0-300	2001D	0-1.0	0-250 Pa				
2180*	0-180	2000-500PA	0-500	2002D	0-2.0	0-500 Pa				
2250*	0-250	2000-750PA	0-750	2003D	0-3.0	0-750 Pa				
Zero Center Ranges				2000-1000PA	0-1000	2004D	0-4.0	0-1.0 kPa		
2300-00†**	0.125-0-0.125	2300-4CM	2-0-2	Zero Center Ranges		2005D	0-5.0	0-1.25 kPa		
2300-0†*	25-0-25	2300-10CM	5-0-5	Model	Range, Pa	2006D	0-6.0	0-1.5 kPa		
2301	5-0-5	2300-30CM	15-0-15	2300-60PA†**	30-0-30	2008D	0-8.0	0-2.0 kPa		
2302	1-0-1	Model	Range, Pa	2300-100PA†*	50-0-50	2010D	0-10	0-2.5 kPa		
2304	2-0-2			2300-120PA	60-0-60	2015D	0-15	0-3.7 kPa		
2310	5-0-5			2300-200PA	100-0-100	2020D	0-20	0-5 kPa		
2320	10-0-10			2300-250PA	125-0-125	2025D	0-25	0-6.2 kPa		
2330	15-0-15			2300-300PA	150-0-150	2050D	0-50	0-12.4 kPa		
				2300-500PA	250-0-250	2060D	0-60	0-15 kPa		
				2300-1000PA	500-0-500					
†These ranges calibrated for vertical scale position • Accuracy ±3% ** Accuracy ±4% *MP option standard **HP option standard										

†These ranges calibrated for vertical scale position • Accuracy ±3% ** Accuracy ±4% *MP option standard **HP option standard

VELOCITY AND VOLUMETRIC FLOW UNITS

Scales are available on the Magnehelic® that read in velocity units (FPM, m/s) or volumetric flow units (SCFM, m³/s, m³/h). Stocked velocity units with dual range scales in inches w.c. and feet per minute are shown above. For other ranges contact the factory. When ordering volumetric flow scales please specify the maximum flow rate and its corresponding pressure. Example: 0.5 in w.c. = 16,000 CFM.

ACCESSORIES

Model	Description
A-321	Safety relief valve
A-448	3-piece magnet kit for mounting Magnehelic® gage directly to magnetic surface
A-135	Rubber gasket for panel mounting
A-401	Plastic carry case
A-310A	3-way vent valves. In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage.



A-310A

MAGNEHELIC® GAGE OPTIONS



LED Setpoint Indicator



Adjustable Signal Flag



Transparent Overlay



Mirrored Scale Overlay



Integrated Mounting Plate



OPTION - LED SETPOINT INDICATOR

To order add suffix:	Description
-SP	Bright red LED on right scale shows when setpoint is reached. Field adjustable from gage face, unit operates on 12-24 VDC. Setpoint indicator option comes with medium pressure (MP) bezel.

Note: 4-13/16" hole for flush mounting.

OPTION - ADJUSTABLE SIGNAL FLAG

To order add suffix:	Description
-ASF	Integral with plastic gage cover. Available for most models except those with medium or high pressure construction. Can be ordered with gage or separate.

OPTIONS - TRANSPARENT OVERLAYS

To order add suffix:	Description
-R	Red (to highlight and emphasize critical pressures)
-Y	Yellow (to highlight and emphasize critical pressures)
-G	Green (to highlight and emphasize critical pressures)

OPTION - MIRRORED SCALE OVERLAY

To order add suffix:	Description
-M	A mirrored scale overlay is also available to assist in reducing parallax error.

OPTIONS - INTEGRATED MOUNTING PLATE

To order add suffix:	Description
-AHU1	Furnished with attached surface mounting plate
-AHU2	Furnished with attached surface mounting plate and including A-481 installer kit (2 plastic static pressure tips and 7' of PVC tubing)

OPTIONS - FOR HIGH STATE PRESSURE APPLICATIONS

To order add suffix:	Description
-MP	Medium Pressure Option: For pressures to 35 psig
-HP	High Pressure Option: For pressures to 80 psig

OPTIONS - OPTIONAL BEZELS

To order add suffix:	Description
-SB	Stainless Steel Bezel Option: 304 stainless steel electro polished Ra 16 finished bezel.
-CB	Chrome Bezel Option: A chrome plated aluminum bezel for an aesthetically pleasing finish when mounting on metal surfaces such as control panels.

OPTIONS

To order add suffix:	Description
-LT	Low temperatures to -20°F (-28°C)
-NIST	NIST traceable calibration certificate
-FC	Factory calibration certificate

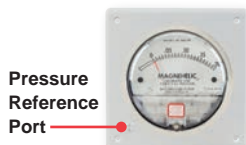
MAGNEHELIC® GAGE MOUNTING ACCESSORIES



A-610



A-369



Pressure
Reference
Port

A-464



A-299



A-286



A-300



A-368



A-371

A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. Complete mounting and connection fittings plus instructions are furnished with each instrument. A 4-9/16" hole is required for flush panel mounting.

Flush mounting is easily accomplished with the new A-300 Flush Mounting bracket. This bracket provides a solution to quickly and conveniently flush mount the Magnehelic®. The A-300 is ideal for mounting the Magnehelic® on control panel doors. The A-368 is a simple bracket for quickly surface mounting the Magnehelic® gage. After securing the Magnehelic® to the A-368 bracket, mount the bracket on any flat surface.

The A-369 allows the Magnehelic® to be easily carried to locations where pressure readings need to be taken. The A-369 can stand on its own or hang on a nail or hook.

ACCESSORIES	
Model	Description
A-610	Pipe mounting kit for installing on 1-1/4" to 2" horizontal or vertical pipe
A-286	Magnehelic® gage panel mounting flange
A-369	Stand-hang bracket, aluminum, for Magnehelic® gage
A-300	Flush mounting bracket
A-464	Flush mount kit for Magnehelic® gage
A-368	Surface mounting plate, aluminum, for Magnehelic® gage
A-299	Mounting bracket, flush mount for Magnehelic® gage, bracket is then surface mounted, steel with gray hammerloid epoxy finish
A-371	Surface mounting bracket, use with medium pressure (-MP) or high pressure (-HP) models only

SERIES A-320

INSTRUMENT ENCLOSURE

Protects Various Instruments



A-320-A



A-320-A With Gage Installed



A-320-B



A-320-B With Gage Installed

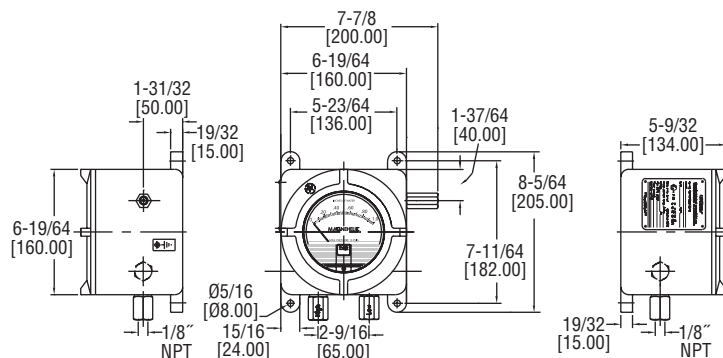
SERIES A-320 Instrument Enclosure protects instruments in all applications. The A-320-A fits standard Magnehelic® size instruments (4-9/16" diameter) and the A-320-B fits standard 3000MR Photohelic® switch/gage size instruments (4-13/16" diameter). Both models include silicone tubing, gage barbs and mounting hardware.

MODEL CHART	
Model	Compatible Instruments
A-320-A	2000 Magnehelic® Gage, DM-1000 Digital Differential Pressure Gage, DM-2000 Differential Pressure Transmitter
A-320-B	3000MR Photohelic® Switch/Gage, Series 605 Magnehelic® Differential Pressure Transmitter, DH3 Digihelic® Pressure Controller, 2000 Magnehelic® Gage with medium and high pressure options

SPECIFICATIONS	
Housing: ABS.	
Process Connections: Anodized aluminum.	
Enclosure Rating: NEMA 1 (IP10). Note: Check instruments rating.	
Weight: Model A-320-A: 11.29 oz (320 g); A-320-B: 16.23 oz (420 g).	
Gage Size Opening: A-320-A: 4-9/16 in (115.89 mm); A-320-B: 4-13/16 in (122.24 mm).	

ATEX APPROVED SERIES 2000 MAGNEHELIC® DIFFERENTIAL PRESSURE GAGE

Magnehelic® Gage in Flame-Proof ATEX Enclosure



The popular **SERIES AT22000** Magnehelic® Differential Pressure Gage is now available in a flame-proof ATEX enclosure with the new ATEX approved AT22000 Series. This gage can indicate positive, negative or differential pressures and is accurate within 2%.

FEATURES/BENEFITS

- ATEX housing provides all the capabilities and value of the Magnehelic® in a flame & explosion proof enclosure
- Quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time
- High impact strength and high temperature rated for applications where hazardous environments exist

APPLICATIONS

- Fan and blower pressures
- Filter resistance
- Air velocity
- Furnace draft
- Liquid levels with bubbler systems
- Pressure in fluid amplifier or fluidic systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

RANGE CHART					
Model	Range in w.c.	Model	Range in w.c.	Model	Range in w.c.
2000-00N	.05 to 0 to .2	2006	0 to 6.0	2040	0 to 40
2000-00	0 to .25	2008	0 to 8.0	2050	0 to 50
2000-0	0 to .50	2010	0 to 10	2060	0 to 60
2001	0 to 1.0	2012	0 to 12	2080	0 to 80
2002	0 to 2.0	2015	0 to 15	2100	0 to 100
2003	0 to 3.0	2020	0 to 20	2120	0 to 120
2004	0 to 4.0	2025	0 to 25	2150	0 to 150
2005	0 to 5.0	2030	0 to 30	2160	0 to 160

MODEL CHART										
Example	AT2	2001	-X	X	-A	O	1	X	T2	AT22001-XX-AO1XT2
Housing	AT2									ATEX Approved Series 2000 Magnehelic® Differential Pressure Gage
Range		2XXX								Specify range by using Magnehelic® model number. See range chart.
Pressure Rating			X MP HP							Standard from -20 in Hg to 15 psig static pressure Medium pressure-max. static 35 psig High pressure-max. static 80 psig
Temperature Rating				X LT						Standard temperature limits -6.67 to 60°C Low temperature limit to -28.8°C
Housing Material					A					Aluminum
Cover						O				Glass cover
Process Connection							1 2			1/8" NPT female brass ports 1/8" NPT female SS ports
Overpressure Plug								X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag									T2	SS information label

For other engineering unit ranges contact the factory.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Magnehelic® Housing: Die cast aluminum case & bezel with acrylic cover; Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.

Housing Material: Aluminum.

Finishing: Texture epoxy coat RAL7038.

Accuracy: ±2% of FS (±3% on -0, -100PA, -125PA, -10MM and ±4% on -00, -60PA, -6MM ranges), throughout range at 70°F (21.1°C).

Pressure Limits: -20 in Hg to 15 psig (-0.677 bar to 1.034 bar); MP option; 35 psig (2.41 bar), HP option; 80 psig (5.52 bar).

Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. ①

Temperature Limits: 20 to 140°F (-6.67 to 60°C); Low temperature option: -20°F (-28.8°C); Case: -76 to 140°F (-60 to 60°C) (**Note:** Product temperature limits are less than case limits).

Mounting Orientation: Diaphragm in vertical position.

Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.

Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.

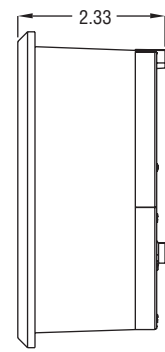
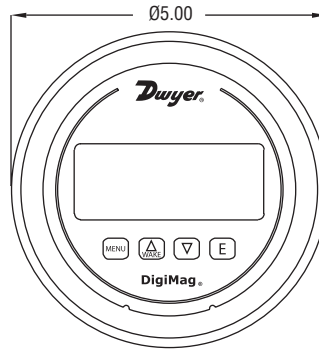
Weight: 8.6 lb (3.9 kg).

ATEX Approved Product from Comhas with ECN: BVI 14ATEX0072.

Agency Approvals: CE 1370 Ex II 2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb IIIC Db T 85°C.

DIGIMAG® DIGITAL DIFFERENTIAL PRESSURE AND FLOW GAGES

24 Volt or Battery Powered, Fits in Magnehelic® Gage Cut-Out



The DigiMag® **SERIES DM-1000** Digital Differential Pressure and Flow Gages monitor the pressure of air and compatible gases just as its famous analog predecessor the Magnehelic® Differential Pressure Gage. All models are factory calibrated to specific ranges. The 4-digit LCD can display readings in common English and metric units so conversions are not necessary. The simplified four button operation reduces set up time and simplifies calibration with its digital push button zero and span.

FEATURES/BENEFITS

- Field programmed reduces installation time
- User selectable parameters for pressure, air velocity or flow permits same device for multiple applications
- Specialized filter set point for alerts when maintenance is due
- Security levels permit matches the correct access to right skill
- Power versatility works with 9-24 VDC or 9 V battery allows deployment in a variety of spaces wired or not

APPLICATIONS

- Filter monitoring
- Air velocity or flow
- Blower vacuum monitoring
- Fan pressure indication
- Duct, room or building pressures
- Clean room positive pressure indication

ACCESSORIES	
Model	Description
A-300	Flat flush mounting bracket
A-286	4-1/2" gage panel mounting flange
A-489	4" straight static pressure tip with flange
A-480	Plastic static pressure tip

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Materials: Glass filled plastic.
Accuracy: ±1% FS including linearity, hysteresis and repeatability; ±2% FS for ranges 1 in w.c. and below.
Temperature Limits: 0 to 140°F (-18 to 60°C).
Compensated Temperature Limits: 32 to 122°F (0 to 50°C).
Long Term Stability: ±1% FS per year.
Thermal Effect: ±0.05% FS/°F typ.; ±0.10% FS/°F for ranges 1 in w.c. and below.
Display: 4-digit LCD (digits: 0.60H x 0.33W).
Display Update: Selectable for 1 second to 10 minutes or update only from button push.
Pressure Limits: Normal and bi-directional ranges 5 in w.c. and lower = 2 psi (13.7 kPa); Normal and bi-directional ranges 10 in w.c. and higher = 11 psi (75 kPa).
Selectable Engineering Units: in w.c., psi, kPa, Pa, mm w.c., mBar, in Hg, mm Hg, FS (0-100%).
Power Requirements: 9 V alkaline battery, included, user replaceable or external power supply 9-24 VDC.
Battery Service Life: Battery life depending on the display update setting: 150 hours (typical) if display update = 1 second; 9 month (typical) if display update = 10 minutes; 1.5 years (typical) if display update is disabled. Battery may last up to four times longer when using lithium-based battery ULTRALIFE U9VL-J.
Current Consumption: 5 mA max.
Electrical Connections: Removable terminal block for 16 to 26 AWG.
Electrical Entry: Cable gland for 0.114 to 0.250" (2.9 to 6.4 mm) diameter cable.
Process Connections: 1/8" (3 mm) ID tubing.
Enclosure Rating: NEMA 4X (IP66).
Weight: 1.18 lb (535 g).
Size: 5" (127 mm) OD front face.
Agency Approvals: CE.

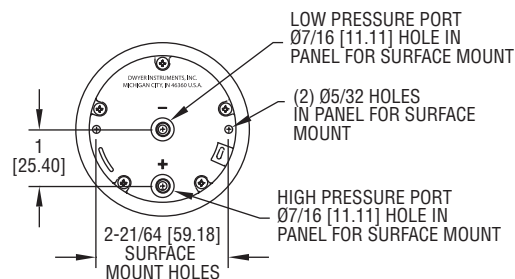
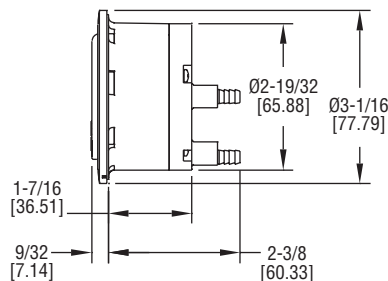
MODEL CHART										
Model	Range									Resolution
	in w.c.	psi	kPa	Pa	mbar	mm w.c.	in Hg	mm Hg	% of FS	in w.c.
DM-1102	0.250	—	0.062	62.20	0.622	6.35	—	0.467	100.0	0.001
DM-1103	0.500	—	0.124	124.5	1.245	12.70	—	0.934	100.0	0.001
DM-1104	1.000	—	0.249	249.1	2.492	25.40	—	1.868	100.0	0.001
DM-1105	2.000	—	0.498	498.2	4.982	50.80	—	3.736	100.0	0.001
DM-1107	5.000	0.181	1.245	1245	12.45	127.0	0.368	9.34	100.0	0.002
DM-1108	10.00	0.361	2.491	2491	24.91	254.0	0.736	18.68	100.0	0.010
DM-1109	15.00	0.543	3.738	3738	37.38	381.0	1.104	28.02	100.0	0.010
DM-1110	25.00	0.903	6.227	6227	62.27	635.0	1.839	46.71	100.0	0.010
DM-1111	50.00	1.806	12.45	—	124.5	1270	3.678	93.42	100.0	0.020
DM-1112	100.0	3.613	24.91	—	249.1	2540	7.355	186.8	100.0	0.100

Contact the factory for available bi-directional ranges from ±0.25 to ±10 in w.c.
Note: For air flow models change -11XX to -12XX.

OPTION	
To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: DM-1103-NIST	

MINIHELIC® II DIFFERENTIAL PRESSURE GAGES

Combining High Accuracy, Compactness, Dependability, and Low Cost



Combining clean design, small size and low cost with enough accuracy for all but the most demanding applications our **SERIES 2-5000** MiniHelic® II gage offers the latest in design features for a dial type differential pressure gage. It is our most compact gage but is easy to read and can safely operate at total pressures up to 30 psig.

FEATURES/BENEFITS

- Removable lens and rear-housing provides easy, cost-effective servicing
- Accuracy and value provides an excellent solution for OEM and user applications
- Durable housing materials make it well-suited for rough environments and total high pressure

APPLICATIONS

- Room positive pressure sensing
- Cabinet air-purging
- Medical respiratory equipment
- Air samplers
- Electronic air cooling systems
- Laminar flow hoods
- Local indication on filter status
- Face velocity on fume hood
- Duct pressures

SPECIFICATIONS

Service: Air and compatible gases.

Wetted Materials: Consult factory.

Housing: Glass filled nylon; acrylic lens.

Accuracy: $\pm 5\%$ of FS at 70°F (21.1°C).

Pressure Limits: 30 psig (2.067 bar) continuous to either pressure connection.

Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).

Size: 2-1/16" (52.39 mm) diameter dial face.

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

Process Connections: Barbed, for 3/16" ID tubing (standard); 1/8" male NPT (optional).

Weight: 6 oz (170.1 g).

Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

Caution: For use only with air or compatible gases.

MINIHELIC® II DIFFERENTIAL PRESSURE GAGES

Combining High Accuracy, Compactness, Dependability, and Low Cost

Housing is molded from strong mineral and glass filled nylon.

Pointer stops of molded rubber prevent pointer over-travel without damage.

Full view lens is removable and molded of acrylic.

Aluminum scale litho-printed black on white, enhances readability.

Red tipped aluminum pointer, rigidly mounted to helix is easy to see.

Wishbone assembly provides mounting for helix, helix bearings, and pointer shaft.

Jewel bearings provide virtually friction-free helix motion.

Helix is free to rotate in jewel bearings. It aligns with magnetic field of magnet to transmit pressure indications to pointer.

Zero adjustment screw, located behind the removable lens, eliminates tampering.

Range spring calibration clamp fixes live length of spring for proper gage calibration and is factory set and sealed.

Silicone rubber diaphragm allows accurate response to a broad range of temperatures and at extremely low pressure. Incorporates blow out area for overpressure protection.

Diaphragm support plates of lightweight aluminum on each side of the diaphragm minimize position or attitude sensitivity and help define pressure area.

Flat leaf range spring reacts to pressure on the diaphragm. Live length is adjustable for calibration. Small amplitude of motion minimizes inaccuracies and assures long life.

Low pressure tap connects to rear chamber.

Coil spring link provides a resilient connection between the diaphragm and the range spring.

Ceramic magnet mounted on a molded bracket at the end of the range spring rotates the helix without direct mechanical linkage.

High pressure tap connects with the front chamber through passageway in the plastic case and a sealing ring molded into the edge of the diaphragm.

MODEL CHART			
Model	Range, Inches of Water	Model	Range, MM of Water
2-5000-0	0-0.5	2-5000-25MM	0-25
2-5001	0-1.0	2-5000-50MM	0-50
2-5002	0-2.0	2-5000-100MM	0-100
2-5003	0-3.0		
2-5005	0-5.0	Model	Range, Pascals
2-5010	0-10	2-5000-125PA	0-125
2-5020	0-20	2-5000-250PA	0-250
2-5040	0-40	2-5000-500PA	0-500
2-5060	0-60		
2-5100	0-100	Model	Range, kPa
		2-5000-1KPA	0-1
		2-5000-3KPA	0-3
Model	Range, PSI		
2-5205	0-5		

OPTIONS	
To order add suffix:	Description
-NPT	1/8" male NPT connections
Example: 2-5001-NPT	
-BB	Bottom barbed surface mount
Example: 2-5001-BB	
-NIST	NIST traceable calibration certificate
Example: 2-5001-NIST	
-FC	Factory calibration certificate
Example: 2-5001-FC	

ACCESSORIES	
Model	Description
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-434	Portable kit
A-489	4" straight static pressure tip with flange
A-497	Surface mounting bracket
A-609	Air filter kit
A-480	Plastic static pressure tip

SURFACE MOUNTING



Optional surface mounting with back mounting plate allows for quick installation to any surface. Process connections are barbed and point downwards. Add -BB for bottom barbed surface mount option.



PANEL MOUNTING



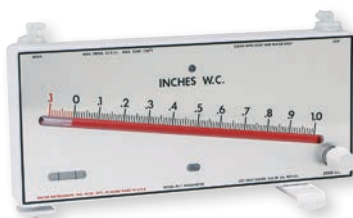
Mounting hardware is supplied with the MiniHelic® II gage for panel mounting through a single hole, 2-5/8" (67 mm) in diameter. Panel thickness up to 1/2" (13 mm) can be accommodated with the hardware supplied. If necessary, surface mounting of the gage can be accomplished by means of two 4-40 screws into the tapped mounting bracket stud holes in the rear of the gage. Surface mounting requires clearance holes in the panel for the two pressure taps.

MARK II MOLDED PLASTIC MANOMETERS

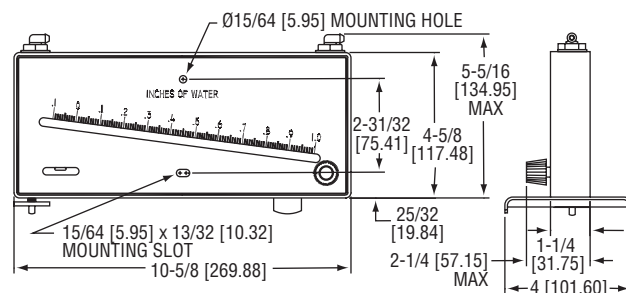
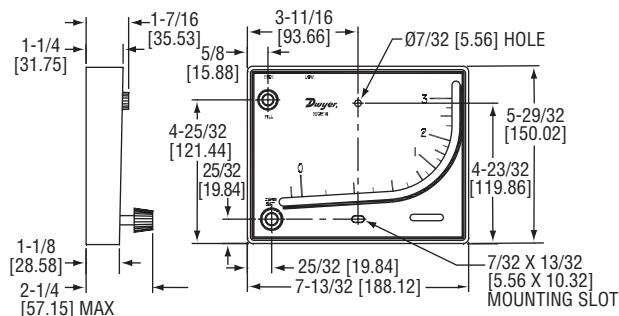
3% Accuracy For Stationary And Portable Applications



Mark II Model No. 25 inclined-vertical manometer.
(shown with optional A-612 portable stand)



Mark II Model No. 40-1 inclined manometer



SERIES MARK II Molded Manometers are of the inclined and inclined-vertical types. The curved inclined-vertical tube of the Model 25 gage provides higher ranges with more easily read increments at low readings. The Model 25 is excellent for general purpose work. The Model 40 inclined gage provides linear calibration and excellent resolution throughout its range. The Model 40 is ideally suited for air velocity and air filter gage applications. Both gage types are capable of pressure measurements above and below atmospheric as well as differential pressure measurements. Included with each Mark II manometer are two tubing connectors for 1/8" pipe or sheet metal ducts, two mounting screws, 1 ounce bottle of indicating fluid, red and green pointer flags and complete instructions.

The Model 25 also includes 8' of flexible double column plastic tubing. Portable operation of the Model 25 is made possible by the use of the optional A-612 portable stand. A short piece of tubing can be slipped over the Model 25 pressure connections to contain the gage fluid in transit.

The Model 40 contains two 4-1/2' lengths of clear plastic tubing, a plastic swing-out stand and leveling screw for portable operation. It also features convenient rapid shutoff pressure connections and integral overpressure safety traps.

FEATURES/BENEFITS

- Broad ranging in easy to read calibrated increments
- Gages ideally suited for general measurements and specific air applications
- Compact, stationary or portable device, make it a simple to use tool for pressure measurement in OEM or user applications

APPLICATIONS

- Paint booths
- Air velocity measurement
- Air filter gage

OEM SPECIALS

All Dwyer® Mark II molded plastic manometers can be supplied in OEM quantities with your name or special graphics and scales.

ACCESSORIES

Model	Description
A-612	Portable stand
A-606	Air filter kit
A-480	Plastic static pressure tip
A-489	4" straight static pressure tip with flange

SPECIFICATIONS

INCLINED/VERTICAL

Accuracy: $\pm 3\%$ FS.
Temperature Limits: 140°F (60°C).
Pressure Limits: 10 psi (70 kPa).
Weight: 1.04 lb (472 g).

INCLINED

Accuracy: $\pm 3\%$ FS.
Temperature Limits: 150°F (65°C).
Pressure Limits: 15 psi (100 kPa).
Scale Length: Approx. 8-1/4" (21 cm).
Weight: 1.23 lb (558 g).

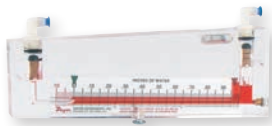
MODEL CHART

Model	Range	Fluid Used
Mark II 25	0-3 in w.c	Red fluid, .826 s.g.
Mark II 26	0-7 in w.c.	Blue oil, 1.91 s.g.
Mark II 27*	0-7000 fpm	Red fluid, .826 s.g.
Mark II MM-80	0-80 mm w.c.	Red fluid, .826 s.g.
Mark II M-700PA	10-0-700 Pa	Red fluid, .826 s.g.
Mark II 40-1	.1-0-1.0 in w.c.	Red fluid, .826 s.g.
Mark II 40-25MM	0-26 mm w.c.	Red fluid, .826 s.g.
Mark II 40-250PA	10-0-250 Pa	Red fluid, .826 s.g.
Mark II 41-60MM	0-60 mm w.c.	Blue oil, 1.91 s.g.
Mark II 41-600PA	20-0-600 Pa	Blue oil, 1.91 s.g.

*Require Pitot tube at additional cost. ●

INCLINED MANOMETER AIR FILTER GAGES

Precision Machined, Solid Acrylic Plastic Gages, Accurate To $\pm 1\%$ Of Full-Scale



Model 250.5-AF



Model 452-AF

Dwyer® Durablock® **SERIES 250-AF** Gages are precision machined 1" thick solid acrylic plastic, virtually unbreakable and free of distortion. The fluid bore is precision drilled to $\pm .0002"$ to assure life-long accuracy. A glass spirit level is built into the body and encapsulated to prevent damage or tampering. The scale is mirror polished chrome plated brass to assure parallax free reading by alignment of the meniscus with its reflection. Safety traps are incorporated in the body to prevent loss of fluid due to pressure surges. Red and green signal flags indicate clearly when a filter change is necessary. Gages are suitable for use in ambient temperatures of -20 to 150°F. Connection fittings are positively sealed but easily removed for zeroing or addition of fluid.

FEATURES/BENEFITS

- High-accuracy and easy to use make it a dependable device for many years of service
- Easy to read polished inclined scale allows pressure minute pressure differences to be read
- No moving parts mean no calibration or nothing to wear out

APPLICATIONS

- Air filter gage

▲ Economy Model 452-AF is similar to the 250 Series except they are not equipped with over pressure traps. Two A-324 1/4" compression fittings are included with each gage but not shown. Bodies are of 5/8" thick acrylic and scales are mirror polished, epoxy coated aluminum.

MODEL CHART				
Model	Range: Water Column	Minor Divisions	Scale Length Inclined (Inches)	Overall Size (Inches)
250-AF	.10-0-1.0"	.02"	5-1/2	8-1/2 x 4-1/8 x 1
250.5-AF	.10-0-1.0"	.01"	8	11-3/8 x 4 x 1
251-AF	.05-0-.50"	.01"	5-1/2	8-1/4 x 3-3/8 x 1
252-AF	.20-0-2.0"	.02"	8	11-1/8 x 6-1/2 x 1
260-AF	0-1.5"	.02"	5-1/2	8-3/8 x 5-7/8 x 1
452-AF ▲	0-2"	.02"	8	11 x 4 x 5/8

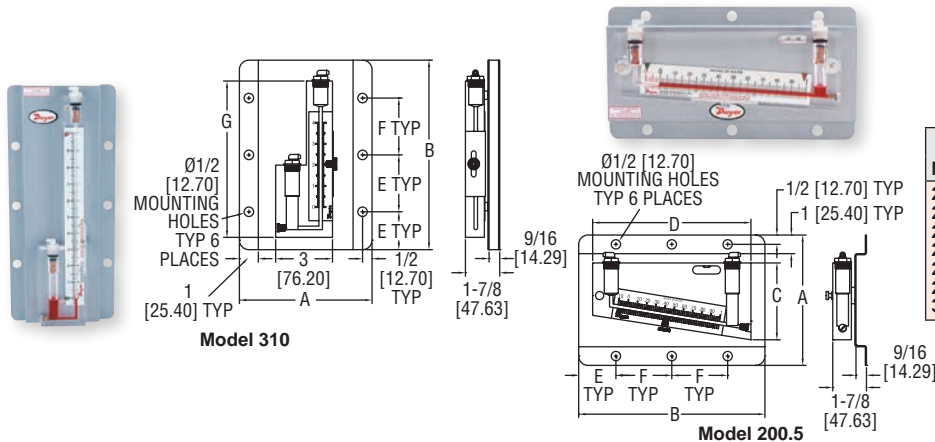
▲ 2 PSI maximum working pressure

ACCESSORIES	
Model	Description
A-310B	3-way vent valve, 1/8" NPT to 1/4" metal tubing, 10 psi rating
A-317	Gage connector, 1/8" pipe thread opening, less OD thread, for slip fit in 3/4" diameter opening in Series 250-AF gages

SERIES 200 & 300

DURABLOCK® SOLID PLASTIC STATIONARY GAGES

Suitable for Total Pressures Up to 100 psig, Temperatures Up to 150°F, Accuracy $\pm 2\%$ of Full-Scale (1% on Models 215, 244, 246 Only)



Model	Dimensions, Inches						
	A	B	C	D	E	F	G
200.5	7	13	3-15/16	11-3/8	2	4-1/2	-
202.5	9	13	5-5/8	12	2	4-1/2	-
209	9	13	7	11-1/4	2	4-1/2	-
215	7	10	3-1/16	9-1/2	2	3	-
244	11	16-1/2	3-1/8	15-5/8	4	8-1/2	-
246	13-1/2	23	11	22	4	15	-
310	7	16	-	-	4	4	15-1/4

Dwyer® **SERIES 200 & 300** solid plastic stationary gages, or draft gages, are offered in inclined and vertical (well-type) styles for highly accurate laboratory or general industrial service, for measurement of low range gas and air pressures, positive, negative or differential. To assure the accuracy required in instruments of this type, all machining of bores and wells is to the highest standards of precision backed by Dwyer's years of experience in the fabrications of acrylic instruments.

FEATURES/BENEFITS

- High-accuracy measurement of low range gas and air pressure suitable for laboratory or general industry
- Precision built assures device meets the highest standards
- No moving parts mean no calibration or nothing to wear out
- Over-pressure trap prevents liquid from being expelled from gage, preventing disruption of operation

APPLICATIONS

- Low pressure laboratory and industrial service applications



Exclusive Dwyer® over-pressure safety traps assure that over range pressures whether gradual or a sudden surge will not force the liquid out of the gage. Over-pressures simply raise the float, force the O-ring over the opening and seal the fluid in the gage. When pressure is reduced, the float drops down releasing the O-ring safety trap which allows the gage to continue operation.

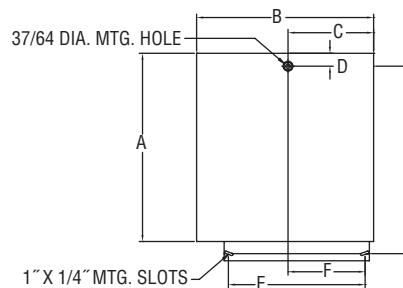
MODEL CHART				
Incline Type Model	Range Inches of Water	Minor Scale Divisions	Scale Length	Weight lb-oz
200.5	.10-0-1.0	.01	8-1/4	3-11
202.5	.20-0-2.0	.01	8-3/4	4-7
209	.20-0-3.0	.02	8-3/4	4-11
215	.05-0-.25	.005	6	2-14
244	0-4	.02	13-1/4	9-11
246	0-6	.02	20	13-14
Vertical or Well-Type Model	Range Inches of Water	Minor Scale Divisions	Scale Length	Weight lb-oz
310	0-10	.10	11-1/8	3-10

Note: Model 200.5 replaces Model 200. Model 202.5 replaces Model 202.

OPTION	
To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: 244-NIST	

Dwyer

SERIES 424 & 420

DURABLOCK® INCLINED-VERTICAL MANOMETERSAccuracy To $\pm 0.25\%$ Inclined-Vertical Manometer
Single ColumnInclined-Vertical Manometer
Double Column**RANGES AND DIMENSIONS - SUITABLE FOR TOTAL PRESSURE UP TO 100 PSIG, TEMPERATURES UP TO 150°F**

Model	Description	Inclined Range Inches of Water	Inclined Minor Div.	Length of Inclined Scale	Vertical Range Inches of Water	Vertical Minor Div.	Length of Vertical Scale	Dimensions							Weight lb-oz
								A	B	C	D	E	F	G	
424-10	Single column	0-2.0	.01	20"	2.1-10	.10	9"	16-1/2"	25-1/4"	12-5/8"	1"	10-1/2"	5-3/8"	16"	22-12
421-5	Single column	0-1.0	.01	6-1/2"	1.1-5	.10	4-5/8"	9-7/8"	9-5/8"	4-7/8"	5/8"	6-1/2"	3-1/4"	9-7/8"	4-12
421-10	Single column	0-1.0	.01	6-1/2"	1.1-10	.10	10-1/8"	15-1/2"	9-5/8"	4-7/8"	5/8"	6-1/2"	3-1/4"	15-1/2"	6-10
422-5	Double column	0-1.0	.01	6-1/2"	1.1-5	.10	4-5/8"	10-1/2"	11-1/2"	5-1/8"	5/8"	6-1/2"	3-1/4"	10-1/2"	6-10
422-10	Double column	0-1.0	.01	6-1/2"	1.1-10	.10	10-1/8"	16-1/8"	11-1/2"	5-1/8"	5/8"	6-1/2"	3-1/4"	16-1/8"	10-13

*Single column metric-ranges and divisions in millimeters.

Dwyer® **SERIES 424 & 420** inclined-vertical manometer are extremely accurate instruments designed and made especially for precision measurement of low differential pressures in laboratory and test applications. The inclined range bore has a length of 20" to provide ample multiplication of indicating fluid movement in this critical lower part of the range.

FEATURES/BENEFITS

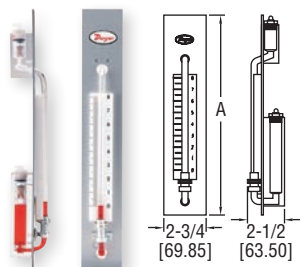
- High-accuracy measurement of low range gas and air pressure suitable for laboratory and test applications
- Long bore length provides ample room for fluid movement for low range sensing
- Precision built to assure device meets the highest standards

APPLICATIONS

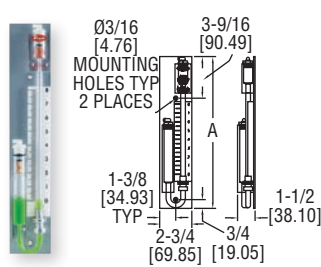
- Low pressure laboratory and test applications

ACCESSORIES - STANDARD**Description**

Include two 1 oz bottles of .826 red gage fluid (1.91 blue gage oil for models 421-23 and 422-23), rapid shut-off type "a" connections, two 3 ft lengths of clear plastic tubing and two 1/8" NPT tubing adapters — two sets for double column models.

SERIES 1230 & 1235**FLEX-TUBE® WELL-TYPE MANOMETERS**

1235 Series Panel Mounting



1230 Series Wall Mounting

Model	Scale in Inches of Water or Mercury	Dimensions		Mercury Required to Fill (Wt.)
		A	D	
1230-8	0-8	15-13/16	16-3/4	12 oz
1230-12	0-12	19-3/8	21-7/8	14 oz
1230-16	0-16	23-1/2	27	16 oz
1230-20	0-20	27-9/16	32-1/8	18 oz
1230-36	0-36	43-1/8	51-1/4	26 oz

Model	Scale in Inches of Water or Mercury	Dimensions		Mercury Required to Fill (Wt.)
		A	D	
1235-20	0-20	29-5/16	33-9/16	18 oz

Dwyer® **SERIES 1230 & 1235** Flex-Tube® Well Type Manometers are designed to meet the need for a direct reading single column instrument providing highly accurate pressure readings; positive, negative or differential. Unlike other makes, Dwyer manometers have no hidden wells or packing glands. These instruments are constructed of shatter-proof clear plastic tubing permanently bonded to well assemblies with leak-proof glued joints. Well assemblies are precisely machined from solid acrylic plastic. Over-pressure safety traps assure protection against loss of fluid. Scales are adjusted with quick-acting positive mechanism. These manometers are rated to 100 psig (6.89 bar). Not recommended for vacuum service beyond 5" Hg (68 in w.c.).

FEATURES/BENEFITS

- High-accuracy pressure measurement suitable for laboratory or general industry
- Precision built assures device meets the highest standards
- No moving parts mean no calibration or nothing to wear out
- Over-pressure trap prevents liquid from being expelled from gage, preventing disruption of operation

APPLICATIONS

- Laboratory and industrial service applications

OPTION**To order add suffix: Description**

-NIST NIST traceable calibration certificate

Example: 1222-8-W/M-NIST

ACCESSORIES - STANDARD**Description**

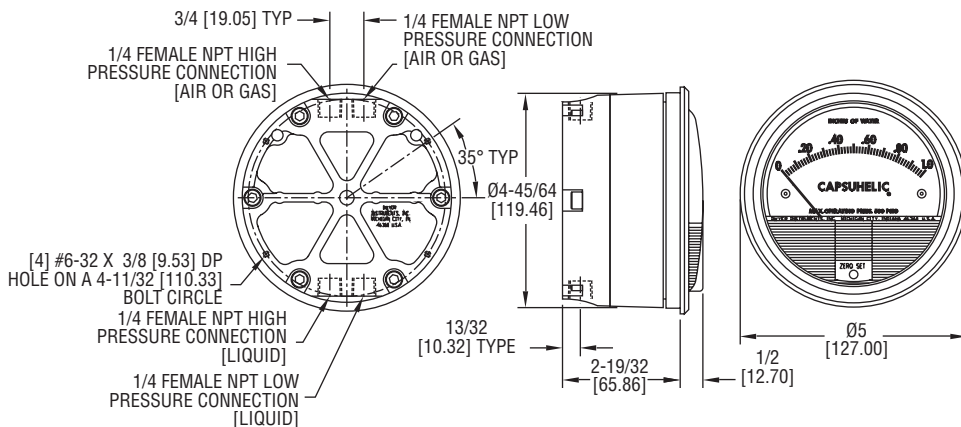
Include one set of type "a" connections, .826 sp. gr. red gage fluid for "D" style or fluorescein green dye concentrate with wetting agent for "W/M" styles, two 3 ft lengths of clear vinyl tubing and two 1/8" NPT tubing adapters.

CAPSUHELIC® DIFFERENTIAL PRESSURE GAGES

Measures Pressure, Vacuum or Differential, Suitable for Internal Pressures to 500 psig



Capsuhelic® Pressure Gage has a large, easy-to-read 4" (102 mm) dial.



The **SERIES 4000** Capsuhelic® gage is designed to give fast, accurate indication of differential pressures. The gage may be used as a readout device when measuring flowing fluids, pressure drop across filters, liquid levels in storage tanks and many other applications involving pressure, vacuum or differential pressure. The pressure being measured is held within a capsule which is an integral part of the gage. This containment of the pressure permits the use of the gage on system pressures of up to 500 psig, even when differentials to be read are less than 0.1 in w.c.

FEATURES/BENEFITS

- Gage capsule permits high-pressure usage with small differentials
- Zero and range adjustments outside of gage means no disassembly in normal service
- Time-proven, simple, frictionless movement that permits full scale readings as low as 0.5 in w.c.
- Diaphragm-actuated versus liquid filled gage supports outdoor use

APPLICATIONS

- Fluid flow
- Liquid storage tanks
- Filter pressure drops
- Vacuum or differential pressure

Note: May be used with hydrogen where pressures are less than 35 psi. Order with a Buna-N diaphragm.

MODEL CHART			
Model	Range, Inches of Water	Model	Range Zero Center Inches of Water
*4005	0-5.0	4310	5-0-5
*4006	0-6.0	4330	15-0-15
*4010	0-10		
*4015	0-15	Model	Range PSID
*4020	0-20	4205	0-5
*4025	0-25	4210	0-10
*4030	0-30	4215	0-15
*4040	0-40	4220	0-20
*4050	0-50		
*4060	0-60		
*4080	0-80		
*4100	0-100		
*4200	0-200		

*These ranges available for vertical scale position only. **Note:** Scales reading directly in flow, heights, etc., are also available.

SPECIFICATIONS

Service: Aluminum case: Air and compatible gases and oil based liquids; Brass case: Air and compatible gases and water based liquids.

Wetted Materials: Consult factory.

Housing: Die cast aluminum with impregnated hard coating, standard. Optional forged brass housing is required for water or water based fluids. Special material diaphragms available, contact factory.

Accuracy: $\pm 3\%$ of FS at 70°F (21.1°C). ($\pm 4\%$ on 4200, 4210, 4215, 4220, 4300, 4400, and 4500).

Pressure Limits: -20" Hg to 500 psig (-0.677 bar to 34.4 bar).

Temperature Limits: 20 to 200°F (-6.67 to 93.3°C).

Size: 4" (101.6 mm) diameter dial face.

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

Process Connections: 1/4" female NPT high and low pressure taps, duplicated - one pair top for air and gas, and one pair bottom for liquids.

Weight: 3 lb, 3 oz (1.45 kg) aluminum case; 7 lb, 13 oz (3.54 kg) brass case.

ACCESSORIES - STANDARD

Description

Two 1/4" NPT plugs for duplicate pressure taps, four flush mounting adapters with screws and four surface mounting screws.

ACCESSORIES

Model	Description
A-298	Flat flush mounting bracket
A-309	3-way manifold valve
A-314	Bleed fitting
A-370	Mounting bracket
A-471	Portable kit
A-496	Flush mount bracket
A-610	Pipe mount kit

OPTIONS

To order add suffix:	Description
-ASF	Adjustable signal flag
B	Brass case
Scale Overlays	Red, green, mirrored or combination; specify locations
-NIST	NIST traceable calibration certificate

DIFFERENTIAL PRESSURE PISTON-TYPE GAGE

Excellent Accuracy and Over-Pressure Ratings

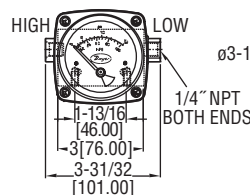
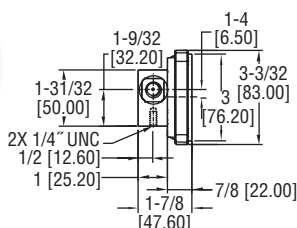


Shown with optional pointer follower

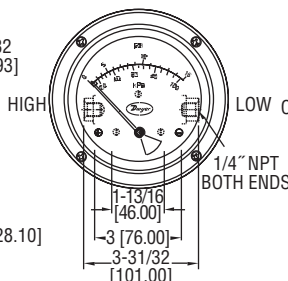
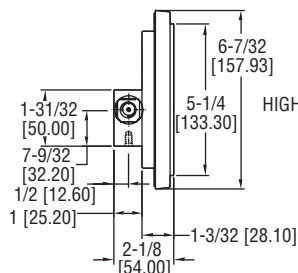
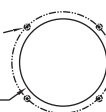
2.5"



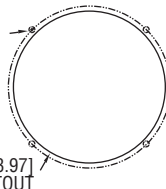
4.5"



4X ø3/16 [ø5.16]
EQUALLY SPACED ON A
ø3-1/2 [ø88.90] BOLT CIRCLE
ø3-1/32 [ø76.99]
PANEL CUTOUT



4X ø3/16 [ø5.16]
EQUALLY SPACED
ON A ø5-5/8 [ø142.85]
BOLT CIRCLE
ø5-9/32 [ø133.97]
PANEL CUTOUT



The **SERIES PTGD** Differential Pressure Piston-Type Gage can be used to measure the pressure drop across filters, strainers, pump performance testing, and heat exchanger pressure drop monitoring. Its simple, rugged design possesses weather and corrosion resistant gage front with a shatter resistant lens. The Series PTGD contains a piston-sensing element which provides differential pressure ranges with full-scale accuracies of $\pm 2\%$. Constructed with aluminum or 316SS and available with two 1/4" female NPT end connections, the Series PTGD provides over-range protection rated to 3000 psig (200 bar) or 6000 psig (400 bar) depending on model. Standard models come with in-line connections. Back or bottom connections are also available.

FEATURES/BENEFITS

- Rugged, weather and corrosive proof design supports use in harsh environments
- Over-protection range depending on model, up to 6000 psig (400 bar) allows high-pressure applications
- Flexibility of connection selection fits the most sophisticated designs

APPLICATIONS

- Filter pressure drop
- Strainers
- Pump performance testing
- Heat exchanger pressure drop

OPTIONS

To order add suffix:	Description
-V	FKM fluoroelastomer seals
-N	EPDM seals
-PY	Glycerine fill
-PF	Pointer follower
-RP	Reverse port
-SP1	1 0.5A SPDT DIN Plug
-SP2	2 0.25A SPDT DIN Plugs
Use order code:	Description
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Compatible gases and liquids.

Wetted Materials: Gage body: Aluminum or 316 SS; Piston: Aluminum or 316 SS; Spring: 302 SS; Seals: Buna-N (standard); PTFE, Ceramic magnet; Dial case: Nylon 6 30% glass filled gage case.

Window: Acrylic.

Accuracy: $\pm 2\%$ FS ascending.

Temperature Limit: 176°F (80°C).

Pressure Limits: 3000 psi (206 bar) for aluminum body; 6000 psi (413 bar) for SS body.

Size: 2.5" (63 mm) or 4.5" (115 mm).

Mounting Orientation: Mount in any position.

Process Connections: 1/4" female NPT end connections standard; 1/4" female NPT back or bottom connections available. All styles available with 1/4" BSP.

Weight: Aluminum: 2.5" 0.88 lb (399 g); 4.5" 1.35 lb (612 g); Stainless steel: 2.5" 1.75 lb (794 g); 4.5" 2.3 lb (1.04 kg).

MODEL CHART

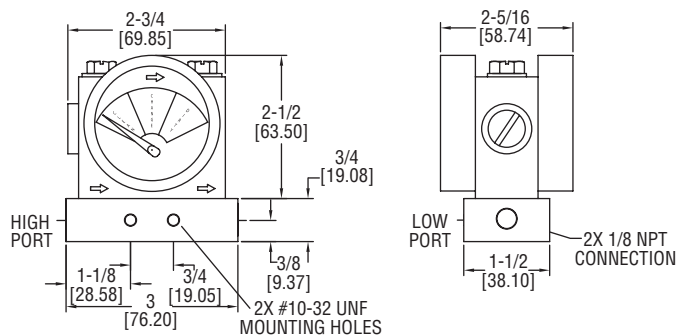
Model	Description	Range
PTGD-AA01A	2.5" aluminum	0-5 psid (0.25 bar)
PTGD-AA02A	2.5" aluminum	0-10 psid (0.75 bar)
PTGD-AA03A	2.5" aluminum	0-15 psid (1 bar)
PTGD-AA04A	2.5" aluminum	0-20 psid (1.6 bar)
PTGD-AA05A	2.5" aluminum	0-25 psid (1.6 bar)
PTGD-AA06A	2.5" aluminum	0-30 psid (2 bar)
PTGD-AA07A	2.5" aluminum	0-40 psid (3 bar)
PTGD-AA08A	2.5" aluminum	0-50 psid (3.5 bar)
PTGD-AA09A	2.5" aluminum	0-60 psid (4 bar)
PTGD-AA10A	2.5" aluminum	0-80 psid (5.5 bar)
PTGD-AA11A	2.5" aluminum	0-100 psid (7 bar)
PTGD-AA12A	2.5" aluminum	0-150 psid (10 bar)
PTGD-SA01A	2.5" stainless steel	0-5 psid (0.25 bar)
PTGD-SA02A	2.5" stainless steel	0-10 psid (0.75 bar)
PTGD-SA03A	2.5" stainless steel	0-15 psid (1 bar)
PTGD-SA04A	2.5" stainless steel	0-20 psid (1.6 bar)
PTGD-SA05A	2.5" stainless steel	0-25 psid (1.6 bar)
PTGD-SA06A	2.5" stainless steel	0-30 psid (2 bar)
PTGD-SA07A	2.5" stainless steel	0-40 psid (3 bar)
PTGD-SA08A	2.5" stainless steel	0-50 psid (3.5 bar)
PTGD-SA09A	2.5" stainless steel	0-60 psid (4 bar)
PTGD-SA10A	2.5" stainless steel	0-80 psid (5.5 bar)
PTGD-SA11A	2.5" stainless steel	0-100 psid (7 bar)
PTGD-SA12A	2.5" stainless steel	0-150 psid (10 bar)

Note: For 4.5" dial face, change -AA to -AC for aluminum and -SA to -SC for stainless steel.

For back or bottom connections as well as female BSP threads, contact the factory.

PROCESS FILTER GAGE

Indicates Process Filter Status, In-Line or Bottom Connect Mounting



The **SERIES PFG2** Process Filter Gage is designed for determining the state of an inline filter. The differential pressure indicator determines the pressure drop on either side of a filter and relates the value to one of three zones: clean (green), change (yellow), or dirty (red). The Series PFG2 is perfectly suited for filter applications, line loss, valve drop, and many other differential pressure applications where a simple indicator is needed. The direction of process flow is indicated on the dial, with the arrow pointing to the low pressure port. The PFG2 can be connected in-line through the side process connections, or can also be directly mounted through the outlet/inlet.

FEATURES/BENEFITS

- Simple easy to understand indicator means no guessing filter status
- Removable mounting block provides direct mounting options especially in difficult filter access locations
- Quick installation reduces time to operation

APPLICATIONS

- Filter pressure drop
- Filter status
- Valve drop
- Line loss

SPECIFICATIONS

Service: Liquids/gases compatible with SS, GFN, and fluoropolymer.
Wetted Materials: Aluminum, SS, glass filled nylon, and fluoropolymer.
Accuracy: $\pm 5\%$ FS.
Temperature Limit: 200°F (93°C).
Pressure Limit: 300 psig (20.7 bar).
Materials: Body: Glass filled nylon; Mounting Block: Aluminum; Lens: Polyester; Elastomers: Fluorocarbon.
Process Connection: 1/8" female NPT.
Mounting Orientation: Any orientation with 10-32 threaded holes 3/4" apart.
Weight: 9.6 oz (272.2 g).

MODEL CHART

Model	Full Range	Green Zone	Yellow Zone	Red Zone
PFG2-02	0 to 5 psid	0 to 2.5 psid	2.5 to 3.75 psid	3.75 to 5 psid
PFG2-03	0 to 10 psid	0 to 5 psid	5 to 7.5 psid	7.5 to 10 psid
PFG2-06	0 to 25 psid	0 to 11 psid	11 to 18.5 psid	18.5 to 25 psid

MODEL DIGIHELIC LINKS™

DATA ACQUISITION AND LOGGING SOFTWARE

Designed for Communication with Series DH & DHII Digihelic® Differential Pressure Controllers



The **MODEL DIGIHELIC LINKS™** Communications Software is an easy to use Windows® based program. Data logging and graphing can be set up by the individual control with varying logging periods. Event logging, live instrument status, remote calibration as well as uploading pre-saved configuration files are some of the higher end capabilities the Digihelic Links™ Communications Software provides. The Digihelic Links™ Communications Software is compatible with all Series DH and DHII Digihelic® Differential Pressure Controllers.

FEATURES/BENEFITS

- Log and graph data up to 10 units simultaneously; view up to 40 units
- Easy to use Windows® based operator interface
- Data logging at individually adjustable rates
- On-screen graphing of process values
- Upload and download saved control configuration profiles
- Remote calibration of controls

MODEL CHART	
Model	Description
Digihelic Links	Communications software CD

ACCESSORY	
Model	Description
MN-1	Mini-Node™ USB/RS-485 converter

REQUIRED EQUIPMENT COMPUTER REQUIREMENTS

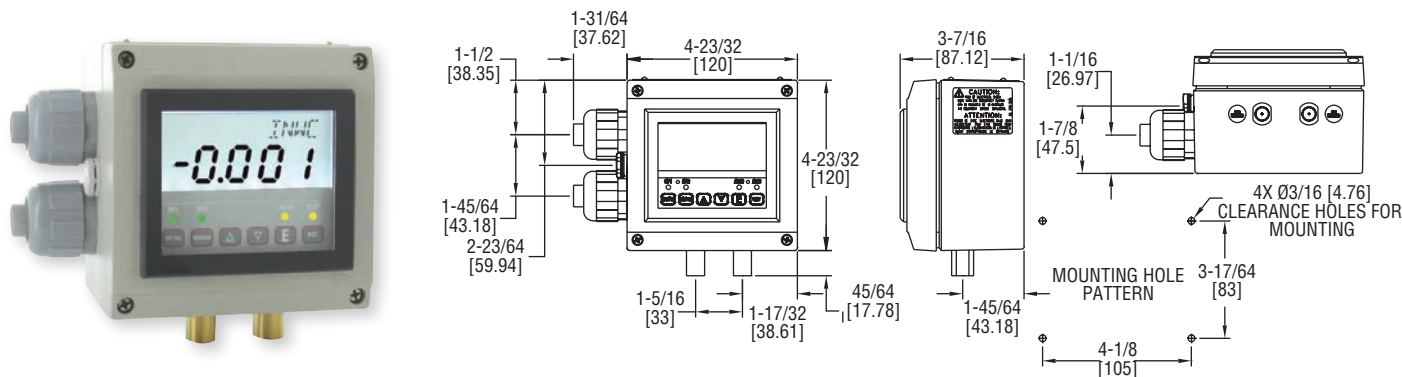
The Digihelic Links™ Communications Software application will run on Windows® 95/98 and Windows® NT Workstation 4.0 (Service Pack 3 recommended), Windows® 2000 and Windows® XP software. The hardware requirements for each of these operating systems can be found in the documentation provided with that operating system. One available RS-485 port is needed to communicate with the control(s). A minimum of 4 MB of hard disk space is needed for the Digihelic Links™ Communications Software application files, and additional hard disk space is needed to store data log files. Log file size will vary depending on the duration and rate selected for the controls and the number of controls on line.

COMMUNICATION REQUIREMENTS

To communicate with the Digihelic® Differential Pressure Controller from a PC with an RS-232 Serial Communications Port, an RS-485 to RS-232 converter is required to convert the signal from the Digihelic® controller RS-485 format to the RS-232 input of the PC. Recommended converters are the Models 351-9 RS-485 to RS-232 converter or Model MN-21 RS-485 to USB converter. For RS-485 systems a 120 Ω resistor is also needed to terminate the last control on the control network. Shielded twisted pair cable is recommended for wiring the controls together.

DIGIHELIC® II DIFFERENTIAL PRESSURE CONTROLLER

NEMA 4 (IP66) Housing With Large, Bright LCD, Square Root Output for Flow



The **SERIES DHII** takes all the fabulous features of the standard DigiHeliC® Pressure Controller and packages them in a robust NEMA 4 (IP66) housing.

The DigiHeliC® II Pressure Controller combines the 2 SPDT control relays, 4 to 20 mA process output and Modbus® communications with a large, brightly backlit 4 digit LCD display that can easily be seen from long distances. The electrical wiring has also been enhanced in the DHII with its detachable terminal blocks. The removable terminals allow the install to easily wire the terminal block outside the housing and then attach to the circuit board, reducing wiring difficulties and installation time on the process.

The DigiHeliC® II Differential Pressure Control in the new NEMA 4 (IP66) enclosure enables this product to be the perfect choice when mounting pressure controls outdoors in such applications as rooftop air handlers. This housing also makes it the ideal solution for surface mounting in clean rooms or facilities where water or a cleaning solution is utilized in maintaining plant cleanliness.

FEATURES/BENEFITS

- NEMA 4 housing enables a range of uses both outdoors or indoors where water is present
- Large backlight LCD display provides local reading from a distance
- Detachable terminal blocks reduce wiring difficulties saving installation time

APPLICATIONS

- Air handlers
- Clean rooms

ACCESSORIES

Model	Description
MN-1	Mini-Node™ USB/RS-485 converter
A-301	Static pressure tip for 1/4" metal tubing connection
A-302	Static pressure tip for 3/16" and 1/8" I.D. plastic or rubber tubing
A-438	Surface mounting brackets
A-489	4" straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
DigiHeliC Links™	Communications software

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Housing Material: Aluminum, glass.

Accuracy: ±0.5% at 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).

Stability: < ±1% per year.

Pressure Limits: Ranges ≤ 2.5 in w.c. = 2 psi; 5": 5 psi; 10": 5 psi; 25": 5 psi; 50": 5 psi; 100": 9 psi.

Temperature Limits: 32 to 140°F (0 to 60°C).

Compensated Temperature Limits: 32 to 140°F (0 to 60°C).

Thermal Effects: 0.020%/°F (0.036%/°C) from 77°F (25°C).

Power Requirements: High voltage power = 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC; Low voltage power = 24 VDC ±20%.

Power Consumption: Low voltage power = 24 VDC - 130 mA max; High voltage power = 100 to 240 VAC, 132 to 240 VDC - 7 VA max.

Output Signal: 4 to 20 mA DC into 900 Ω max.

Zero & Span Adjustments: Accessible via menus.

Response Time: 250 ms (dampening set to 1).

Display: 4 digit backlit LCD 0.6" height. LED indicators for set point and alarm status.

Electrical Connections: Euro type removable terminal blocks with watertight conduit fittings for 1/2" watertight conduit.

Process Connections: 1/8" female NPT.

Enclosure Rating: Designed to meet NEMA 4 (IP66).

Mounting Orientation: Mount unit in horizontal plane.

Weight: 2 lb 10 oz (1.19 kg).

Serial Communications: Modbus® RTU, RS485, 9600 baud.

Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.

Electrical Rating: 8 amps at 240 VAC resistive.

Set Point Adjustment: Adjustable via keypad on face.

MODEL CHART - AVAILABLE PRESSURE ENGINEERING UNITS

Model	in w.c.	ft w.c.	mm w.c.	cm w.c.	psi	in Hg	mm Hg	mbar	Pa	kPa	hPa	oz/in ²
DHII-002	.2500	-	6.350	0.635	-	-	0.467	0.623	62.28	-	0.623	0.144
DHII-004	1.000	-	25.40	2.540	-	-	1.868	2.491	249.1	0.249	2.491	0.578
DHII-006	5.000	.4167	127.0	12.70	.1806	.3678	9.342	12.45	1245	1.245	12.45	2.890
DHII-007	10.00	.8333	254.0	25.40	.3613	.7356	18.68	24.91	2491	2.491	24.91	5.780
DHII-008	25.00	2.083	635.0	63.50	.9032	1.839	46.71	62.27	6227	6.227	62.27	14.45
DHII-009*	50.00	4.167	1270	127.0	1.806	3.678	93.42	124.5	-	12.45	124.5	28.90
DHII-010*	100.0	8.333	2540	254.0	3.613	7.356	186.8	249.1	-	24.91	249.1	57.80

*Velocity and volumetric flow not available on bi-directional range units and models DHII-009 & DHII-010.

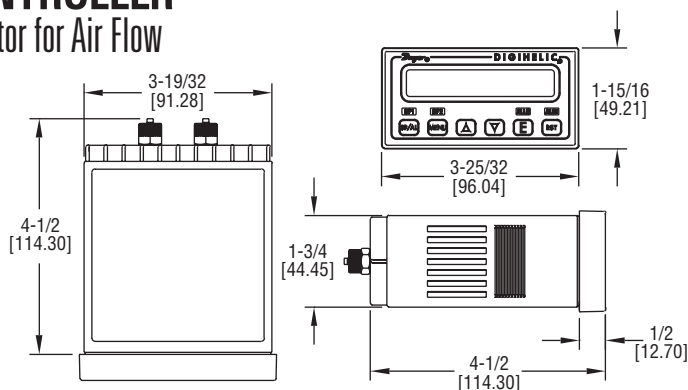
MODEL CHART - BI-DIRECTIONAL* RANGES

Model	Range
DHII-012	0.25 to 0 - 0.25 in w.c.
DHII-014	1.0 to 0 - 1.0 in w.c.
DHII-015	2.5 to 0 - 2.5 in w.c.
DHII-016	5 to 0 - 5 in w.c.
DHII-017	10 to 0 - 10 in w.c.

*Velocity and volumetric flow not available on bi-directional range units and models DHII-009 & DHII-010.

DIGIHELIC® DIFFERENTIAL PRESSURE CONTROLLER

3-in-1 Instrument: Gage, Switch and Transmitter, Square Root Extractor for Air Flow



The **SERIES DH** Digihelic® Differential Pressure Controller is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with current output. The Digihelic® controller is the ideal instrument for pressure, velocity and flow applications, achieving a 0.5% full scale accuracy on ranges from 0.25 to 100 in w.c. The Digihelic® controller allows the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. Two SPDT control relays with adjustable dead bands are provided along with a scalable 4-20 mA process output. The Series DH provides extreme flexibility in power usage by allowing 120/220 VAC and also 24 VDC power which is often used in control panels. Programming is easy using the menu key to access 5 simplified menus which provide access to: security level; selection of pressure, velocity or flow operation; selection of engineering units; K-factor for use with flow sensors; rectangular or circular duct for inputting area in flow applications; set point control or set point and alarm operation; alarm operation as a high, low or high/low alarm; automatic or manual alarm reset; alarm delay; view peak and valley process readings; digital damping for smoothing erratic process applications; scaling the 4-20 mA process output to fit your application's range; Modbus® communications; and field calibration.

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Velocity of flow modes, a square root output coincides with the actual flow curve for greater precision
- Power usage of 120/220 VAC or 24 VDC provides flexibility to incorporate device in control panel
- Secure menu program provides access to device operation only for the right skill level
- Modbus® communications supports Process and HVAC system integration and control

APPLICATIONS

- SCFM duct flow
- Industrial ovens air flow
- Filter status
- Clean room pressurization
- Fume hood air flow
- Surgical and medical room pressurization
- Damper and fan control

OPTIONS

To order add suffix:	Description
-B	Barbed fitting for 3/16" ID tubing
-NIST	NIST traceable calibration certificate
Example: DH-004-NIST	
-FC	Factory calibration certificate
Example: DH-004-FC	

MODEL CHART - AVAILABLE PRESSURE ENGINEERING UNITS

Model	in w.c.	ft w.c.	mm w.c.	cm w.c.	psi	in Hg	mm Hg	mbar	Pa	kPa	hPa	oz/in ²
DH-002	.2500	-	6.350	0.635	-	-	0.467	0.623	62.28	-	0.623	0.144
DH-004	1.000	-	25.40	2.540	-	-	1.868	2.491	249.1	0.249	2.491	0.578
DH-006	5.000	.4167	127.0	12.70	.1806	.3678	9.342	12.45	1245	1.245	12.45	2.890
DH-007	10.00	.8333	254.0	25.40	.3613	.7356	18.68	24.91	2491	2.491	24.91	5.780
DH-008	25.00	2.083	635.0	63.50	.9032	1.839	46.71	62.27	6227	6.227	62.27	14.45
DH-009*	50.00	4.167	1270	127.0	1.806	3.678	93.42	124.5	-	12.45	124.5	28.90
DH-010*	100.0	8.333	2540	254.0	3.613	7.356	186.8	249.1	-	24.91	249.1	57.80

*Velocity and volumetric flow not available on bi-directional range units and models DH-009 & DH-010.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: ABS plastic, UL approved 94 V-0.
Accuracy: ±0.5% at 77°F (25°C) including hysteresis and repeatability.
Stability: < ±1% per year.
Pressure Limits: Ranges ≤ 2.5 in w.c. = 2 psi; 5": 5 psi; 10": 5 psi; 25": 5 psi; 50": 5 psi; 100": 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: High voltage power = 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC. Low voltage power = 24 VDC ±20%.
Power Consumption: Low voltage power = 24 VDC - 130 mA max; High voltage power = 100 to 240 VAC, 132 to 240 VDC - 7VA max.
Output Signal: 4-20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus.
Response Time: 250 ms.
Display: 4 digit LCD 0.4" height. LED indicators for set point and alarm status.
Electrical Connections: Screw terminals.
Process Connections: Compression fitting for use with 1/8" ID X 1/4" OD tubing (3.175 mm ID x 6.35 mm OD). Optional barbed fitting for 3/16" ID tubing.
Enclosure Rating: Face designed to meet NEMA 4X (IP66).
Mounting Orientation: Mount unit in horizontal plane.
Size: 1/8 DIN.
Panel Cutout: 1.772 x 3.620 in (45 x 92 mm).
Weight: 14.4 oz (408 g).
Serial Communications: Modbus® RTU, RS485, 9600 baud.
Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 8 amps at 240 VAC resistive.
Set Point Adjustment: Adjustable via keypad on face.

ACCESSORIES

Model	Description
MN-1	Mini-Node™ USB/RS-485 converter; the Mini-Node™ converters are an easy solution for utilizing the Digihelic® controller's RS-485 serial communication and connecting to virtually any PC.
A-266	Digihelic® surface mounting bracket
A-203	1/8" ID x 1/4" OD PVC tubing
Digihelic Links™	Communications Software

MODEL CHART - BI-DIRECTIONAL* RANGES

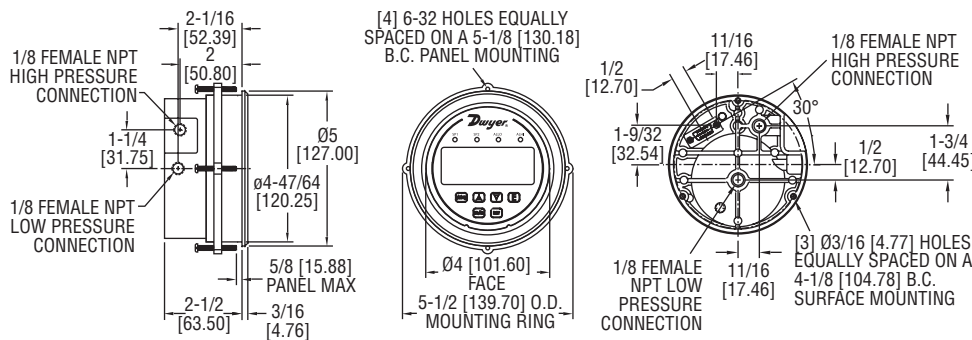
Model	Range
DH-012	0.25 to 0 - 0.25 in w.c.
DH-014	1.0 to 0 - 1.0 in w.c.
DH-015	2.5 to 0 - 2.5 in w.c.
DH-016	5 to 0 - 5 in w.c.
DH-017	10 to 0 - 10 in w.c.

*Velocity and volumetric flow not available on bi-directional range units and models DH-009 & DH-010.

Modbus® is a registered trademark of Schneider Automation, Inc.
Process Tubing Options: See page 489 (Gage Tubing Accessories)

DIGIHELIC® 3 DIFFERENTIAL PRESSURE CONTROLLER

DigiHelic® Controller in PhotoHelic® Gage, Square Root Output for Flow



The **SERIES DH3** DigiHelic® Differential Pressure Controller is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with current output all packed in the popular PhotoHelic® gage style housing. Combining these 3 features allows the reduction of several instruments with one product, saving inventory, installation time and money. The DigiHelic® controller is the ideal instrument for pressure, velocity and flow applications, achieving a 1% full scale accuracy on ranges down to the extremely low 0.25 in w.c. to 2.5 in w.c. full-scale. Ranges of 5 in w.c. and greater maintain 0.5% FS accuracy. Bi-directional ranges are also available. The Series DH3 DigiHelic® controller allows the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. 2 SPDT control relays with adjustable deadbands are provided along with a scalable 4-20 mA process output.

Programming is easy using the menu key to access 5 simplified menus which provide access to: security level; selection of pressure, velocity or flow operation; selection of engineering units; K-factor for use with flow sensors; rectangular or circular duct for inputting area in flow applications; set point control or set point and alarm operation; alarm operation as a high, low or high/low alarm; automatic or manual alarm reset; alarm delay; view peak and valley process reading; digital damping for smoothing erratic process applications; scaling the 4-20 mA process output to fit your applications range and field calibration.

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Full scale accuracy of 1% even on extremely low ranges, and 0.5% for ranges above 5 in w.c. provide for greater measurement precision
- Secure menu program provides access to device operation only for the right skill level

APPLICATIONS

- SCFM duct flow
- Filter status
- Duct or building static pressure
- Damper and fan control

MODEL CHART			
Model	Ranges	Model	Ranges
DH3-002	0-0.25 in w.c.	*DH3-010	0-50 in w.c.
DH3-003	0-0.5 in w.c.	*DH3-011	0-100 in w.c.
DH3-004	0-1 in w.c.	*DH3-013	0.25-0-0.25 in w.c.
DH3-005	0-2.5 in w.c.	*DH3-014	0.5-0-0.5 in w.c.
DH3-006	0-5 in w.c.	*DH3-015	1-0-1 in w.c.
DH3-007	0-10 in w.c.	*DH3-016	2.5-0-2.5 in w.c.
DH3-009	0-25 in w.c.	*DH3-017	5-0-5 in w.c.
		*DH3-018	10-0-10 in w.c.

*Velocity and volumetric flow not available on bi-directional range units and models DH3-010 and DH3-011.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: Die cast aluminum case and bezel.
Accuracy: $\pm 1.5\%$ for 0.25 in and ± 0.25 in w.c. ranges. Ranges 0.5 in to 5 in w.c. and corresponding bi-directional (except ± 2.5 in w.c.) $\pm 1\%$; All other ranges: $\pm 0.5\%$ @ 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).
Stability: $< \pm 1\%$ per year.
Pressure Limits: Ranges ≤ 2.5 in w.c.: 25 psi; ± 2.5 , 5 in w.c.: 5 psi; 10 in w.c.: 5 psi; 25 in w.c.: 5 psi; 50 in w.c.: 5 psi; 100 in w.c.: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C). For 0.25 in and ± 0.25 in w.c. ranges: $\pm 0.03\%$ /°F ($\pm 0.054\%$ /°C).
Power Requirements: 12-28 VDC, 12-28 VAC 50 to 400 Hz.
Power Consumption: 3 VA max.

Output Signal: 4-20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus.
Response Time: 250 ms (damping set to 1).
Display: Backlit 4 digit LCD 0.4" height LED indicators for set point and alarm status.
Electrical Connections: 15 pin male high density D-sub connection. 18" (46 cm) cable with 10 conductors included.
Process Connections: 1/8" female NPT. Side or back connections.
Mounting Orientation: Mount unit in vertical plane.
Size: 5" (127 mm) OD x 3-1/8" (79.38 mm).
Weight: 1.75 lb (794 g).
Agency Approvals: CE.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 1 A @ 30 VAC/VDC.
Set Point Adjustment: Adjustable via keypad on face.

ACCESSORIES

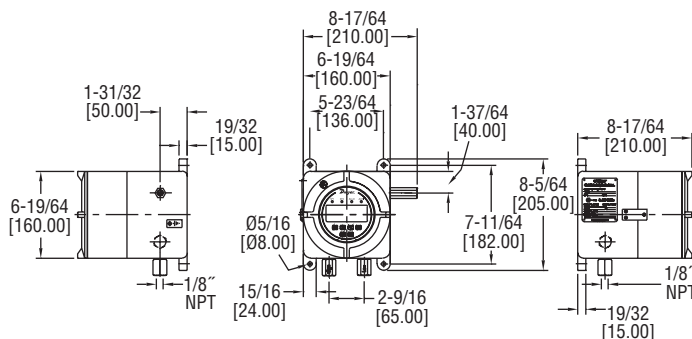
Model	Description
A-298	Flat aluminum bracket for flush mounting
A-301	Static pressure tip for 1/4" metal tubing connection
A-302	Static pressure tip for 3/16" and 1/8" I.D. plastic or rubber tubing
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-370	Mounting bracket flush mount bracket; bracket is then surface mounted; steel with gray hammertone epoxy finish
A-489	4" straight static pressure tip with flange

OPTIONS

To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: DH3-004-NIST	
-FC	Factory calibration certificate
Example: DH3-004-FC	

ATEX APPROVED DH3 DIFFERENTIAL PRESSURE CONTROLLER

Digihelic® Pressure Control in Flame-Proof ATEX Enclosure



The ATEX approved **SERIES AT2DH3** Digihelic® Differential Pressure Controller is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with current output. Combining these three features allows the reduction of several instruments with one product, saving inventory, installation time and money. The ATEX approved Digihelic® controller is the ideal instrument for hazardous area pressure, velocity and flow applications by allowing for the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. Two SPDT control relays with adjustable dead bands are provided along with a scalable 4 to 20 mA process output. In velocity or flow modes, a square root output is provided on the 4 to 20 mA signal to coincide with the actual flow curve. Flame-proof ATEX enclosures are available in aluminum and can include a glass window for viewing process information and set point status on digital display.

FEATURES/BENEFITS

- 3-in-1 ATEX approved instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Flame-proof ATEX enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
DH3 Housing Material: Die cast aluminum case and bezel.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: < 5 in w.c. (except ± 2.5 in w.c.): $\pm 1\%$; All other ranges: $\pm 0.5\%$ at 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).
Stability: < $\pm 1\%$ per year.
Pressure Limits: Ranges ≤ 2.5 in w.c.: 25 psi; ± 2.5 , 5 in w.c.: 5 psi; 10 in w.c.: 5 psi; 25 in w.c.: 5 psi; 50 in w.c.: 5 psi; 100 in w.c.: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C) Case: -76 to 140°F (-60 to 60°C) (Note: Product temperature limits differ from case).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: 12 to 28 VDC, 12 to 28 VAC 50 to 400 Hz.
Power Consumption: 3 VA max.
Output Signal: 4 to 20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus in safe zone only.

Response Time: 250 ms (damping set to 1).
Display: Backlit 4 digit LCD 0.4" height LED indicators for set point and alarm status.
Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2" NPT female. Cable gland not included.
Weight: 12.3 lb (5.6 kg).
Electrical Wiring: Screw terminal.
Mounting Orientation: Mount unit in vertical plane.
Enclosure Rating: (IP66). IP65 with option OPV, overpressure relief valve.
Dial Size: 5" (127 mm) OD x 3-1/8" (79.38 mm).
ATEX Approved Products from Comhas with ECN: BVI 14ATEX0072.
Agency Approvals: CE 1370 Ex d IIC Gb T6; -60°C \leq Ta \leq +60°C Ex tb IIIC Db T 85°C.
SWITCH SPECIFICATIONS
Switch Type: 2 SPDT relays.
Electrical Rating: 1 A @ 30 VAC/VDC.
Set Point Adjustment: Adjustable via keypad on face in safe zone only.

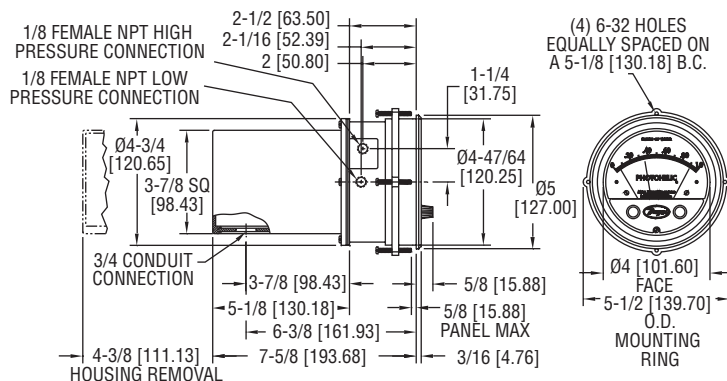
MODEL CHART									
Example	AT2DH3	-002	-A	O	1	X	T2	AT2DH3-002-AO1XT2	
Series	AT2DH3							ATEX Approved Series AT2DH3 Digihelic Differential Pressure Controller	
Range		002 003 004 005 006 007 009 010 011 013 014 015 016 017 018						0 to 0.25 in w.c. 0 to 0.5 in w.c. 0 to 1 in w.c. 0 to 2.5 in w.c. 0 to 5 in w.c. 0 to 10 in w.c. 0 to 25 in w.c. 0 to 50 in w.c. 0 to 100 in w.c. 0.25 to 0 to 0.25 in w.c. 0.5 to 0 to 0.5 in w.c. 1 to 0 to 1 in w.c. 2.5 to 0 to 2.5 in w.c. 5 to 0 to 5 in w.c. 10 to 0 to 10 in w.c.	
Housing Material			A					Aluminum	
Cover				B O				Blind Glass top cover	
Process Connection					1 2			1/8" NPT F brass ports 1/8" NPT F SS ports	
Overpressure Plug						X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as port	
Tag							T2	SS information label	

PHOTOHELIC® PRESSURE SWITCH/GAGES

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



Set points are instantly adjusted with front knobs.



The **SERIES A3000** Photohelic® Switch/Gages function 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); single positive pressure to 6000 psig (413 bar).

FEATURES/BENEFITS

- 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 setpoint 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 & 24 VAC power optional.

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

Set Point Adjustment: Adjustable knobs on face.

Agency Approvals: CE, CSA, UL.

PHOTOHELIC® PRESSURE SWITCH/GAGES

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

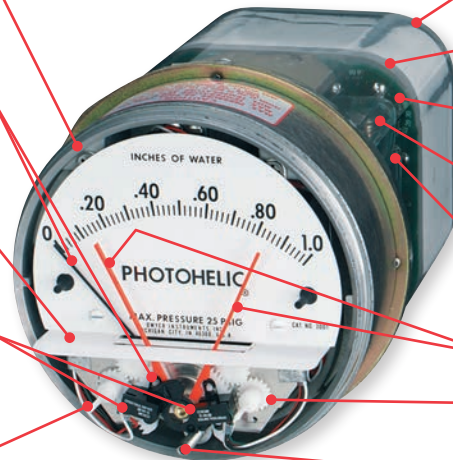
Bezel and front cover (with set point knobs and zero adjustment screw) removed to expose Photohelic® gage set point mechanism. Cover is clear polycarbonate plastic.

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.



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	Model	Range in w.c. /Air Velocity, F.P.M.	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	Model	Range, Pascals	Model	Range, Pascals	A3000-5KPA	0-5		
A3015	0-15					A3000-8KPA	0-8		
A3020	0-20	A3000-00AV	0-.25/300-2000	Model	Range, Pascals	A3000-10KPA	0-10		
A3025	0-25	A3000-0AV	0-.50/500-2800			A3000-15KPA	0-15		
A3030	0-30	A3001AV	0-1.0/500-4000	A3000-60PA	0-60	A3000-20KPA	0-20		
A3040	0-40	A3002AV	0-2.0/1000-5600	A3000-125PA	0-125	A3000-25KPA	0-25		
A3050	0-50	A3010AV	0-10/2000-12500	A3000-250PA	0-250	A3000-30KPA	0-30		
A3060	0-60	Pitot tube required		A3000-500PA	0-500	Zero Center Ranges			
A3080	0-80			A3000-750PA	0-750	Model	Range, kPa		
A3100	0-100								
A3150	0-150						A3300-1KPA	.5-0-.5	
Bi-Directional Range									
A3000-00N	.05-.20							A3300-3KPA	1.5-0-1.5

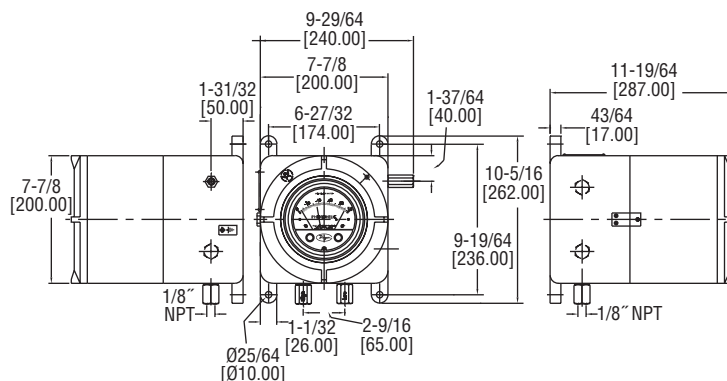
OPTIONS	
To order add suffix:	Description
-SRH	Single relay activates on increase
-SRL	Single relay activates on decrease
-OLS	OEM model
-RMR	Remote mounted relay
-TAMP	Tamper proof knobs
-MP	Medium pressure
-HP	High pressure
-LT	Low temperature (-20°F)
-NIST	NIST traceable calibration certificate

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.

ATEX APPROVED PHOTOHELIC® SWITCH/GAGES WITH 120, 240 OR 24 VAC POWER

Photohelic® Switch/Gages in Flame-Proof ATEX Enclosures



Flame-proof ATEX approved **SERIES AT3A3000** Photohelic® Switch/Gages function 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 psig (2.4 bar) or 80 psig (5.5 bar). 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 (accessible opening case after de-energizing instrument). Set points can be interlocked to provide variable dead band—ideal for control of fans, dampers, etc. Gage reading is continuous and unaffected by switch operation, even during loss of electrical power. Flame-proof ATEX enclosures are available in aluminum with glass window which allows for viewing of set point needles and process pressure.

FEATURES/BENEFITS

- 3-in-1 ATEX approved instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Flame-proof ATEX enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching
- Air conditioning systems
- Clean rooms
- Fume exhaust systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

RANGE CHART					
Model	Range in w.c.	Model	Range in w.c.	Model	Range in w.c.
A3000-00	0 to .25	A3006	0 to 6.0	A3040	0 to 40
A3000-0	0 to .50	A3008	0 to 8.0	A3050	0 to 50
A3001	0 to 1.0	A3010	0 to 10	A3060	0 to 60
A3002	0 to 2.0	A3015	0 to 15	A3080	0 to 80
A3003	0 to 3.0	A3020	0 to 20	A3100	0 to 100
A3004	0 to 4.0	A3025	0 to 25	A3150	0 to 150
A3005	0 to 5.0	A3030	0 to 30		

MODEL CHART												
Example	AT3	A3001	-120VAC	-X	X	X	-A	B	1	X	T2	AT3A3001-120VAC-XXX-AB1XT2
Housing	AT3											ATEX Approved Series A3000 Photohelic® Switch/Gages
Range		A3XXX										Specify range by wiring Photohelic® model number. See range chart.
Power			120VAC 240VAC 24VAC									Power requirement 120 VAC Power requirement 240 VAC Power requirement 24 VAC
Pressure Rating				X								Standard -25 in Hg to 25 psig Medium pressure max. static 35 psig High pressure max. static 80 psig
Construction					X							Standard silicone construction
Temperature Rating						X						Standard temperature 20 to 120°F Low temperature to -20°F
Housing Material							A					Aluminum
Cover								B				Blind Glass cover
Process Connection									1			1/8" NPT female brass ports 1/8" NPT female SS ports
Overpressure Plug										X	OPV	Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag											T2	SS information label

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: ±2% of FS at 70°F (21.1°C); ±3% on -0 and ±4% on -00 models.
Pressure Limits: -20 in Hg to 25 psig (-0.677 to 1.72 bar). MP option; 35 psig (2.4 bar), HP option; 80 psig (5.52 bar).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C) LT low temperature option to -20°F available; Case: -76 to 140°F (-60 to 60°C) (**Note:** Product temperature limits differ from case).
Dial Size: 4" (101.6 mm).
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Adjustable knobs on Photohelic® gage face behind enclosure cover. Follow instructions and safety warnings to open cover.

SWITCH SPECIFICATIONS

Switch Type: Each setpoint has 2 Form C relays (DPDT).
Repeatability: ±1% of FS.
Electrical Rating: 10 A @ 28 VDC, 10 A @ 120, 240 VAC.
Electrical Wiring: Screw terminals.
Power Requirements: 120 VAC, 50/60 Hz; 240 VAC & 24 VAC power optional.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Three 1/2" NPT female. Cable gland not included.
Weight: 28.4 lb (12.9 kg).
ATEX Approved Products from Comhas with ECN: BVI 14ATEX0072.
Agency Approvals: CE 1370 Ex II/2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb IIIC Db T 85°C.

CAPSU-PHOTOHELIC® PRESSURE SWITCH/GAGES

Lo-Limit and Hi-Limit Control, Aluminum or Brass Case Available

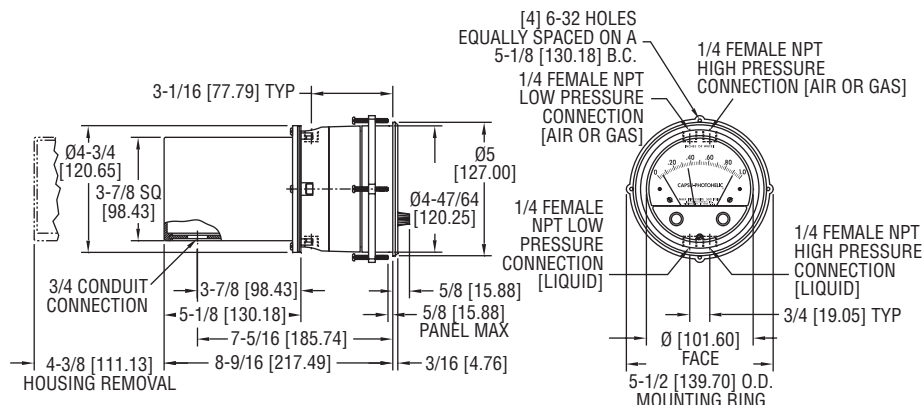
Set points are instantly adjusted with front knobs.



Series 43000
Capsu-Photohelic® Switch/Gage



Series 43000
Capsu-Photohelic® Switch/Gage with Brass Body



SERIES 43000 Capsu-Photohelic® Switch/Gages function as versatile, highly repeatable pressure switches combined with a precise pressure gage employing the time-proven Magnehelic® gage design. The Capsu-Photohelic® switch/gage employs an encapsulated sensing element for use with both liquids and gases at pressures to 500 psig (34 bar). Optional cast brass case is available for water or water based liquids. Two phototransistors 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 pumps.

FEATURES/BENEFITS

- Gage capsule permits high-pressure usage with small differentials
- Zero and range adjustments outside of gage means no disassembly in normal service
- Time-proven, simple, frictionless movement that permits full scale readings as low as 0.5 in w.c.
- Photo-electronic relays provide fast-acting switching with variable deadband control for chatter-free operation

APPLICATIONS

- Pump control
- Pumping systems
- Waste water
- Compatible liquid or gas applications

MODEL CHART			
Model	Range in w.c.	Model	Range in w.c.
43000-0	0-.5	43050	0-50
43001	0-1.0	43060	0-60
43002	0-2.0	43080	0-80
43003	0-3.0	43100	0-100
43004	0-4.0	43150	0-150
43005	0-5.0	43200	0-200
43006	0-6.0	43300	0-300
43008	0-8.0	43400	0-400
43010	0-10	43500	0-500
43015	0-15	43302	1-0-1
43020	0-20	43304	2-0-2
43025	0-25	43310	5-0-5
43030	0-30	43320	10-0-10
43040	0-40	43330	15-0-15

ACCESSORY

Model	Description
A-298	Flat aluminum bracket for flush mounting

SPECIFICATIONS

GAGE SPECIFICATIONS

Service: Compatible gases and liquids. Brass case option required for water based liquids.

Wetted Materials: Consult factory.

Accuracy: ±3% of FS at 70°F (21.1°C).

±4% on 43215, 43220 and 43500.

Pressure Limits: -20 Hg to 500 psig (-0.677 to 34.5 bar).

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

Process Connections: 1/4" female NPT. **Size:** 4" (101.6 mm) dial face, 5" (127 mm) OD x 9-3/16" (233.36 mm).

Weight: 5 lb, 8 oz (2.49 kg). Brass 11 lb, 2 oz (5.05 kg).

SWITCH SPECIFICATIONS

Switch Type: Each setpoint has 2 form C relays (DPDT).

Repeatability: ±1% of FS.

Electrical Rating: 10 A @ 120 VAC, 6 A @ 240 VAC, 60 Hz res. 10 A @ 28 VDC.

Electrical Connections: Screw terminals.

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

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

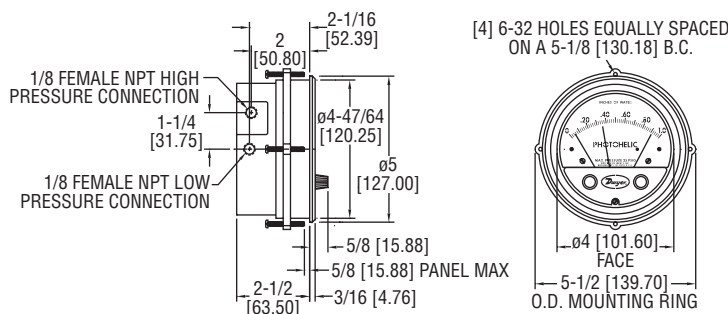
Set Point Adjustment: Adjustable knobs on face.

OPTIONS

To order add suffix:	Description
-SRH	Single relay activates on increase
-SRL	Single relay activates on decrease
-24VAC	24 VAC relay pack
-240VAC	240 VAC relay pack
-RMR	Remote mounted relay
-TAMP	Tamper proof knobs
-WP	Weatherproof (NEMA 4)
-EXPL	Explosion-proof (NEMA 7 C, D, 9 E, F, G; NEC Class I, Div. 1 & 2, Groups C, D, Class II, Div. 1 & 2, Groups E, F, G, Class III)
-NIST	NIST traceable calibration certificate
Example: 43001-NIST	
B	Brass body; For water based liquids order optional brass case
Example: 43001B	
Contact Customer Service for detailed dimension drawings.	

PHOTOHELIC® SWITCH/GAGES

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



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).

FEATURES/BENEFITS

- 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

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

Model	Range, Pascals	Minor Divs.	Model	Range, Pascals	Minor Divs.
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

Model	Range, kPa	Minor Divs.	Model	Range, kPa	Minor Divs.
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

Model	Range, mm w.c.	Minor Divs.	Model	Range, mm w.c.	Minor Divs.
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

Model	Range, cm w.c.	Minor Divs.	Model	Range, cm w.c.	Minor Divs.
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).

Weight: 1.8 lb (816 g).

SWITCH SPECIFICATIONS 3000MR

Switch Type: Each setpoint 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.

Agency Approvals: CE.

SWITCH SPECIFICATIONS 3000MRS

Switch Type: Each setpoint 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.

Agency Approvals: CE.

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

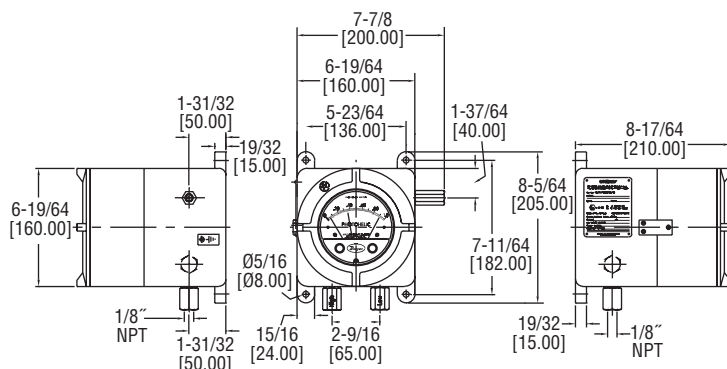
Mounting ring, snap ring, 18" (45 cm) cable assembly, (2) 3/16" tubing to 1/8" NPT adapters, (2) 1/8" NPT pipe plugs, (4) 6-32 x 1-1/4" RH machine screws (panel mounting), (3) 6-32 x 5/16" RH machine screws (surface mounting)

OPTIONS

To order add suffix:	Description
-TAMP	Tamper-proof knobs; require spanner key (supplied) to change setpoints
-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)
-HP	High pressure; increases maximum rated pressure to 80 psig (5.5 bar)
-WP	Weatherproof housing option
-NIST	NIST traceable calibration certificate

Example: 3001MR-NIST

ATEX APPROVED PHOTOHELIC® SWITCH/GAGES WITH 24 VDC POWER



Using solid state technology, the **SERIES AT23000MR & AT23000MRS** ATEX Approved Photohelic® Switch/Gages combine the functions of a precise, highly repeatable differential pressure switch with a large easy-to-read analog pressure gage. Gage reading is unaffected by switch operation and will indicate accurately even if power is interrupted. AT23000MR series employ versatile electromechanical relays with low amperage ratings-ideal for dry circuits. For applications requiring high cycle rates, choose AT23000MRS models with SPST (NO) solid state relays. Easy to adjust set point indicators are controlled by knobs located on the gage face (accessible opening case after de-energizing instrument). All models provide both low and high limit control. 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). Flame-proof ATEX enclosures are available with glass window which allows for viewing of set point needles and process pressure. 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).

FEATURES/BENEFITS

- 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
- Flame-proof ATEX enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching
- Pneumatic conveying
- Air conditioning systems
- Clean rooms
- Fume exhaust systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

RANGE CHART					
Model	Range in w.c.	Minor Divis.	Model	Range, Pa	Minor Divis.
3000-00	0 to 0.25	.005	3000-60 Pa	0 to 60	2.0
3000-0	0 to 0.5	.01	3000-125 Pa	0 to 125	5.0
3001	0 to 1.0	.02	3000-250 Pa	0 to 250	5.0
3002	0 to 2.0	.05	3000-500 Pa	0 to 500	10.0

MODEL CHART

Example	AT2	3001	MR	-X	X	X	-A	B	1	X	T2	AT23001MR-XXX-AB1XT2
Housing	AT2											ATEX Approved Series 3000 MR/MRS Photohelic® Switch/Gages
Range		3XXX										Specify range by using Photohelic® model number. See range cart.
Relay			MR MRS									Electromechanical relay Solid state relay
Pressure Rating				X MP HP								Standard -25 in Hg to 25 psig Medium pressure max. static 35 psig High pressure max. static 80 psig
Construction					X							Standard silicone construction
Temperature Rating						X LT						Standard temperature 20 to 120°F Low temperature to -20°F
Housing Material							A					Aluminum
Cover								B O				Blind Glass top cover
Process Connection									1 2			1/8" NPT female brass ports 1/8" NPT female SS ports
Overpressure Plug										X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag											T2	SS information label

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Housing Material: Aluminum.

Finishing: Texture epoxy coat RAL7038.

Accuracy: $\pm 2\%$ of FS at 70°F (21.1°C). $\pm 3\%$ on -0, -60 Pa and $\pm 4\%$ on -00 models.

Pressure Limits: -20 in 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). Option LT low temperature to -20°F (28.8°C); Case: -76 to 140°F (-60 to 60°C). (**Note:** Product temperature limits differ from case).

Power Requirements: 24 VDC, regulated $\pm 10\%$.

Electrical Wiring: Screw terminals.

Mounting Orientation: Diaphragm in vertical position.

Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.

Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.

Electrical Connections: Two 1/2" NPT female. Cable gland not included.

Dial Size: 4" (101.6 mm).

Set Point Adjustment: Adjustable knobs on face behind enclosure cover. Follow instructions and safety warnings to open cover.

Weight: 12.5 lb (5.7 kg).

ATEX Approved Products from Comhas with ECN: BVI 14ATEX0072.

Agency Approvals: CE 1370 II2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb
IIIC Db T 85°C.

SWITCH SPECIFICATIONS (3000MR)

Switch Type: Each setpoint has 1 Form C relay (SPDT).

Relay Contacts: (resistive load) 1 Form C rated 1.0 A @ 30 VDC, 0.3 A @ 110 VDC or 0.5 A @ 125 VAC. Gold over clad silver - suitable for dry circuits.

SWITCH SPECIFICATIONS (3000MRS)

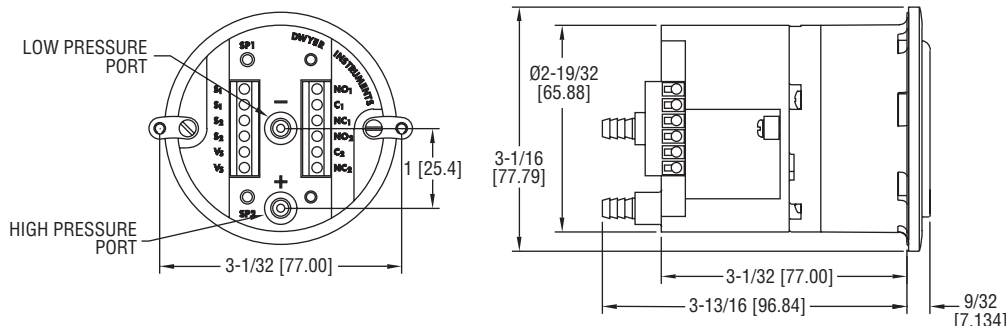
Switch Type: Each setpoint has a solid state relay.

Switching Voltage: 20 to 280 VAC (47 to 63 Hz).

Switching Current: 1.0 amp (AC) max., 0.01 mA (AC) min., (2) SPST NO.

MINI-PHOTOHELIC® DIFFERENTIAL PRESSURE SWITCH/GAGE

Compact, Low Cost Switch Gage



The **SERIES MP** Mini-Photohelic® differential pressure switch/gage combines the time proven Minihelic® II differential pressure gage with two SPDT switching set points. The Mini-Photohelic® switch/gage is designed to measure and control positive, negative, or differential pressures consisting of non-combustible and non-corrosive gases. Gage reading is independent of switch operation. Switching status is visible by LED indicators located on the front and rear of the gage. Set points are adjusted with push buttons on the back of the unit.

FEATURES/BENEFITS

- Gage reading unaffected by switch operation and will continue to read pressure even during power loss
- Visible switch status LED provides indication of set point switching state
- Compact design but with the power of larger devices can meet the same application specifications

APPLICATIONS

- Fume hoods
- Dust collection
- Pneumatic conveying
- Clean room

MODEL CHART			
Model	Range, Inches of Water	Model	Range, Pa
MP-000	0-0.5	MP-125PA	0-125
MP-001	0-1.0	MP-250PA	0-250
MP-002	0-2.0	MP-500PA	0-500
MP-003	0-3.0	Model	Range, kPa
MP-005	0-5.0		
MP-010	0-10	MP-1KPA	0-1
MP-020	0-20	MP-3KPA	0-3

SPECIFICATIONS

GAGE SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: $\pm 5\%$ of FS @ 70°F (21.1°C). Gage face mounted in vertical position.
Pressure Limits: 30 psig (2.067 bar).
Temperature Limits: 20 to 120°F (-6.7 to 49°C).
Process Connections: Barbed for 3/16" ID tubing (STD); 1/8" male NPT (optional).
Size: 4-1/8" (104.78 mm) depth x 3-1/16" (77.79 mm) diameter.
Weight: 23 oz (652 g).

SWITCH SPECIFICATIONS

Switch Type: (2) SPDT relays.
Electrical Rating: 5 A @ 120/240 VAC resistive; 5 A @ 30 VDC.
Electrical Connections: Screw type terminal block. Accepts 22-12 AWG wire.
Power Requirements: 24 VDC / 24 VAC 50/60 Hz 4 watts.
Mounting Orientation: Gage face in vertical position.
Set Point Adjustment: Push buttons.
Standard Accessories: (2) mounting screws, (1) .050" hex allen wrench.
Agency Approvals: CE, cULus.

OPTIONS

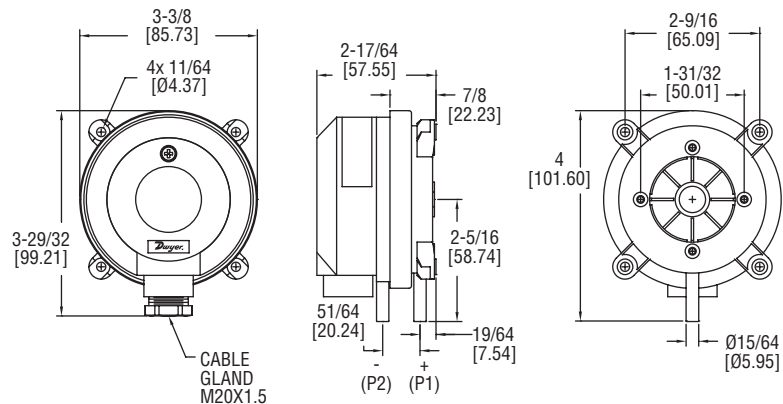
To order add suffix:	Description
-NPT	1/8" male NPT connections
Example: MP-000-NPT; Note: Allow additional lead time	
-NIST	NIST traceable calibration certificate
Example: MP-005-NIST	

ACCESSORIES

Model	Description
A-301	Static pressure tip for 1/4" metal tubing connection
A-302	Static pressure tip for 3/16" and 1/8" I.D. plastic or rubber tubing
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-489	4" straight static pressure tip with flange

WIRELESS COMMUNICATING ADJUSTABLE DIFFERENTIAL PRESSURE SWITCH

EnOcean® Wireless Technology



The **SERIES EWDP** Wireless Communication Adjustable Differential Pressure Switch uses EnOcean® wireless technology to monitor pressure, vacuum, and differential pressures. The dual scaled adjustment knob in inches of water column and pascals allows changes to the pressure set point to be made without a pressure gage. The battery-powered switch is equipped with radio module for frequencies of 902 MHz or 868 MHz which sends a signal wirelessly to a Series USB-300 receiver at each change of status. The silicone diaphragm makes this series ideal for use with air and other non-combustible gases. The EWDP is available with settings from 0.08 in w.c. (20 Pa) up to 20 in w.c. (5000 Pa). The compact size, adjustment knob, and wireless capabilities make the EWDP the perfect choice for HVAC applications in temporary installations or retrofits of existing buildings.

FEATURES/BENEFITS

- Wireless ability allows for easy installation in buildings with concrete or marble walls
- No wires need to be connected, allowing for remote monitoring reduces downtime
- Dual scaled set point adjustment knob to quickly and easily set the value to activate the switch

APPLICATIONS

- Monitoring air filters and ventilators
- Monitoring industrial cooling air circuits and ventilation ducts
- Overheating protection for fan heaters
- Controlling air and fire protection dampers

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Diaphragm material: Silicone; Housing material: POM; Switch Body: PA 6.6; Cover: Polystyrene.
Temperature Limits: Process and Ambient: 14 to 158°F (-10 to 70°C); Storage: -40 to 185°F (-40 to 85°C).
Pressure Limits: 40 in w.c. (10 kPa).
Process Connections: 5/16" (7.94 mm) outside diameter tubing, 1/4" (6.0 mm) inside diameter tubing.
Power Requirements: (1) 3 V CR2032 lithium metal battery, installed non-functional, user replaceable (included).
Enclosure Rating: NEMA 3 (IP54).
Mounting Orientation: Vertically, with pressure connections pointing downwards.
Weight: 5.3 oz (150 g).
Agency Approvals: CE.

MODEL CHART				
Model	Frequency	Set Point Range in w.c. (Pa)	Approx. Deadband @ Min Set Point in w.c. (Pa)	Approx. Deadband @ Max Set Point in w.c. (Pa)
EWDP-08-2-L-N	902 MHz	0.08 to 1.20 (20 to 300)	0.04 (10)	0.05 (12)
EWDP-04-2-L-N	902 MHz	0.12 to 1.60 (30 to 400)	0.06 (15)	0.09 (22)
EWDP-03-2-L-N	902 MHz	0.20 to 2.00 (50 to 500)	0.08 (20)	0.09 (23)
EWDP-05-2-L-N	902 MHz	0.80 to 4.00 (200 to 1000)	0.4 (100)	0.5 (130)
EWDP-06-2-L-N	902 MHz	2.00 to 10.00 (500 to 2500)	0.6 (150)	0.8 (200)
EWDP-07-2-L-N	902 MHz	4.00 to 20.00 (1000 to 5000)	1.0 (250)	1.4 (350)
EWDP-08-2-L-E	868 MHz	0.08 to 1.20 (20 to 300)	0.04 (10)	0.05 (12)
EWDP-04-2-L-E	868 MHz	0.12 to 1.60 (30 to 400)	0.06 (15)	0.09 (22)
EWDP-03-2-L-E	868 MHz	0.20 to 2.00 (50 to 500)	0.08 (20)	0.09 (23)
EWDP-05-2-L-E	868 MHz	0.80 to 4.00 (200 to 1000)	0.4 (100)	0.5 (130)
EWDP-06-2-L-E	868 MHz	2.00 to 10.00 (500 to 2500)	0.6 (150)	0.8 (200)
EWDP-07-2-L-E	868 MHz	4.00 to 20.00 (1000 to 5000)	1.0 (250)	1.4 (350)

Note: For models that include an installer kit, add -C to the end of the model number. Installer kit includes two static pressure tips and 7 ft of PVC tubing.

ACCESSORIES	
Model	Description
A-288	"L" type metal mounting bracket with screws
A-289	"S" type metal mounting bracket with screws
A-480	Plastic static pressure tip
A-481	Installer kit. Includes 2 plastic static pressure tips and 7' (2.1 m) of PVC tubing
A-489	4" straight static pressure tip with flange
USB-300U	USB wireless receiver, 902 MHz
USB-300	USB wireless receiver, 868 MHz

HVAC DIFFERENTIAL PRESSURE SWITCH

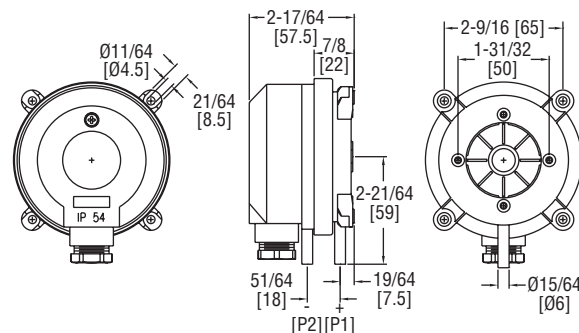
With Dual Scale Field Adjustable Set Point Knob



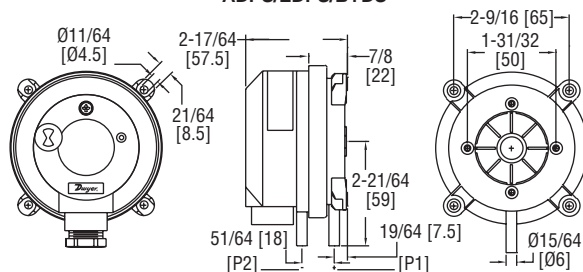
ADPS



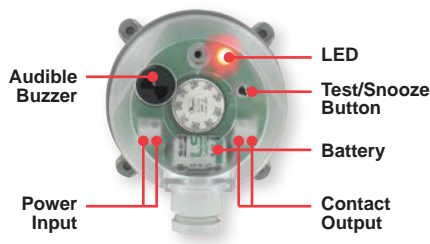
EDPS



ADPS/EDPS/BYDS



BDPA



BDPA

The **SERIES ADPS/EDPS/BDPA/BYDS** Adjustable Differential Pressure Switch is designed for pressure, vacuum, and differential pressures. The dual scaled adjustment knob in inches water column and pascals allows changes to the switching pressure to be made without a pressure gage. The ADPS/EDPS/BDPA is available with settings from 0.08 in w.c. (20 Pa) up to 20 in w.c. (5000 Pa). The silicone diaphragm and PA 6.6 body make the series ADPS ideal for use with air and other noncombustible gases. Series EDPS models meet UL508 and are constructed of plenum rated plastics. The series BDPA Adjustable Differential Pressure Alarms offer a versatile range of configurations allowing utilization of their many features including buzzer and LED notification, and battery or line powered. The compact size, adjustment knob and low cost make the ADPS/EDPS/BDPA the perfect choice for HVAC applications.

FEATURES/BENEFITS

- Adjustment knob changes switching pressure easily with a pressure gage reducing components for application
- Low cost device makes it an excellent solution in BAS and HVAC applications requiring duct control and monitoring
- Relay contact allows simple integration with DDC or building systems

APPLICATIONS

- Air filter and ventilator monitoring
- Industrial cooling circuits
- Fire-protection damper control
- Ventilation duct monitoring
- Fan heater overheating protection
- Heat exchanger frost protection

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: ADPS/BYDS:

Diaphragm material: Silicone;

Housing material: POM; Switch

body: PA 6.6; Cover: Polystyrene;

EDPS: Diaphragm material: Silicone;

Housing material: Switch body: PA 6.6;

Cover: Polystyrene; Materials UL 94 V-0

rated.

Temperature Limits: Process and

ambient temperature from -4 to 185°F

(-20 to 85°C).

Pressure Limits: Max. operating

pressure: 40 in w.c. (10 kPa) for all

pressure ranges.

Switch Type: Single-pole double-throw

(SPDT).

Electrical Rating: Max. 1.5 A res./0.4 A ind./250 VAC, 50/60 Hz; Max. switching rate: 6 cycles/min.

Electrical Connections: Push-on screw terminals. M20x1.5 with cable strain relief or optional 1/2" NPT.

Process Connections: 5/16" (7.94 mm) outside diameter tubing, 1/4" (6.0 mm) inside diameter tubing.

Enclosure Rating: NEMA 13 (IP54).

Mounting Orientation: Vertically,

with pressure connections pointing

downwards.

Mechanical Working Life: Over 106

switching operations.

Weight: 5.6 oz (160 g).

Agency Approvals: CE, ETL approved

to UL508 and CSA C22.2#14

(EDPS only).

MODEL CHART - ADPS			
Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Deadband @ Max Set Point in w.c. (Pa)
ADPS-08-2-N	0.08 to 1.20 (20-300)	0.04 (10)	0.05 (12)
ADPS-04-2-N	0.12 to 1.60 (30-400)	0.06 (15)	0.09 (23)
ADPS-03-2-N	0.20 to 2.00 (50-500)	0.08 (20)	0.09 (23)
ADPS-05-2-N	0.80 to 4.00 (200-1000)	0.4 (100)	0.5 (130)
ADPS-06-2-N	2.00 to 10.00 (500-2500)	0.6 (150)	0.8 (200)
ADPS-07-2-N	4.00 to 20.00 (1000-5000)	1.0 (250)	1.4 (350)

Note: For optional 1/2" NPT conduit connection, change -2-N to -1-N. Models that include installer kit add -C to the end of the model number (-2-N cable gland models only). Installer kit includes two static tips and 7 ft of PVC tubing. Order installer kit separately with 1/2" NPT conduit connection models. See A-481 in the accessories list.

MODEL CHART - EDPS			
Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Dead Band @ Max Set Point in w.c. (Pa)
EDPS-08-1-N	0.08 to 1.20 (20-300)	0.04 (10)	0.05 (12)
EDPS-04-1-N	0.12 to 1.60 (30-400)	0.06 (15)	0.09 (23)
EDPS-03-1-N	0.20 to 2.00 (50-500)	0.08 (20)	0.09 (23)
EDPS-05-1-N	0.80 to 4.00 (200-1000)	0.4 (100)	0.5 (130)
EDPS-06-1-N	2.00 to 10.00 (500-2500)	0.6 (150)	0.8 (200)
EDPS-07-1-N	4.00 to 20.00 (1000-5000)	1.0 (250)	1.4 (350)

Note: For optional M20 cable gland connection, change -1-N to -2-N.

MODEL CHART - BDPA			
Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Dead Band @ Max Set Point in w.c. (Pa)
BDPA-08-2-N	0.08 to 1.20 (20 to 300)	0.04 (10)	0.05 (12)
BDPA-04-2-N	0.12 to 1.60 (30 to 400)	0.06 (15)	0.09 (23)
BDPA-03-2-N	0.20 to 2.00 (50 to 500)	0.08 (20)	0.09 (23)
BDPA-05-2-N	0.80 to 4.00 (200 to 1000)	0.4 (100)	0.5 (130)
BDPA-06-2-N	2.00 to 10.00 (500 to 2500)	0.6 (150)	0.8 (200)
BDPA-07-2-N	4.00 to 20.00 (1000 to 5000)	1.0 (250)	1.4 (350)

MODEL CHART - BYDS

Model Description

BYDS Bypass damper version

Note: All models available online.

ACCESSORIES

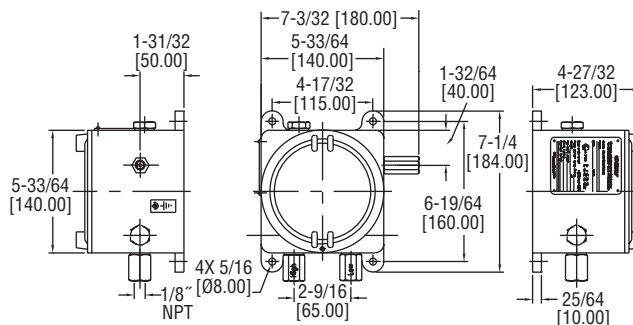
Model	Description
A-288	"L" type metal mounting bracket with screws
A-289	"S" type metal mounting bracket with screws
A-480	Plastic static pressure tip
A-481	Installer kit, includes 2 plastic static pressure tips & 7' (2.1 m) of PVC tubing
A-489	4" straight static pressure tip with flange



A-480

ATEX APPROVED ADPS ADJUSTABLE DIFFERENTIAL PRESSURE SWITCH

The ADPS in Flame-Proof ATEX Enclosure



The ATEX approved **SERIES AT1ADPS** Adjustable Differential Pressure Switch is designed for pressure, vacuum, and differential pressure applications in hazardous areas. The dual scaled adjustment knob in inches water column and Pascals allows changes to the switching pressure to be made without a pressure gage. The switch is available with settings from 0.08 in w.c. (20 Pa) up to 16 in w.c. (4000 Pa). The silicone diaphragm makes this series ideal for use with air and other noncombustible gases. Flame-proof ATEX enclosures are available in aluminum and can include a glass window for viewing set point status on the adjustment knob.

FEATURES/BENEFITS

- Flame-proof ATEX enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to set point status

APPLICATIONS

- Hazardous area pressure switch
- Air filter and ventilator monitoring
- Ventilation duct monitoring
- Industrial cooling circuits
- Fan heater overheating protection
- Fire-protection damper control
- Heat exchanger frost protection

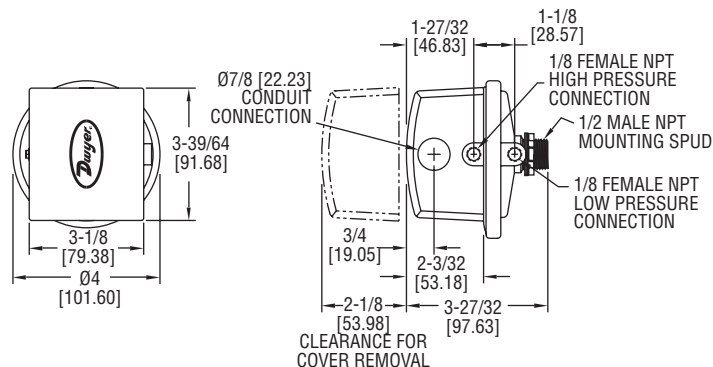
SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Diaphragm material: Silicone; Housing material: Switch body: PA 6.6 and POM; Cover: Polystyrene; Brass or SS depending on pressure connections chosen.
Temperature Limits: Process and ambient temperature from -4 to 185°F (-20 to 85°C); Case: -76 to 140°F (-60 to 60°C) (**Note:** Product temperature limits differ from case).
Pressure Limits: 40 in w.c. (10 kPa).
Switch Type: SPDT.
Electrical Rating: Standard: Max. 1.5 A @ 250 VAC, max. switching rate: 6 cycles/min.
Set Point Adjustment: Hand knob on pressure switch inside case. (De-energize before opening case).
Mounting Orientation: Vertically, with pressure connections pointing downwards.
Mechanical Working Life: Over 10⁶ switching operations.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2" NPT female. Cable gland not included.
Weight: 7 lb (3.2 kg).
ATEX Approved Products from Comhas with ECN: BVI 14ATEX0072.
Agency Approvals: CE 1370 Ex II2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb IIIC Db T 85°C.

MODEL CHART										
Example	AT1ADPS	-08	-2	-N	-A	O	1	X	T2	AT1ADPS-08-2-N-AO1XT2
Series	AT1ADPS									ATEX approved ADPS adjustable differential pressure switch
Range		08 04 03 05 06 07								.08 to 1.2 in w.c. (20 to 300 Pa) .12 to 1.6 in w.c. (30 to 400 Pa) .2 to 2 in w.c. (50 to 500 Pa) .8 to 4 in w.c. (200 to 1000 Pa) 2 to 10 in w.c. (500 to 2500 Pa) 4 to 20 in w.c. (1000 to 5000 Pa)
Connection			2							Internal cable gland
Switch				N						1.5 A @ 250 VAC
Housing Material					A					Aluminum
Cover						B O				Blind Glass top cover
Process Connection							1 2			1/8" NPT female brass ports 1/8" NPT female SS ports
Overpressure Plug								X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag									T2	SS information label

LOW DIFFERENTIAL PRESSURE SWITCHES FOR GENERAL INDUSTRIAL SERVICE

Set Points from 0.07 in w.c. to 85 in w.c. Repetitive Accuracy within 2%



Essential for industrial environments, the **SERIES 1800** combines small size and low price with 2% repeatability for enough accuracy for all but the most demanding applications. Set point adjustment inside the mounting stud permits mounting switch on one side of a wall or panel with adjustment easily accessible on the opposite side. UL and CSA listed, and FM approved. For use with air or compatible gases.

FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial applications
- Designed for panel and wall mounting and provides easy access that simplifies making adjustments or changes to switch setting
- Wide range of models from 0.07 in w.c. to 85 in w.c. can meet exacting specifications for a low pressure switch

APPLICATIONS

- Process applications
- Mechanical equipment control

OPTIONS

Weatherproof Housing

16 ga. steel enclosure with gasketed cover (NEMA 4, IP66) for wet or oily conditions. Withstands 200 hour salt spray test. Wt. 5-1/2 lb (2.5 kg). Switch must be factory installed.

Note: To order, change 1823 base number to 1824 and add -WP suffix.

Example: 1824-1-WP

Explosion-Proof Housing

Cast iron base with aluminum cover. Rated Class I, Div. 1 & 2, Group D; Class II, Div. 1 & 2, Groups E, F, G; Class III and NEMA 7 CD, 9 EFG. Wt. 7-1/2 lb (3.4kg). Switch must be factory installed.

Note: To order, change 1823 base number to 1824 and add -EXPL suffix.

Example: 1824-1-EXPL

MIL Environmental Construction

Unlisted Model 1820 can be furnished with a special sealed snap switch for protection against high humidity, fungus and/or military applications. Similar to Model 1823 except deadband is slightly greater and some lower setpoints may not be possible.

Note: To order, add -MIL suffix. **Example:** 1820-2-MIL

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Temperature Limits: -30 to 180°F (-34 to 82.2°C); 1823-00: -20 to 180°F (-28.9 to 82.2°C).

Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge.

Switch Type: Single-pole double-throw (SPDT).

Repeatability: ±2%.

Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. De-rate to 10 A for operation at high cycle rates.

Electrical Connections: 3 screw type, common, normally open and normally closed.

Process Connections: 1/8" female NPT.

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

Set Point Adjustment: Screw type inside mounting spud.

Weight: 1 lb 5 oz (595 g).

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

MODEL CHART

Model	Operating Range, in w.c.	Approximate Deadband	
		At Min. Set Point	At Max. Set Point
1823-00	0.07 to 0.22	0.05	0.05
1823-0	0.15 to 0.5	0.06	0.06
1823-1	0.3 to 1.0	0.08	0.08
1823-2	0.5 to 2.0	0.10	0.12
1823-5	1.5 to 5.0	0.14	0.28
1823-10	2.0 to 10	0.18	0.45
1823-20	3 to 22	0.35	0.70
1823-40	5 to 44	0.56	1.10
1823-80	9 to 85	1.30	3.0

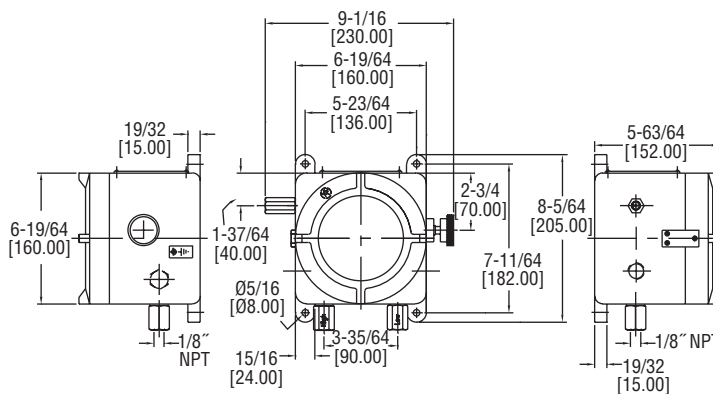
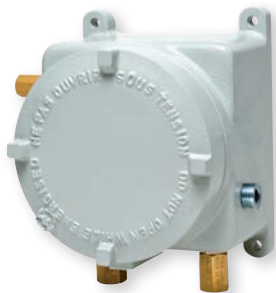
ACCESSORIES

Model	Description
A-389	Mounting bracket; 16 ga. steel, zinc plated and dichromate dipped for corrosion resistance; provides rugged, permanent mounting and speeds installation
A-489	4" straight static pressure tip with flange
A-491	6" straight static pressure tip with flange
A-493	8" straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-302F-B	303 SS static pressure tip with mounting flange; for 3/16" rubber or plastic tubing; 6" insertion depth; includes mounting screws
A-302F-C	303 SS static pressure tip with mounting flange; for 3/16" rubber or plastic tubing; 8" insertion depth; includes mounting screws

Process Tubing Options: See page 489 (Gage Tubing Accessories)

ATEX APPROVED 1823 DIFFERENTIAL PRESSURE SWITCH

The 1823 in Flame-Proof ATEX Enclosure



Essential for industrial environments, the ATEX approved **SERIES AT21823** combines small size with 2% repeatability. Set point adjustment inside the switch allows for set point settings across 9 ranges from the low of .07 in w.c. to a maximum 85 in w.c. differential pressure. Series AT21823 flame-proof ATEX enclosures are available in aluminum and are ideal for low pressure hazardous area applications. Various housing options such as an overpressure relief valve or external setpoint adjustment knob are available. External setpoint knob allows adjustment without opening the enclosure.

FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial applications
- External setpoint knob provides easy access that simplifies making adjustments without opening enclosure
- Flame-proof ATEX enclosure protects the device in hazardous areas

APPLICATIONS

- Hazardous area pressure switch
- Process applications
- Mechanical equipment control

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

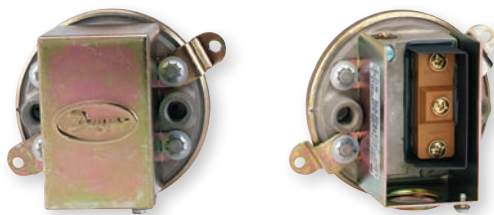
SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C); 1823-00, -20 to 180°F (-28.9 to 82.2°C); Case: -76 to 140°F (-60 to 60°C) (Note: Product temperature limits differ from case).
Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge.
Switch Type: SPDT.
Repeatability: ±2% FS.
Electrical Rating: 15 A @ 120 to 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. De-rate to 10 A for operation at high cycle rates.
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Screw type inside mounting spud internal to switch. External setpoint adjustment knob optional.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve or external setpoint adjustment knob.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2" NPT female. Cable gland not included.
Weight: 11.9 lb (5.4 kg).
ATEX Approved Products from Comhas with ECN: BVI 14ATEX0072.
Agency Approvals: CE 1370 Ex II 2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb IIIC Db T 85°C.

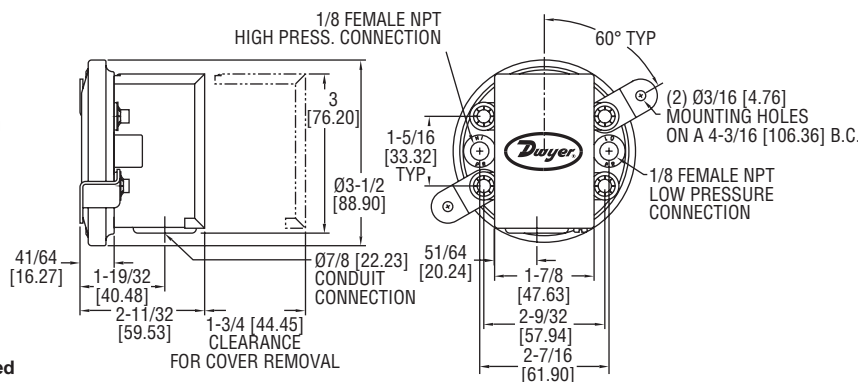
MODEL CHART									
Example	AT21823	-00	-A	O	K1	1	X	T2	AT21823-00-AOK11XT2
Series	AT21823								ATEX approved 1823 differential pressure switch
Range		00 0 1 2 5 10 20 40 80							.08 to .22 in w.c. (18 to 56 Pa) .15 to .5 in w.c. (38 to 127 Pa) .3 to 1 in w.c. (76 to 254 Pa) 5 to 2 in w.c. (127 to 508 Pa) 1.5 to 5 in w.c. (381 to 1270 Pa) 2 to 10 in w.c. (.5 to 2.5 kPa) 3 to 22 in w.c. (.76 to 5.6 kPa) 5 to 44 in w.c. (1.27 to 11.17 kPa) 9 to 85 in w.c. (2.28 to 21.6 kPa)
Housing Material			A						Aluminum
Cover				B O					Blind Glass top cover
Setpoint Adjustment					K1 K2				Without external setpoint adjustment knob With external setpoint adjustment knob
Process Connection						1 2			1/8" NPT female brass ports 1/8" NPT female SS ports
Overpressure Plug							X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag								T2	SS information label

COMPACT LOW DIFFERENTIAL PRESSURE SWITCHES

Set Points from 0.07 in to 20 in w.c. Repetitive Accuracy within 3%



Series 1910 switch with conduit enclosure off.
Shows electric switch and set point adjustment screw located on same side for easy installation.



The Dwyer-engineered force-motion amplifier increases the leverage of diaphragm movement and results in a switch with excellent sensitivity and repeatability.



Our most popular **SERIES 1900** combines advanced design and precision construction to make these switches able to perform many of the tasks of larger, costlier units. Designed for air conditioning service, they also serve many fluidics, refrigeration, oven and dryer applications. Series 1900 switches have set points from 0.07 to 20 in w.c. (1.8 to 508 mm). Set point adjustment is easy with range screw located inside conduit enclosure. Internal location helps prevent tampering. UL, CE and CSA listed, and FM approved. For use with air or compatible gases.

FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial and OEM applications
- Wide range of models from 0.07 in w.c. to 20 in w.c. can meet exacting OEM specifications for a low pressure switch
- Range screw protected inside enclosure provides simplifies making adjustments but prevents tampering

APPLICATIONS

- Air conditioning refrigeration coil icing detection; defrost cycle initiation
- Clogged filter detection
- Variable air volume controller

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C).
Pressure Limits: 45 in w.c. (11.2 kPa) continuous, 10 psig (68.95 kPa) surge.
Switch Type: Single-pole double-throw (SPDT).
Repeatability: ±3%.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. Derate to 10 A for operation at high cycle rates.

Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8" female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type inside conduit enclosure.
Weight: 1 lb 4.5 oz (581 g).
Agency Approvals: CE, CSA, FM, and UL. Optional-EXPL explosion-proof enclosure does not possess any agency approvals.

OPTIONS

Weatherproof Housing

16 ga. steel enclosure with gasketed cover (NEMA 4, IP66) for wet or oily conditions. Withstands 200 hour salt spray test. Wt. 5-1/2 lb (2.5 kg). Switch must be factory installed.

Note: To order, change 1910 base number to 1911 and add -WP suffix.

Example: 1911-1-WP

Explosion-Proof Housing

Cast iron base with brass cover. Rated Class I, Groups D; Class II, Div. 2, Groups E, F, G; Class III and NEMA 7, 9 NEMA 3. (7 lb). Switch must be factory installed.

Note: To order, change 1910 base number to 1911 and add -EXPL suffix.

Example: 1911-1-EXPL

Manual Reset Option (Model 1900 MR)

Includes special snap switch which latches on pressure increase above the setpoint. Switch must be manually reset after pressure drops below the setpoint. Available on -1, -5, -10 or -20 ranges only. Option is not UL, CSA or FM listed. For use only in single positive pressure applications.

Note: To order, change 1910 base number to 1900 and add -MR suffix.

Example: 1900-10-MR



Manual Reset Option

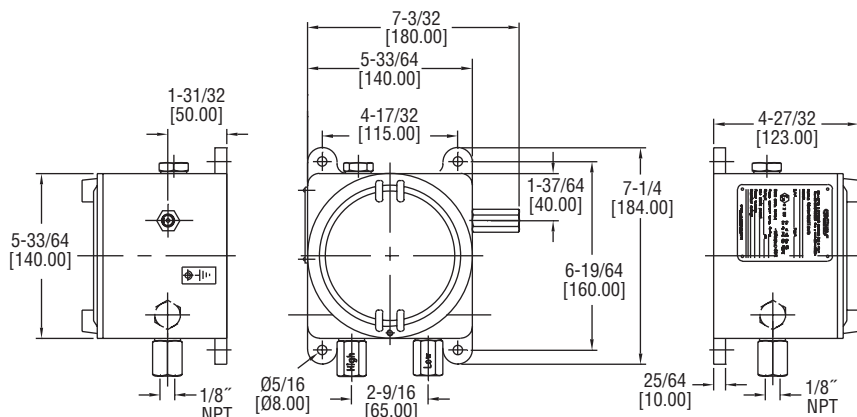
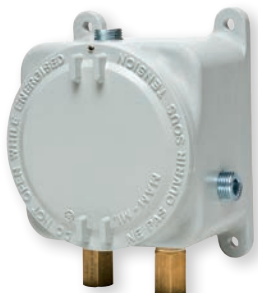
Process Tubing Options: See page 489 (Gage Tubing Accessories)

MODEL CHART			
Model	Operating Range, in w.c.	Approximate Deadband	
		At Min. Set Point	At Max. Set Point
1910-00	0.07 to 0.15	0.04	0.04
1910-0	0.15 to 0.5	0.10	0.10
1910-1	0.40 to 1.6	0.15	0.16
1910-5	1.40 to 5.5	0.30	0.30
1910-10	3.0 to 11.75	0.40	0.40
1910-20	4.0 to 20.0	0.40	0.50

ACCESSORIES	
Model	Description
A-399	Duct pressure monitor kit; for use with standard or manual reset model switches; includes mounting flange, tubing and adapters
A-329	Street ell; brass adapter for applications requiring right angle connections; two required for differential pressures
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-489	4" straight static pressure tip with flange

ATEX APPROVED 1910 DIFFERENTIAL PRESSURE SWITCH

The 1910 in Flame-Proof ATEX Enclosure



Our most popular Differential Pressure Switch is now available in a flame-proof ATEX approved package in the **SERIES AT11910**. This pressure switch combines advanced design and precision construction to make these switches able to perform many of the tasks of larger, costlier units. For air and non-combustible compatible gases, the AT11910 Series switches have set points from 0.07 to 20 in w.c. (1.8 to 508 mm). Set point adjustment is easy with range screw located inside the switch enclosure. Series AT11910 ATEX enclosures are available in aluminum enclosures and ideal for low pressure, hazardous area applications.

FEATURES/BENEFITS


- Flame-proof ATEX enclosure protects the device in hazardous areas
- Compact size and repeatability, provides a high-value switch for many industrial and OEM applications
- Wide range of models from 0.07 in w.c. to 20 in w.c. can meet exacting OEM specifications for a low pressure switch
- Range screw protected inside switch enclosure prevents tampering

APPLICATIONS

- Hazardous area low pressure applications
- Air conditioning refrigeration coil icing detection; defrost cycle initiation
- Clogged filter detection
- Variable air volume controller

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

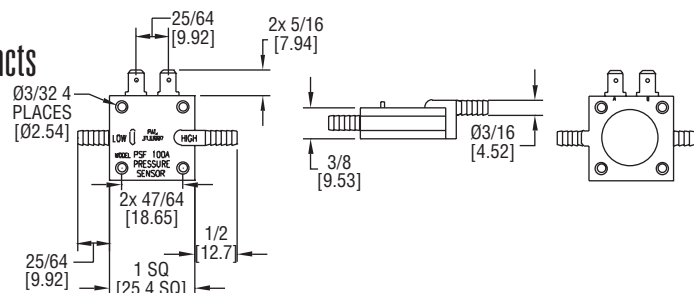
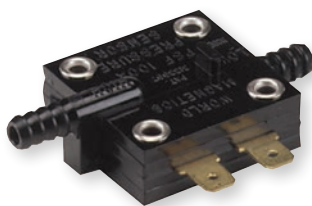
SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C); Case: -76 to 140°F (-60 to 60°C) (Note: Product temperature limits differ from case).
Pressure Limits: 45 in w.c. (11.2 kPa) continuous, 10 psig (68.95 kPa) surge.
Switch Type: SPDT.
Repeatability: ±3% FS.
Electrical Rating: 15 A @ 120 to 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. Derate to 10 A for operation at high cycle rates.
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Screw type on pressure switch inside the enclosure accessible by hole with plug on housing. Setpoint regulation must be done with instrument de-energized. Follow instructions and safety warning to open cover.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8" NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2" NPT female. Cable gland not included.
Weight: 7.49 lb (3.4 kg).
ATEX Approved Products from Comhas with ECN: BVI 14ATEX007.
Agency Approvals: CE 1370  II2 GD Ex d IIC Gb T6; -60°C ≤ Ta ≤ +60°C Ex tb IIIC Db T 85°C.

MODEL CHART									
Example	AT11910	-00	-A	B	1	X	T2	AT11910-00-AB1XT2	
Series	AT11910							ATEX approved 1910 differential pressure switch	
Range		00 0 1 5 10 20						.07 to .15 in w.c. (17.5 to 37 Pa) .15 to .55 in w.c. (37.5 to 137 Pa) .4 to 1.6 in w.c. (100 to 398 Pa) 1.4 to 5.5 in w.c. (348.5 to 1368 Pa) 3 to 11.75 in w.c. (747 to 2924 Pa) 4 to 20 in w.c. (996 to 4977 Pa)	
Housing Material			A					Aluminum	
Cover				B				Blind	
Process Connection					1 2			1/8" NPT female brass ports 1/8" NPT female SS ports	
Overpressure Plug						X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports	
Tag							T2	SS information label	

MINIATURE PRESSURE SWITCH

Shock and Vibration Resistant, Lightweight and Compact, Gold Contacts



The **SERIES MDS** Pressure Switch is designed with a double diaphragm to protect false actuation due to shock and vibration. This low cost pressure switch has a minimum 20 million cycle life expectancy, and an extremely fast response time, making this an ideal device for OEM orders.

FEATURES/BENEFITS

- Low cost, long service life and fast response time is suitable for a wide range of OEM uses
- Lightweight but shock and vibration resistant for tough applications
- Gold contacts help ensure a clean connection without dirt or oxidation

APPLICATIONS

- Air proving
- Ventilation flow
- Exhaust ducts
- Cleaning and purification
- Heavy equipment and machinery
- Pressure monitoring

SPECIFICATIONS

Switch Type: SPST normally open.	Electrical Connections: Brass tab-type for use with quick disconnections.
Switching Media: Air or compatible fluids on "high" side.	Pressure Connections: Two barbed ports for use with 1/8"-3/16" ID tubing.
Pressure Limits: Set point <3.0 in w.c.: 8 psi; Set point >3.0 in w.c.: 15 psi.	Housing: Polycarbonate.
Current Rating: Gold contact switch providing maximum 40 mA resistive load allowing for life in excess of 20 million cycles.	Diaphragm Material: Polyurethane.
Temperature Limits: 40 to 150°F (4 to 66°C).	Operating Voltage: AC/DC - 30 V or less with resistive load.
	Weight: Less than 0.353 oz (10 g).
	Agency Approvals: cULus.

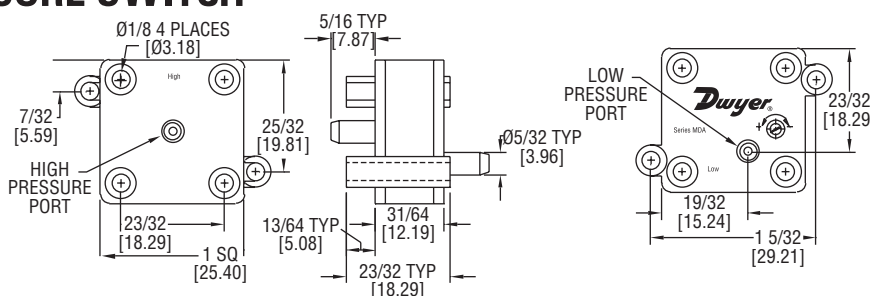
MODEL CHART			
Model	Set Point in w.c.	Model	Set Point in w.c.
MDS-0	0.5	MDS-6	6.0
MDS-1	1.0	MDS-8	10.0
MDS-2	1.5	MDS-10	15.0
MDS-3	2.0	MDS-12	30.0
MDS-4	3.0	MDS-14	50.0

Process Tubing Options: See page 489 (Gage Tubing Accessories)

SERIES MDA

MINIATURE ADJUSTABLE PRESSURE SWITCH

Adjustable Set Points from 0.1 to 100 in w.c.



Sense differential pressure with the **SERIES MDA** Miniature Adjustable Pressure Switch. The switch features field adjustable set point and gold inlay contacts. Air or other compatible fluids can be used on the "high side". The lightweight and compact size make the MDA ideal for any application with space constraints. Applications include industrial, HVAC, pump and motor control, medical, automotive, pools and spas.

FEATURES/BENEFITS

- Air or fluid on high side permits multiple uses where both air and liquids exist
- Small and lightweight for applications where space is constrained
- Gold contacts help ensure a clean connection without dirt or oxidation

APPLICATIONS

- Industrial
- Medical
- HVAC
- Pump and motor control
- Automotive
- Pools and spas

MODEL CHART		
Model	Min. Set Point in w.c. (mbar)	Max. Set Point in w.c. (mbar)
MDA-011	0.1 (0.25)	0.5 (1.25)
MDA-111	0.5 (1.25)	2.0 (4.98)
MDA-211	2.0 (4.98)	15 (37.37)
MDA-311	15 (37.37)	60 (149.3)
MDA-411	60 (149.3)	100 (249.10)

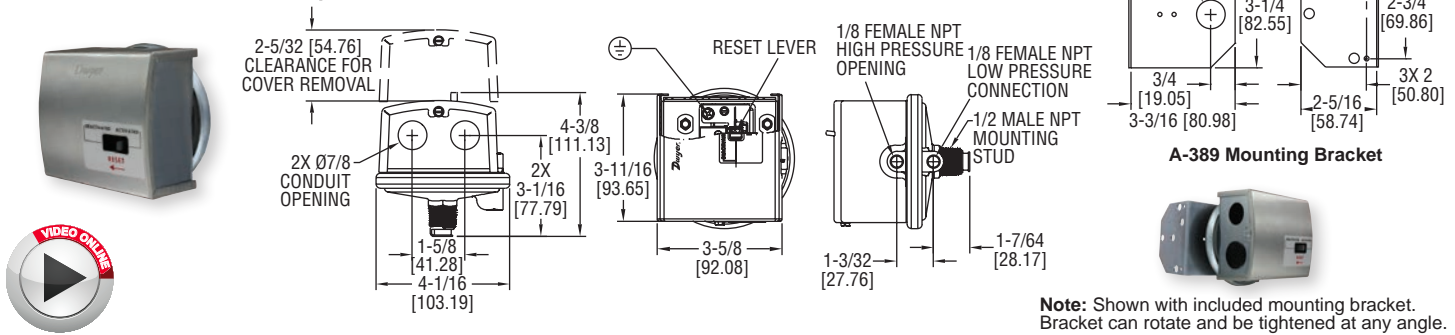
SPECIFICATIONS

Switch Type: SPST normally open.	Pressure Connections: Smooth port 5/32" diameter for 1/8" ID tubing.
Switching Media: Air or compatible fluids on "high side".	Housing: Polycarbonate.
Pressure Limits: MDA-011: 4 psi; MDA-111: 8 psi; MDA-211: 8 psi; MDA-311: 15 psi; MDA-411: 30 psi.	Diaphragm Material: Polyurethane.
Current Rating: 40 mA resistive for life in excess of 20 million cycles.	Operating Voltage: AC/DC - 30 V or less with resistive load.
Temperature Limits: 40 to 150°F (4 to 66°C).	Mounting: Use #4 screws through mounting lugs or #2 screws through eyelets.
Contacts: 18K gold inlay.	Weight: Less than 0.353 oz (10 g).
Electrical Connections: Terminals - 0.187" x 0.20: spade (recessed) for use with quick disconnects.	Agency Approvals: cULus.

Process Tubing Options: See page 489 (Gage Tubing Accessories)

DPDT LOW DIFFERENTIAL PRESSURE SWITCHES

Manual Reset, No Power Required



Note: Shown with included mounting bracket. Bracket can rotate and be tightened at any angle.

One of our most popular differential pressure switches is now available with a DPDT switch and manual reset. The **SERIES 1831** combines small size with 4% set point repeatability. Absolutely no power is required to operate the DPDT switch. Set point adjustment on the switch is easily accessible for modifying the set point. The Series 1831 DPDT Low Differential Pressure Switches with Manual Reset eliminate common problems associated with typical high duct static cutout installations. Since the 1831 requires absolutely no power to drive its outputs, a separate power loop and its associated additional wiring and conduit is alleviated, reducing material and labor installation costs. Both control contacts of the Series 1831 activate at the same time. The potential of the lead switch shutting down the fan preventing the lag switch from sending an alarming signal to the DDC is no longer a probable system liability. Potential costly maintenance calls are diminished. Unlike typical switches that possess only a single conduit entry for both control loops, the Series 1831 provides two conduit connections simplifying wiring while eliminating additional conduit tees.

FEATURES/BENEFITS

- No power to operate DPDT switch means no additional wiring or conduit reduces material and installation labor costs
- Easy access for modifying set point simplifies adjustment
- Both control contacts activate at the same time eliminating system issues where lead switch activities prevent the lagging switch from sending a signal

APPLICATIONS

- High duct static cutout applications
- HVAC

MODEL CHART		
Model	Description	Range (in w.c.)
1831-1-RA-S	Manual reset DPDT, activate on increase	2.5 to 9
1831-2-RA-S	Manual reset DPDT, activate on increase	7.5 to 23

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. Wetted Materials: Consult factory. Temperature Limits: -30 to 180°F (-34 to 82.2°C). Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge. Switch Type: 2 SPDT. Actuation Time Difference: 1 millisecond maximum actuation delay between contacts.	Repeatability: ±4% max. Electrical Rating: 4 A @ 125/250 VAC. Electrical Connections: Screw type terminal block. Process Connections: 1/8" female NPT. Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations. Set Point Adjustment: Screw type inside mounting stud. Weight: 1 lb 2 oz (522 g).
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ACCESSORIES

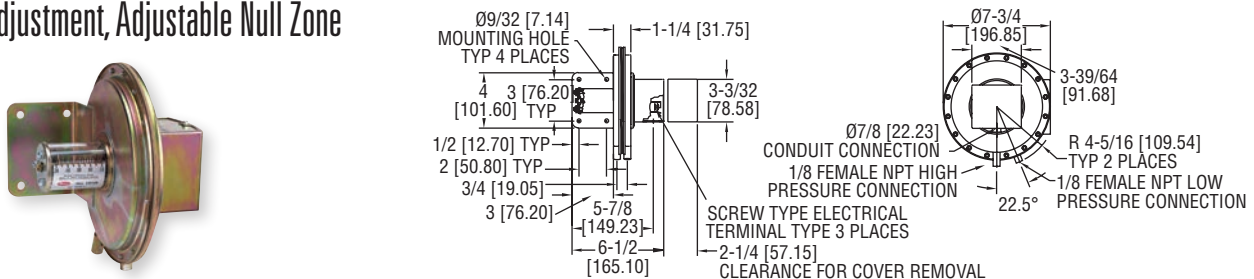
Model	Description
A-489	4" straight static pressure tip with flange
A-491	6" straight static pressure tip with flange
A-493	8" straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-302F-B	303 SS static pressure tip with mounting flange; for 3/16" rubber or plastic tubing; 6" insertion depth; includes mounting screws
A-302F-C	303 SS static pressure tip with mounting flange; for 3/16" rubber or plastic tubing; 8" insertion depth; includes mounting screws

Process Tubing Options: See page 489 (Gage Tubing Accessories)

SERIES 1640

FLOATING CONTACT NULL SWITCH FOR HIGH AND LOW ACTUATION

Visual Set Point Adjustment, Adjustable Null Zone



The unique electric switch design in the **SERIES 1640** is another Dwyer Instrument, Inc. innovation. The Dwyer® Model 1640 Differential Pressure Switch resembles the high precision large diaphragm Series 1630 switches. However, the Model 1640 is equipped with a single pole, double throw floating contact switch (not snap acting) so it functions as a null switch. As the diaphragm moves in response to pressure changes, it moves the floating contact to cause switching action at two preset points with no switching action between these points. The "high" circuit will be closed when rising pressure differential reaches the preset level. The "low" circuit will be closed when falling pressure differential reaches the preset level.

FEATURES/BENEFITS

- Floating "null" switch supports applications requiring two set point actions such as open and close damper control
- Visible set point indicator simplifies operation and trouble shooting
- Large diaphragm provides low range accuracy providing precise control

APPLICATIONS

- Damper positioning
- Duct air control

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. Wetted Materials: Consult factory. Temperature Limits: -30 to 110°F (-34.4 to 43.3°C). Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge. Switch Type: SPDT floating contact (not snap action). Electrical Rating: Non-inductive — 2.5 A @ 110 VAC; 1.5 A @ 220 VAC; 1 A @ 24 VDC; 0.5 A @ 110 VAC; Inductive —	1 A @ 110 VAC; 0.5 A @ 220 VAC; 0.5 A @ 24 VDC (de-rate 70-80% for very slow pressure changes). Electrical Connections: 3 screw type. Process Connections: 1/8" female NPT. Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations. Set Point Adjustment: Screw type. Weight: 4 lb 13 oz (2.18 kg). Agency Approvals: CE.
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MODEL CHART

Model	Ranges in w.c.	Adjustable Null Span	
		Min. Set Point	Max. Set Point
1640-0	.01 to 0.2	.01	.03
1640-1	0.2 to 1.0	.02	.06
1640-2	1.0 to 4.0	.03	.12

Process Tubing Options: See page 489 (Gage Tubing Accessories)