



Manufacturing Excellence Since 1931

pressure • temperature • test & data • air quality

flow • level • process control • valves



2021

dwyer-inst.com



The **trusted leader** in manufacturing innovative instrumentation solutions for the **worldwide** HVAC and process automation markets

CUSTOMER SATISFACTION

Meet and exceed customer and market expectations

INNOVATIVE

Sustained R&D and product development

COMPETITIVE

Highly automated and flexible manufacturing capabilities

TRUSTED

High-quality, reliable, and readily available products and solutions

GLOBAL SUPPORT

Global sales and marketing presence



ESTABLISHED DWYER BRANDS



DWYER AROUND THE GLOBE



CONTACT INFORMATION

CORPORATE HEADQUARTERS

DWYER INSTRUMENTS, INC.
102 Indiana Highway 212
P.O. Box 373
Michigan City, IN 46360, U.S.A.

DWYER-INST.COM

Phone | (219) 879-8000
Toll-Free | (800) 872-9141
Fax | (219) 872-9057

UNITED KINGDOM

DWYER INSTRUMENTS LTD
Unit 16, The Wye Estate, London Road
High Wycombe, Bucks HP11 1LH-U.K.

DWYER-INST.CO.UK

Phone | +44 (0) 1494 461707
Fax | +44 (0) 1494 465102

AUSTRALIA

DWYER INSTRUMENTS, PTY. LTD.
Unit 1, 11 Waverley Drive
P.O. Box 359
Unanderra, NSW 2526 Australia

DWYER-INST.COM.AU

Phone | +61 (0) 2 4272 2055
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HONG KONG

DWYER INSTRUMENTS HK, LTD.
Unit 605A, 6/F, Shui Hing Centre
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Kowloon Bay, Hong Kong

DWYER-INST.COM.HK

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Fax | +852-27561565

OTHER CONTACTS

ORDERS

orders@dwyermail.com

TECHNICAL SUPPORT

tech@dwyermail.com

LITERATURE REQUESTS

lit@dwyermail.com

QUOTATION/BID REQUESTS

quotes@dwyermail.com

GENERAL INFORMATION

info@dwyermail.com

INTERNATIONAL CUSTOMERS

Dwyer has local distributors in over 79 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: dwyer-inst.com/Distributor

ABOUT US

Since the company was founded in 1931, customers have come to recognize Dwyer Instruments, Inc. to stand for quality, reliability, and readily available competitively priced products. As a leading manufacturer in the controls and instrumentation industry, we continue to grow and serve major markets including, but not limited to: HVAC, chemical, agriculture, food, oil and gas, water, wastewater, powder and bulk, and pollution control.

Dwyer holds over 650 technical patents and that number grows every year. We are an enthusiastic group of people headquartered in Michigan City, Indiana, with satellite locations around the globe. We take great pride in the intellect and integrity of our employees, who are passionate about the work we do, the products we develop, and the industries we serve.

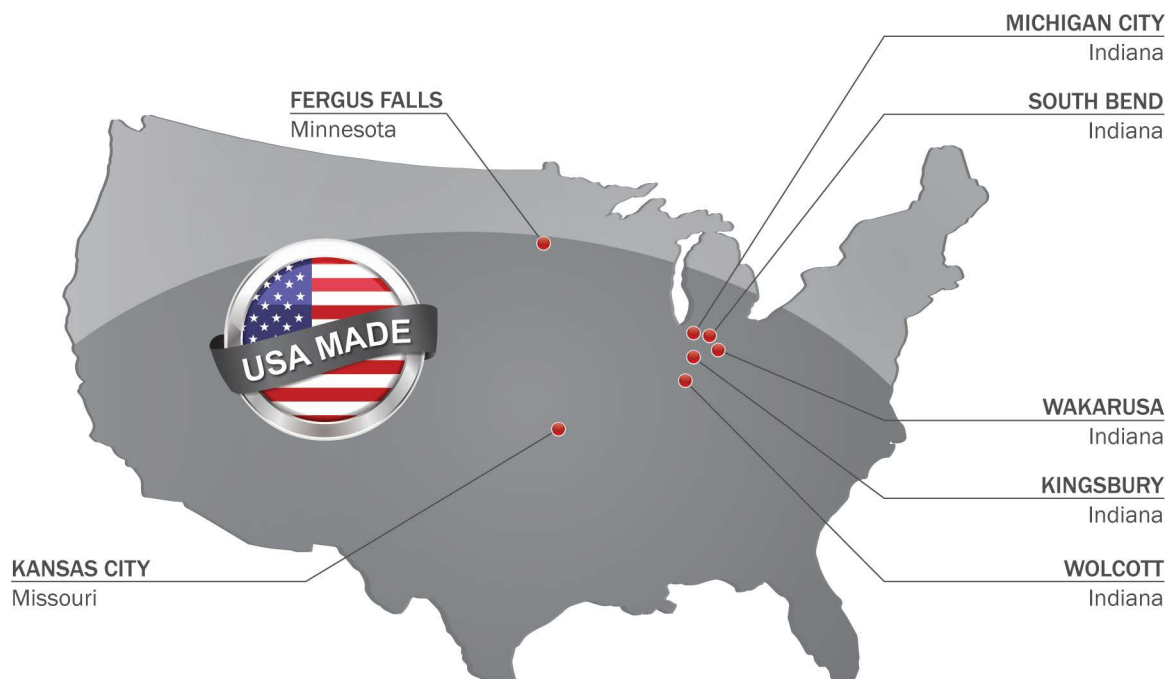
MANUFACTURING EXCELLENCE

At Dwyer, it all starts with commitment to meeting the needs of our customers. We strive to make dependable, easy-to-use products.

With nearly 90 years of manufacturing expertise, we stand behind our high quality products. Dwyer products are trusted in applications all over the world in nearly every industry.



MANUFACTURING & DESIGN CENTER LOCATIONS



OUR PEOPLE MAKE THE DIFFERENCE

CUSTOMER SERVICE

CUSTOMER CARE

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 waiting.

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.A.

Dwyer is committed to process and ship your order as quickly as possible, with more than 5,000 items stocked in our South Bend, Indiana warehouse. In most cases lead time is less than one week for non-stocked products.

FAST PROCESSING & PACKING

Our dedicated shipping staff packs and ships your order same day on stocked items ordered before 1:00 PM U.S. Eastern Time.

FLEXIBLE SHIPPING

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

TECHNICAL SUPPORT

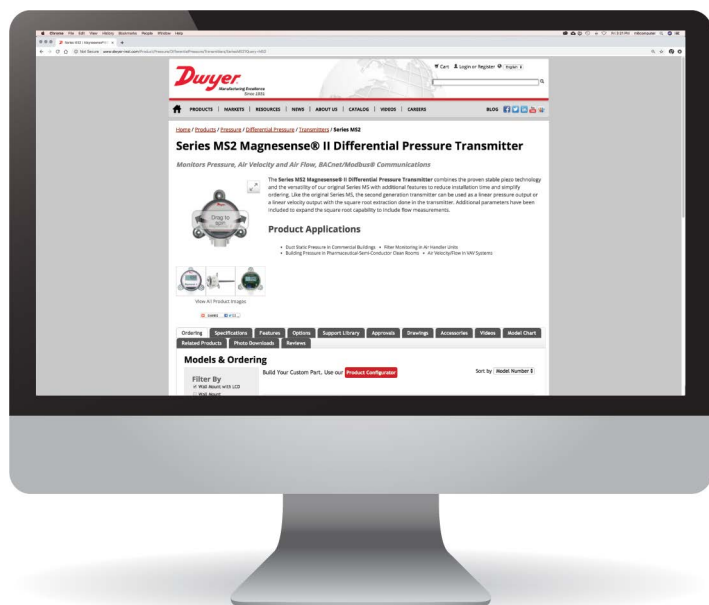
All of our technical sales staff members are degreed engineers trained to be product and industry experts. We listen to your needs and get you the answers you want quickly.

WE HELP YOU FIND A SOLUTION

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

TO CONTACT AN APPLICATIONS ENGINEER

PHONE: (219) 879-8000 | FAX: (219) 872-9057 | EMAIL: tech@dwyermail.com



DWYER ONLINE

WEBSITE FEATURES

- Product Search
- Free Literature – Catalogs, Brochures, and Product Selection Guides
- Product Application and Technical Guides
- Digital Catalogs
- Dedicated Support Product Pages
- Video Library

PRODUCT PAGE FEATURES

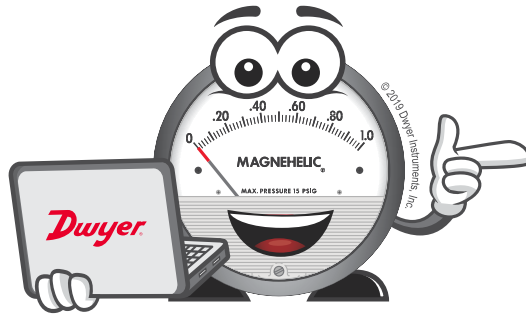
- Easy Online Ordering
- Product Support Library – Instruction Manuals, Catalog Pages, and Data Sheets
- Product Configurator – Customize a Dwyer product to your specific application needs
- Agency Approval Certificates – CE, IECEx, FM, UL, CSA and ATEX
- Instructional and Informational Videos
- Product Drawings and Photography

DWYER CATALOG APP

Browse the Dwyer catalog online or download it for instant access offline. The Dwyer Catalog App is available in the iTunes® and Google Play™ stores.



CONNECT WITH US



WWW.DWYER-INST.COM/SOCIAL

Dwyer Instruments, Inc. is active on multiple social media platforms so you can stay connected with us throughout the year. Follow us on Facebook, LinkedIn, and Twitter so you're always up to date on new products and services, and learn about our company as a whole.

In addition, the Dwyer blog is updated weekly with articles written by our team of experts. These articles will help to give you a better understanding of the various industries we serve, while allowing you to gain in-depth knowledge of application case studies and helpful tips for Dwyer products.

SPECIAL MODELS FOR OEM REQUIREMENTS

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.

CUSTOMIZED FOR YOU

OFFERED IN A WIDE VARIETY OF DESIGNS, FEATURES & SCALES



CALIBRATION & REPAIR SERVICES

DEDICATED

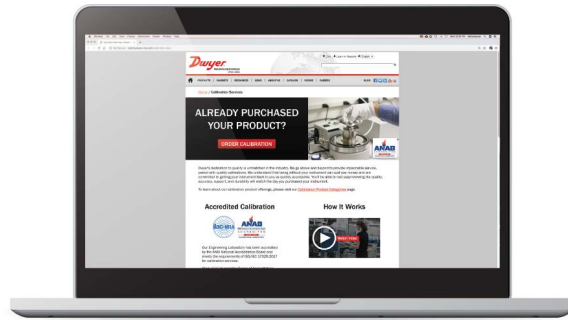
Dwyer's dedication to quality is unmatched in the industry. We go above and beyond to provide impeccable service paired with quality calibrations.

COMMITTED

We understand being without your instrument can cost you money. We are committed to getting you your instrument back as fast as possible.

ACCURATE

You can feel confident by sending your equipment back to the original manufacturer.



CALIBRATION CAPABILITIES

ELECTRICAL

- Digital Multimeters
- Clamp-on Meters
- Amp Meters
- Volt Meters
- Data Loggers
- Optical Tachometers

PRESSURE

- Magnehelic® Differential Pressure Gage
- Absolute Gages
- Manometers
- Micromanometers
- Differential Pressure Gages

VELOCITY & AIR FLOW

- SMART Air Hood® Balancing Instrument
- Rotating Vane
- Anemometer
- Ultrasonic Flowmeter
- Insertion Flow Transmitter

TEMPERATURE

- Controllers
- Probes
- Transmitters

HUMIDITY

- Probes
- Transmitters



Our Engineering Laboratory has been accredited by the ANSI National Accreditation Board and meets the requirements of ISO/IEC 17025:2017 for calibration services. See our scope of accreditation for details at <http://www.dwyer-inst.com/calibration/scope>

CALIBRATION & REPAIR SERVICES

— ISO/IEC 17025 ACCREDITED CERTIFICATE OF CALIBRATION

An ISO/IEC 17025 Accredited Certificate of Calibration is available on select products at an additional charge (email accreditedcal@dwyermail.com for additional information). This certificate is created in our ANAB Accredited Standards Laboratory guaranteeing the calibration work performed is in agreement with the internationally recognized standards (i.e. ISO/IEC 17025:2017). Measurement and Test Equipment (M&TE) used in the calibration are traceable to NMI's (such as NIST) and are calibrated regularly at established intervals. The certificate includes all information regarding M&TE, environmental conditions, procedures used, data obtained for the unit under test (UUT), estimated measurement uncertainties (EMU), test uncertainty ratios (TUR) and probability of false acceptance (PFA) (TUR and PFA values are an additional charge). Pricing and availability varies by product. Additional or customer requested test points during the calibration are an additional charge.

Dwyer Calibration **CERTIFICATE OF CALIBRATION** **ANAB**

Dwyer Instruments, Inc.
161 Indiana Boulevard • Michigan City, Indiana 46360 USA
Telephone: 1-800-872-5511 • 1-219-872-5511 • Fax: 1-219-872-5511
E-mail: dwyer@dwyer.com • Website: www.dwyer.com

CUSTOMER INFORMATION

Customer Name: **[REDACTED]** Calibration Number: **11000000000000000000**
Contact Name: **[REDACTED]** Date of Calibration: **11/01/2021**
Customer Address: **[REDACTED]** Calibration Location: **Dwyer Instruments, Inc., Michigan City, IN 46360 USA**
Customer E-Mail: **[REDACTED]** Calibration Date: **11/01/2021**

UNIT UNDER TEST (UUT)

Equipment Description: **Flow Meter** Serial Number: **11000000000000000000** UUT Identification: **11000000000000000000**
Manufacturer: **[REDACTED]** Model: **[REDACTED]** Serial Number: **[REDACTED]**
Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Size: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Tag Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Location: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Date: **11/01/2021**

TESTING CONDITIONS

Room Temperature: **23.0 °C** Humidity: **45%** Barometric Pressure: **1013.25 hPa**
Reference Temperature: **20.0 °C** Reference Humidity: **45%** Reference Barometric Pressure: **1013.25 hPa**

TESTING PROCEDURE

Procedure: **Flow Meter Calibration** Reference: **ISO 17025:2017**
Method: **[REDACTED]** Standard: **[REDACTED]**
Operator: **[REDACTED]** Supervisor: **[REDACTED]**
Date: **11/01/2021** Signature: **[REDACTED]**

TESTING RESULTS

Result: **[REDACTED]** Uncertainty: **[REDACTED]** TUR: **[REDACTED]** PFA: **[REDACTED]**

APPROVALS

Approved By: **[REDACTED]** Signature: **[REDACTED]**
Job Title: **[REDACTED]** Supervisor: **[REDACTED]**

Page 1 of 1

Dwyer Calibration **CERTIFICATE OF CALIBRATION** **ANAB**

Dwyer Instruments, Inc.
161 Indiana Boulevard • Michigan City, Indiana 46360 USA
Telephone: 1-800-872-5511 • 1-219-872-5511 • Fax: 1-219-872-5511
E-mail: dwyer@dwyer.com • Website: www.dwyer.com

CUSTOMER INFORMATION

Customer Name: **[REDACTED]** Calibration Number: **11000000000000000000**
Contact Name: **[REDACTED]** Date of Calibration: **11/01/2021**
Customer Address: **[REDACTED]** Calibration Location: **Dwyer Instruments, Inc., Michigan City, IN 46360 USA**
Customer E-Mail: **[REDACTED]** Calibration Date: **11/01/2021**

UNIT UNDER TEST (UUT)

Equipment Description: **Flow Meter** Serial Number: **11000000000000000000** UUT Identification: **11000000000000000000**
Manufacturer: **[REDACTED]** Model: **[REDACTED]** Serial Number: **[REDACTED]**
Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Size: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Tag Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Location: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Date: **11/01/2021**

TESTING CONDITIONS

Room Temperature: **23.0 °C** Humidity: **45%** Barometric Pressure: **1013.25 hPa**
Reference Temperature: **20.0 °C** Reference Humidity: **45%** Reference Barometric Pressure: **1013.25 hPa**

TESTING PROCEDURE

Procedure: **Flow Meter Calibration** Reference: **ISO 17025:2017**
Method: **[REDACTED]** Standard: **[REDACTED]**
Operator: **[REDACTED]** Supervisor: **[REDACTED]**
Date: **11/01/2021** Signature: **[REDACTED]**

TESTING RESULTS

Result: **[REDACTED]** Uncertainty: **[REDACTED]** TUR: **[REDACTED]** PFA: **[REDACTED]**

APPROVALS

Approved By: **[REDACTED]** Signature: **[REDACTED]**
Job Title: **[REDACTED]** Supervisor: **[REDACTED]**

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— 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.

Dwyer Calibration **CERTIFICATE OF CALIBRATION** **NIST**

Dwyer Instruments, Inc.
161 Indiana Boulevard • Michigan City, Indiana 46360 USA
Telephone: 1-800-872-5511 • 1-219-872-5511 • Fax: 1-219-872-5511
E-mail: dwyer@dwyer.com • Website: www.dwyer.com

CUSTOMER INFORMATION

Customer Name: **[REDACTED]** Calibration Number: **11000000000000000000**
Contact Name: **[REDACTED]** Date of Calibration: **11/01/2021**
Customer Address: **[REDACTED]** Calibration Location: **Dwyer Instruments, Inc., Michigan City, IN 46360 USA**
Customer E-Mail: **[REDACTED]** Calibration Date: **11/01/2021**

UNIT UNDER TEST (UUT)

Equipment Description: **Flow Meter** Serial Number: **11000000000000000000** UUT Identification: **11000000000000000000**
Manufacturer: **[REDACTED]** Model: **[REDACTED]** Serial Number: **[REDACTED]**
Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Size: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Tag Name: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Location: **[REDACTED]** Part Number: **[REDACTED]** Serial Number: **[REDACTED]**
Date: **11/01/2021**

TESTING CONDITIONS

Room Temperature: **23.0 °C** Humidity: **45%** Barometric Pressure: **1013.25 hPa**
Reference Temperature: **20.0 °C** Reference Humidity: **45%** Reference Barometric Pressure: **1013.25 hPa**

TESTING PROCEDURE

Procedure: **Flow Meter Calibration** Reference: **ISO 17025:2017**
Method: **[REDACTED]** Standard: **[REDACTED]**
Operator: **[REDACTED]** Supervisor: **[REDACTED]**
Date: **11/01/2021** Signature: **[REDACTED]**

TESTING RESULTS

Result: **[REDACTED]** Uncertainty: **[REDACTED]** TUR: **[REDACTED]** PFA: **[REDACTED]**

APPROVALS

Approved By: **[REDACTED]** Signature: **[REDACTED]**
Job Title: **[REDACTED]** Supervisor: **[REDACTED]**

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KEY MARKETS



HVAC

- Building Automation
- Test Equipment
- Critical Environments
- Original Equipment
(Chillers, Boilers, Air Handlers, Cooling Towers)
- Valve Automation



PROCESS AUTOMATION

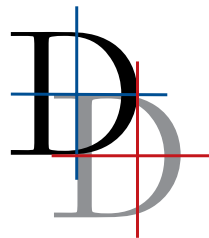
- Water and Wastewater
- Pharmaceutical
- Agriculture and Livestock
- Powder and Bulk
- Industrial Process
- Mining and Heavy Earth Moving
- Oil, Gas and Petrochemical
- Power
- Valve Automation

INNOVATION AWARDS



WINNER

Wireless Hydronic Balancing Kit
Series 490W



The ACHR News is the leading trade magazine in the heating, ventilating, air conditioning, and refrigeration industries.

GOLD

- HVAC Mobile Meter® Software Test Instrument App
- PredictAir™ Application Software
- Air Velocity Transmitter | **Series AVUL**

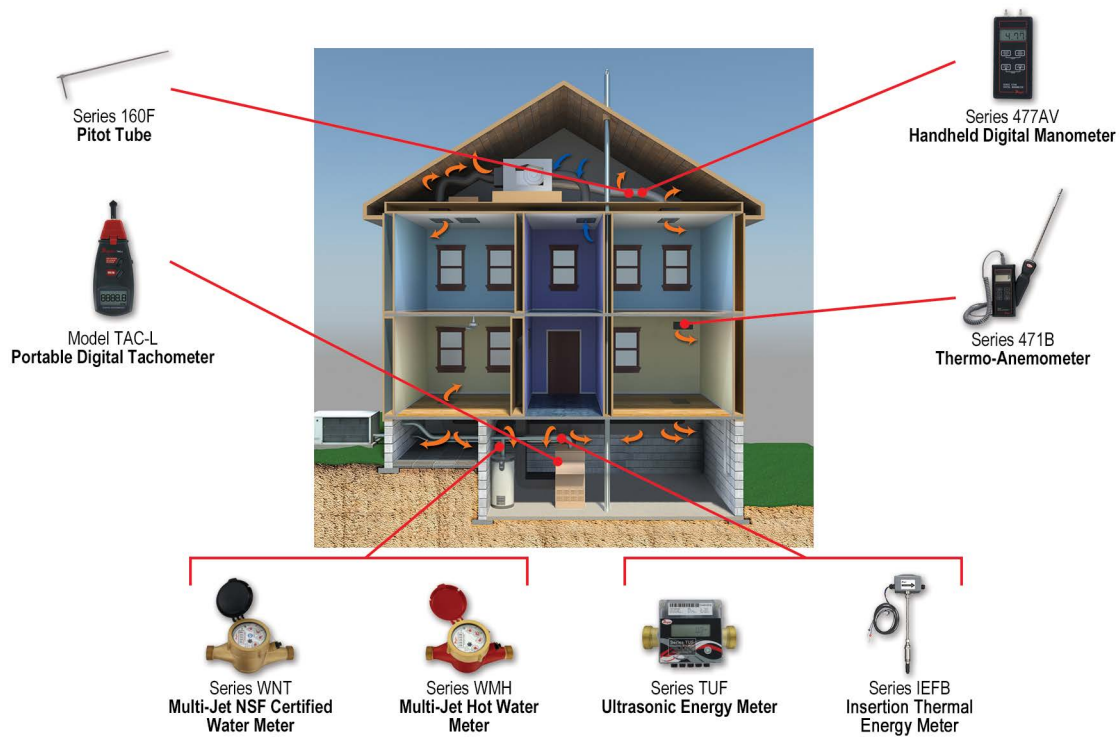
SILVER

- Universal Handheld Test Instrument | **Model UHH2**
- Wireless Hydronic Balancing Kit | **Series 490W**
- Hydronic Application Software

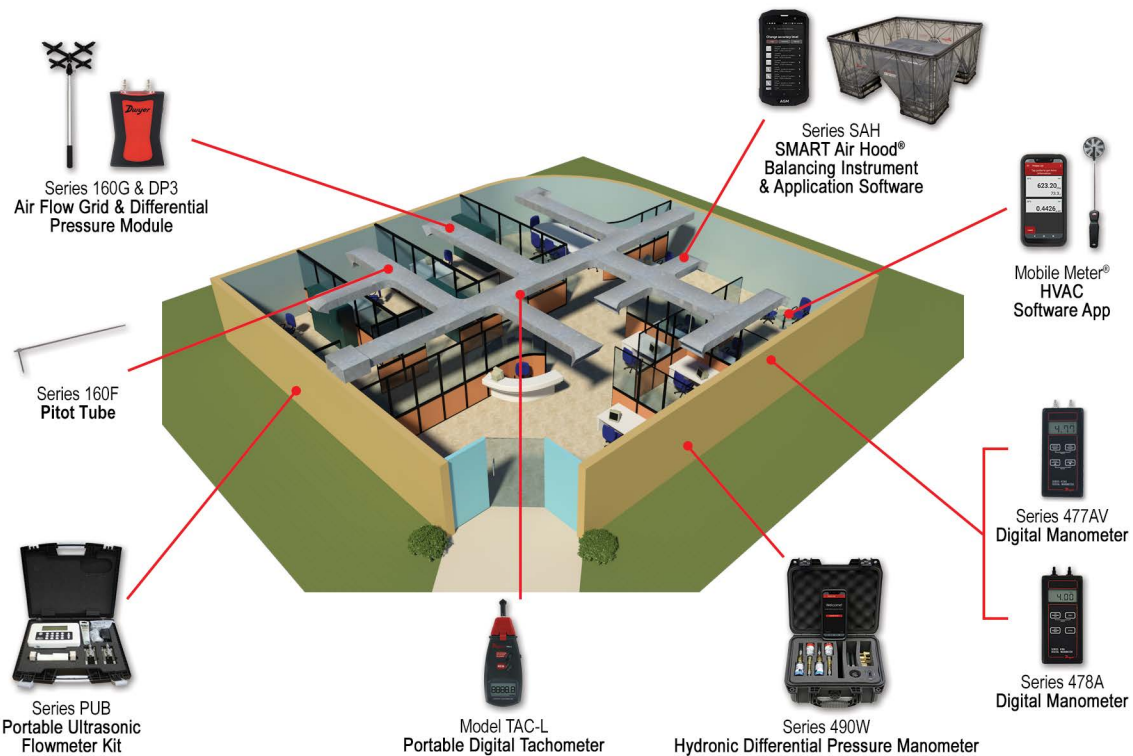
BRONZE

- SMART Air Hood® Balancing Instrument | **Series SAH**
- Hydronic Differential Pressure Manometer | **Series 490A**
- Insertion Electromagnetic Flow Transmitter | **Series IEF**

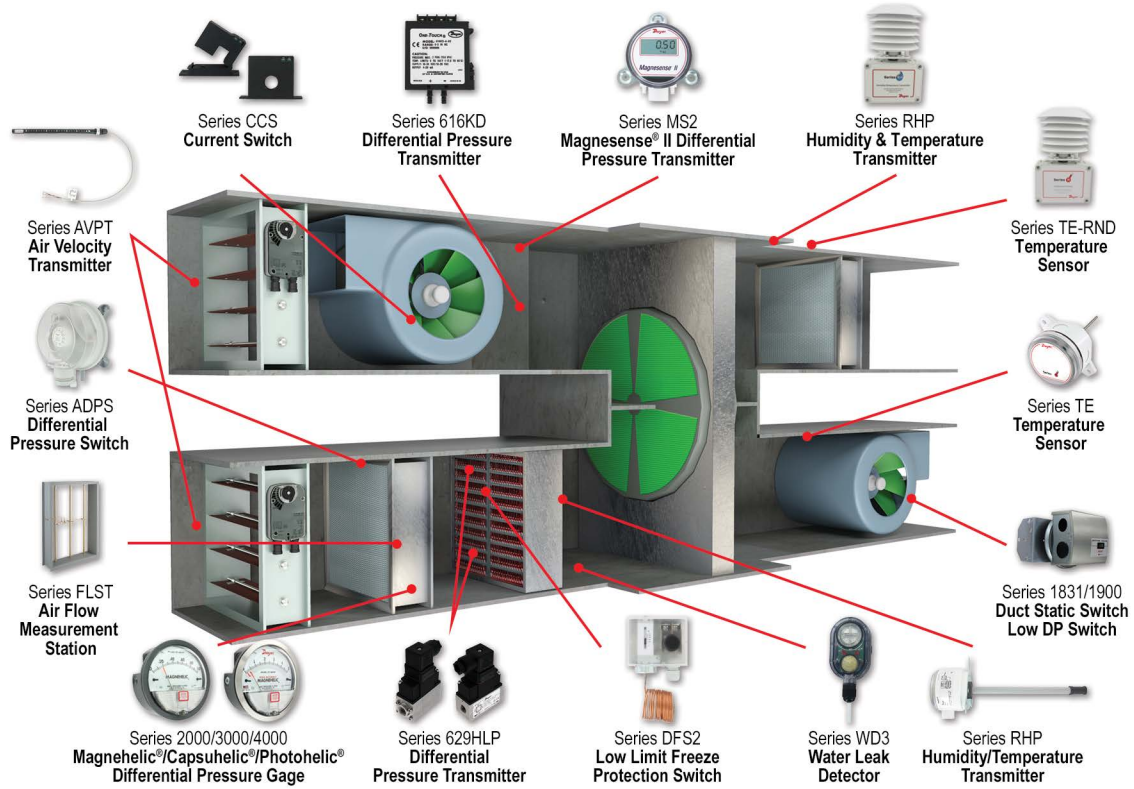
HVAC TESTING



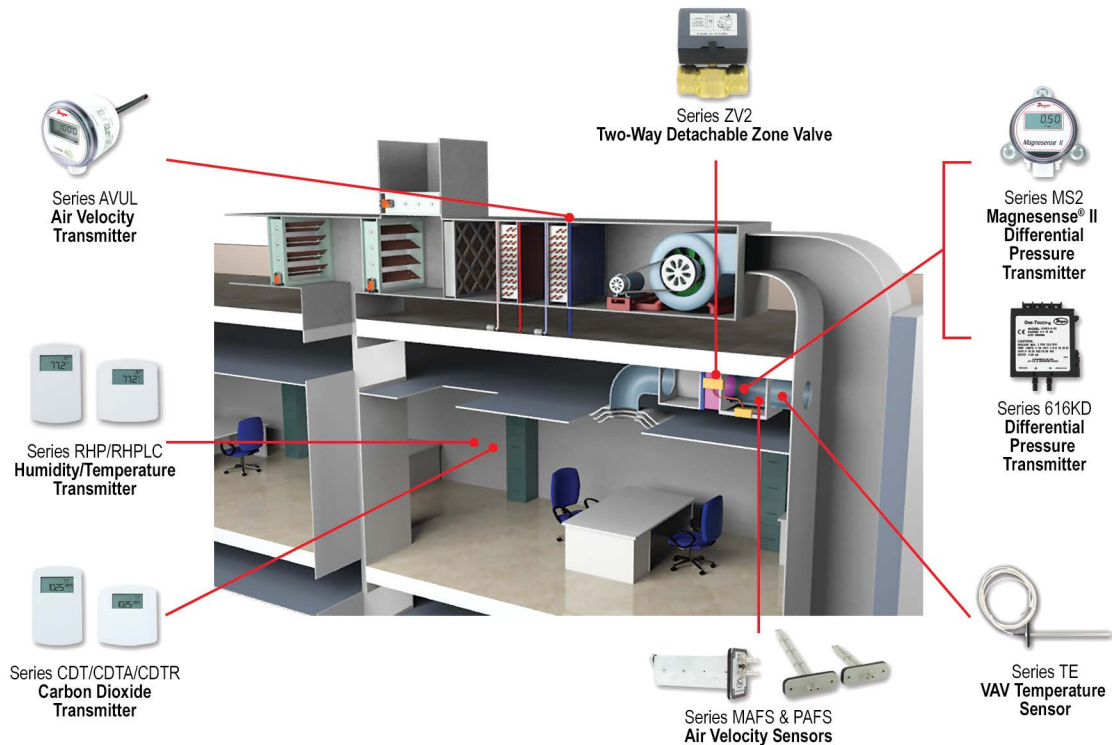
BUILDING BALANCING



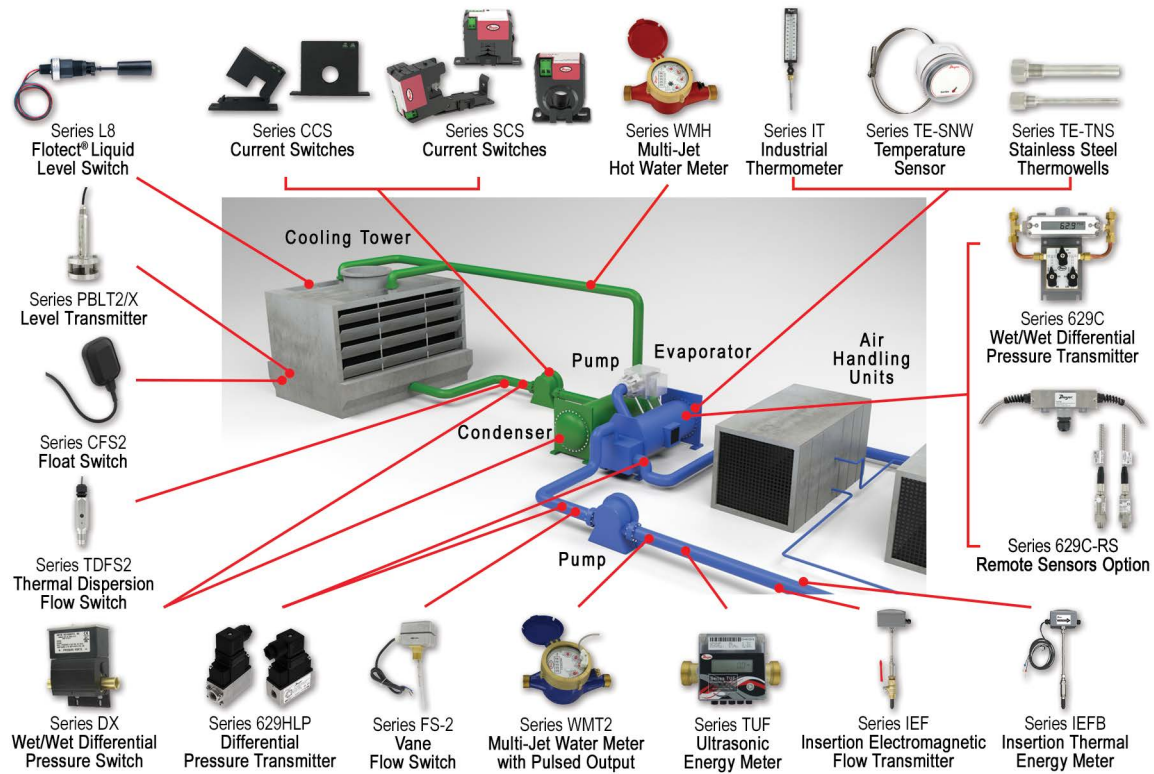
AIR HANDLER



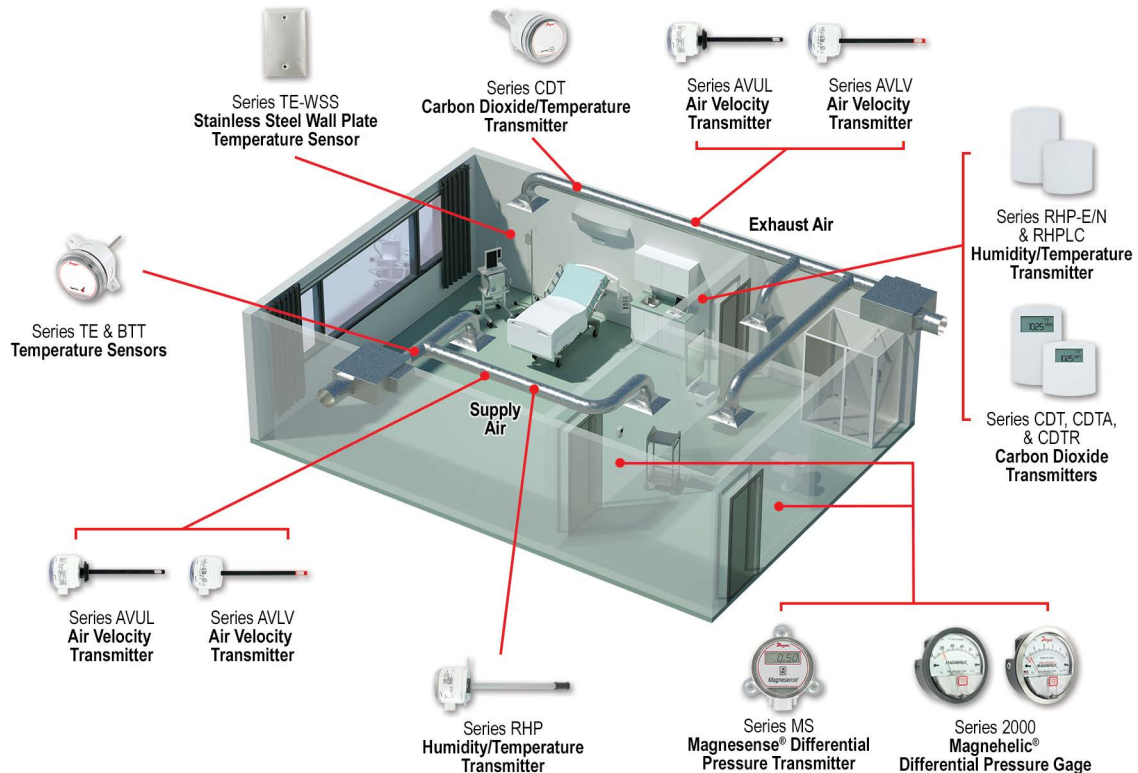
TERMINAL UNIT



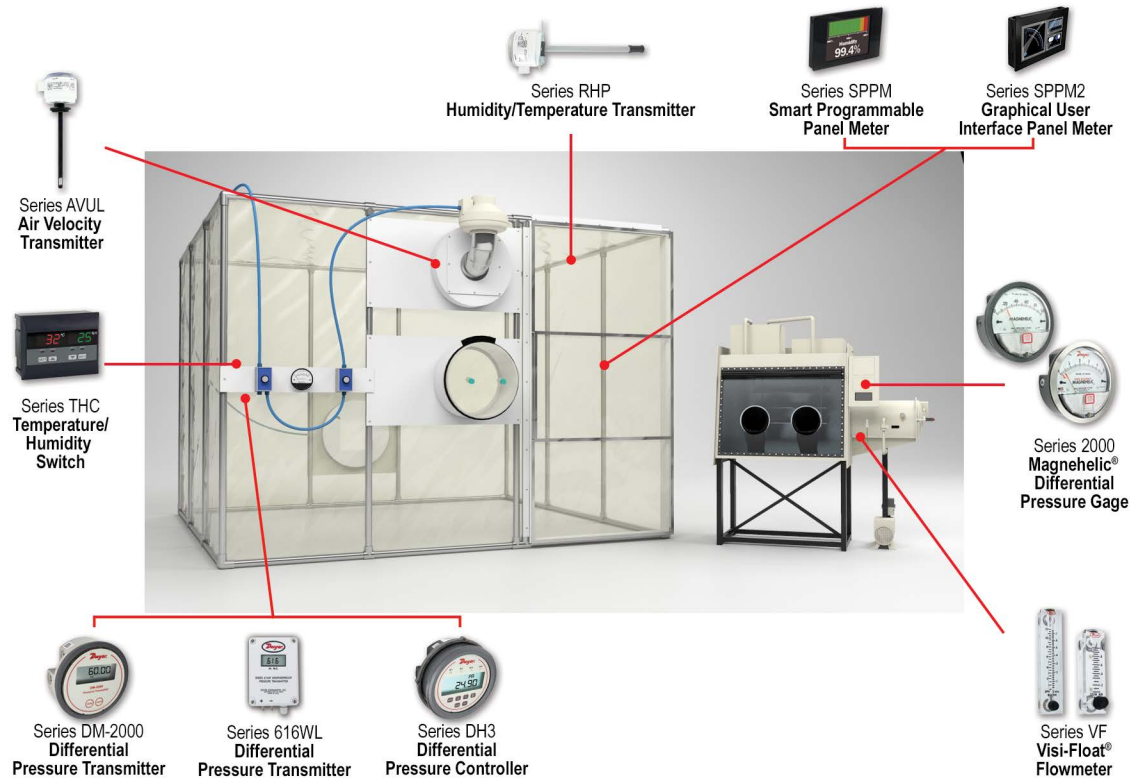
CHILLER PLANT



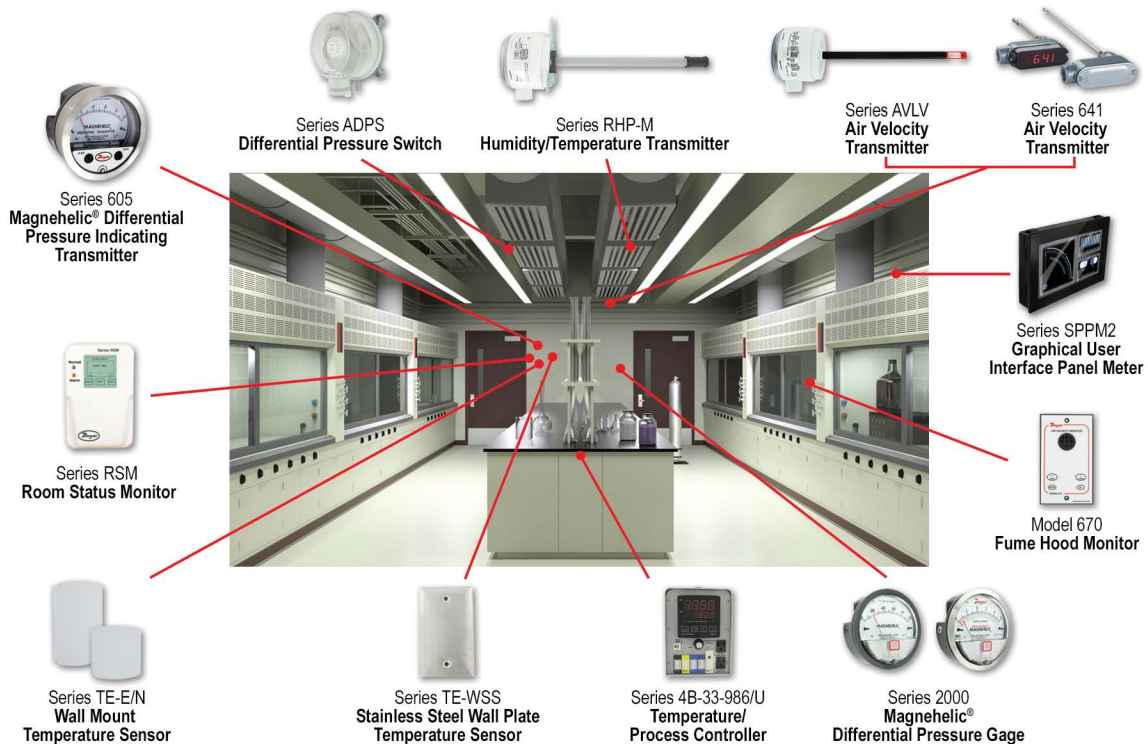
ISOLATION ROOM



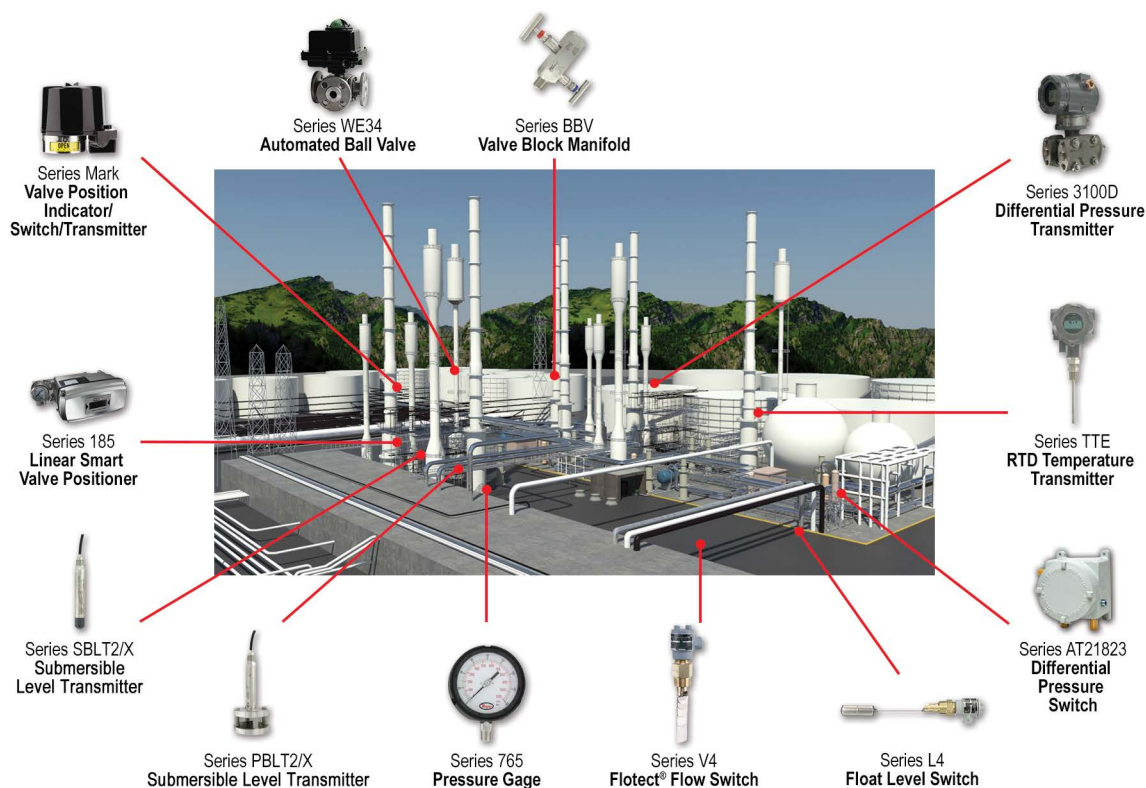
CONTAINMENT CHAMBER/BOX



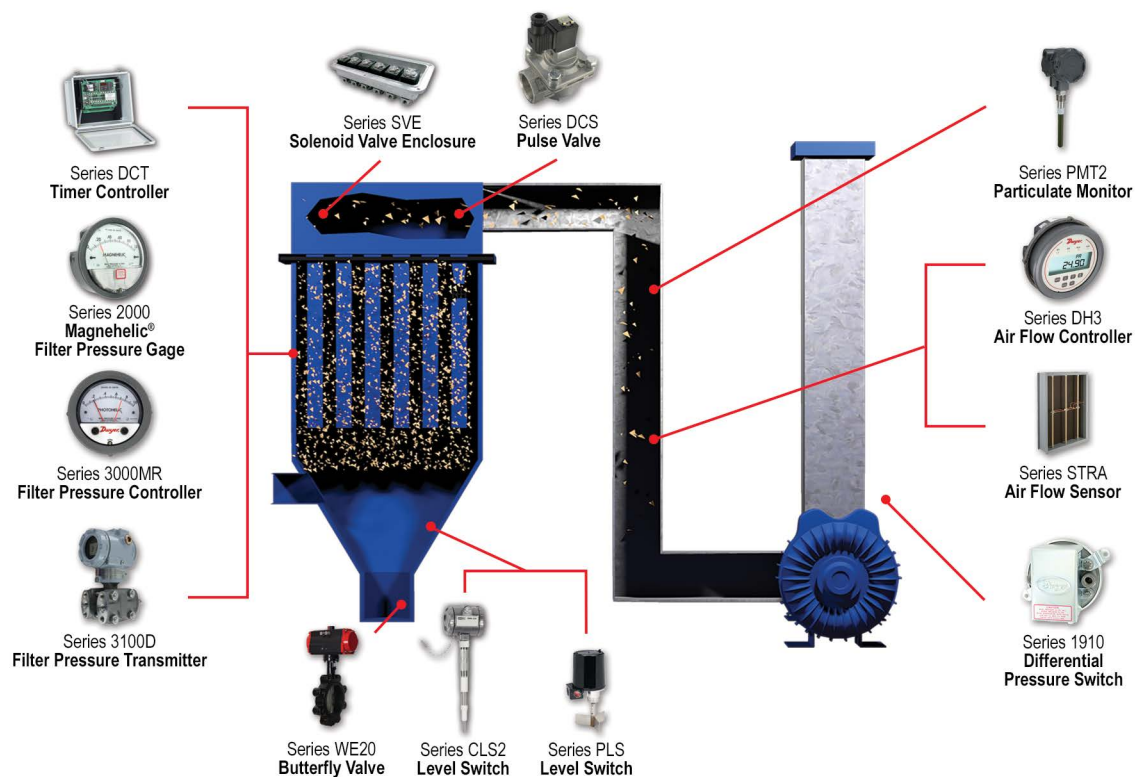
CLEAN ROOM



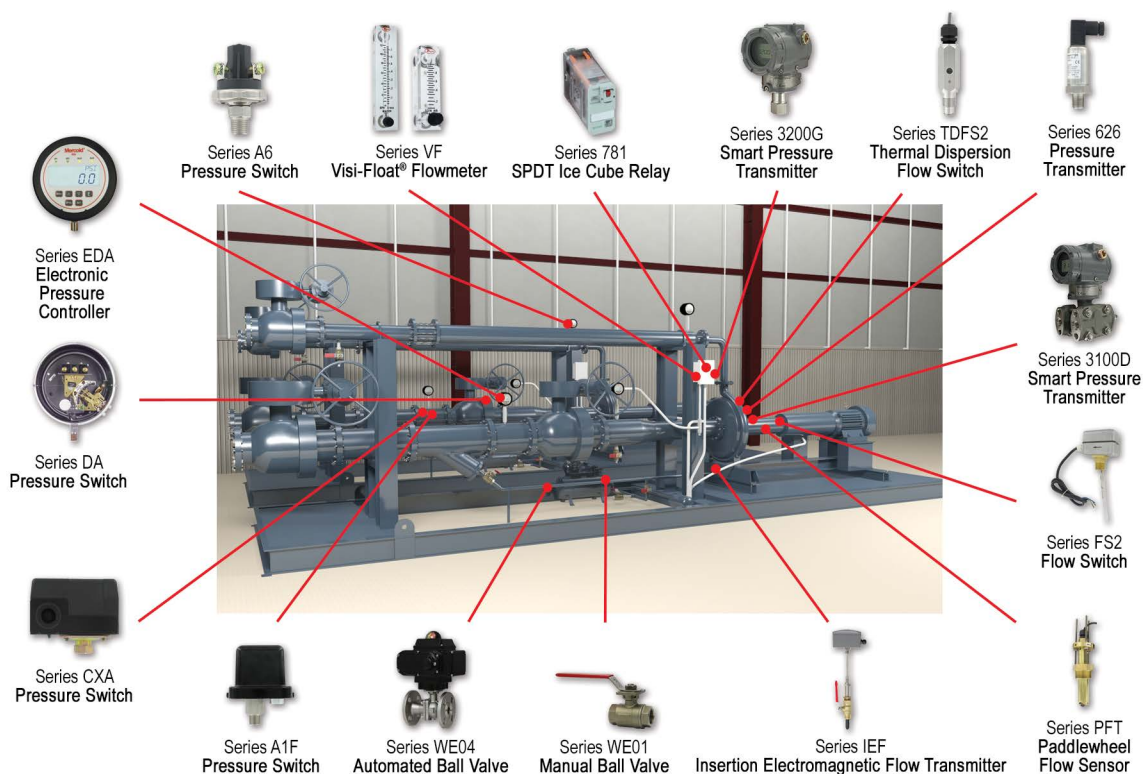
MIDSTREAM REFINERY/CHEM PLANT



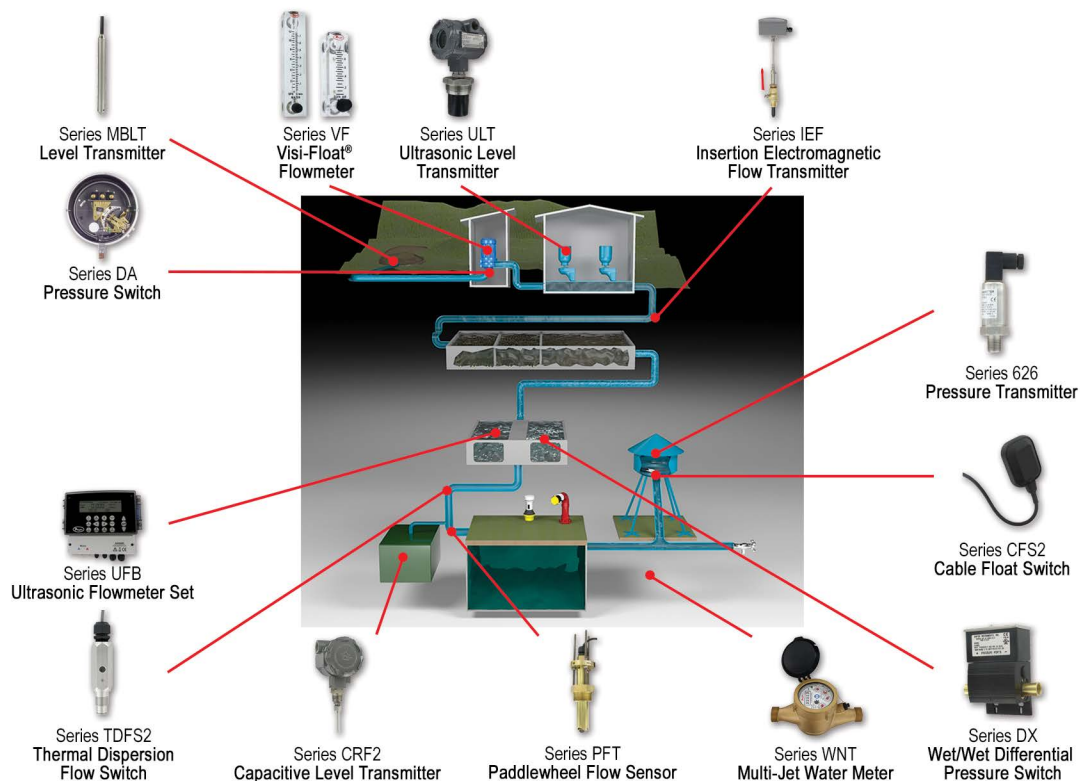
DUST COLLECTOR



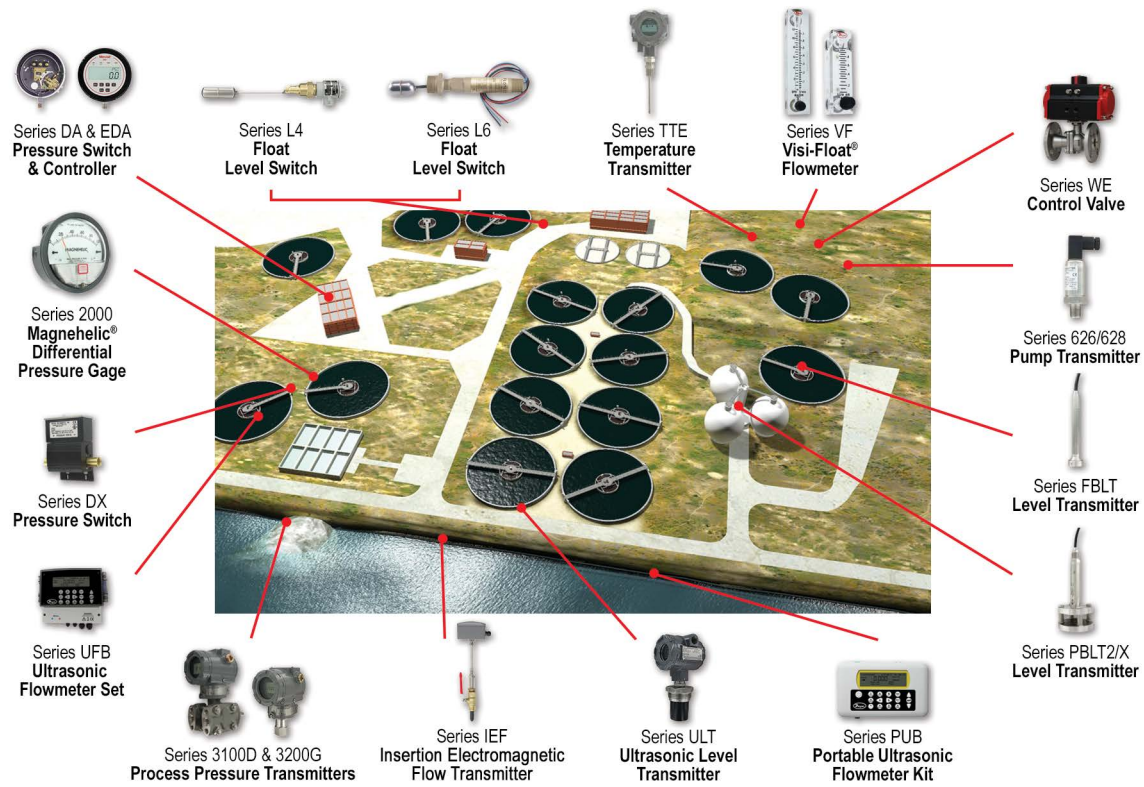
PUMP SKID



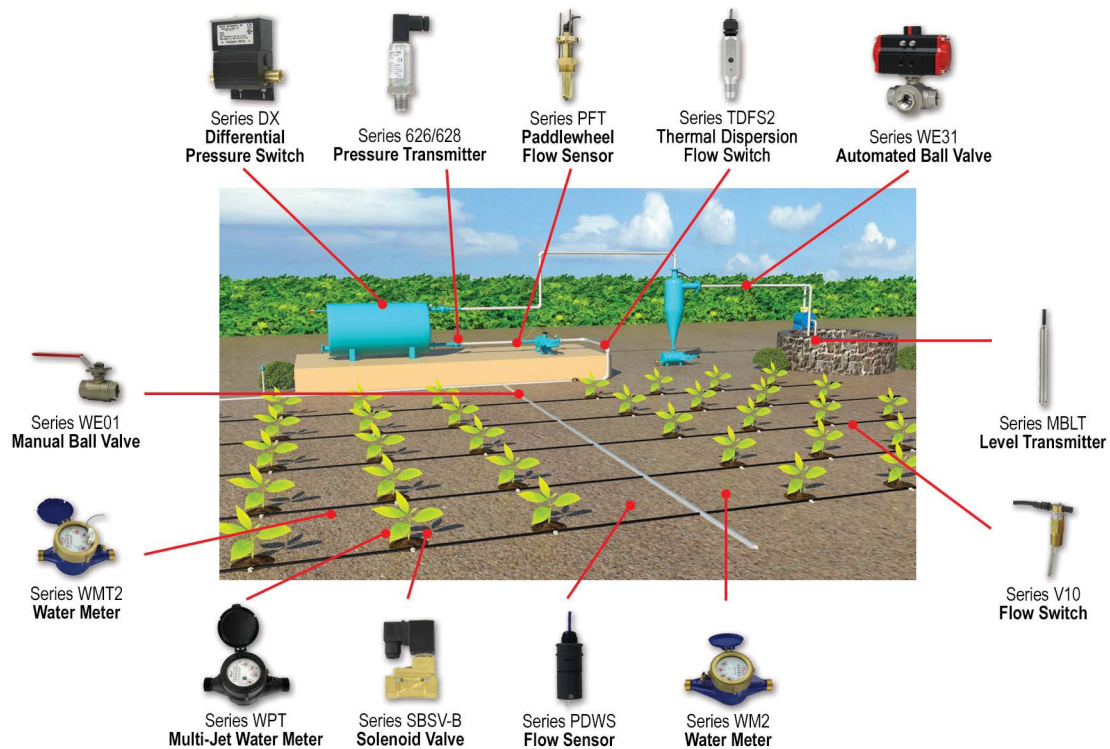
CLEAN WATER



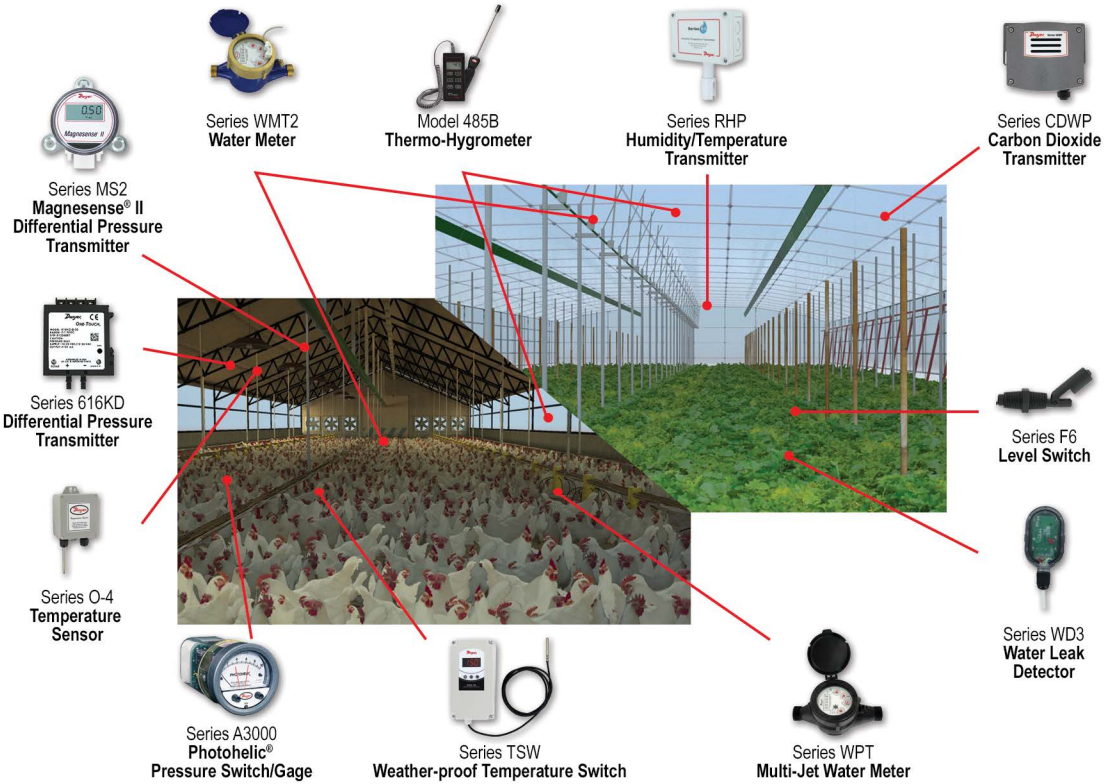
WASTEWATER



IRRIGATION



POULTRY/HOG/GREENHOUSES



RECENT INNOVATIONS



TEST, ADJUST, AND BALANCE KIT SERIES TABKIT

- Everything a balancing technician needs in a single case
- Durability, repeatability, and reliability in every instrument
- Save time by sending everything back to us, we can recalibrate all equipment in the kit

PAGE 163



THERMO-HYGROMETER PROBE, THERMO-ANEMOMETER PROBE & 100 MM VANE THERMO-ANEMOMETER PROBE SERIES RP3/AP3/VP3

- New Bluetooth wireless probes
- Wirelessly connect directly to your mobile device
- Used in conjunction with the Dwyer® Mobile Meter® app

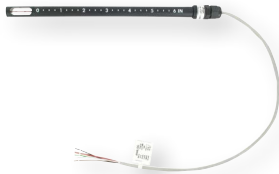
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WIRELESS DIFFERENTIAL PRESSURE MODULE SERIES DP3

- Auto-ranging differential pressure module
- Highly accurate and ideal for low flow applications
- Used in conjunction with the Dwyer® Mobile Meter® app

PAGE 165



PENCIL STYLE AIR VELOCITY TRANSMITTER SERIES AVPT

- Air velocity ranges from 1000 to 4000 FPM (5 to 20 m/s)
- Insertion lengths of 6 or 12 inches
- Low temperature functionality for outdoor air flow measurement

PAGE 216



AIR VELOCITY TRANSMITTER SERIES AVLV

- Air velocity ranges from 100 to 400 FPM (0.5 to 2 m/s)
- High accuracy 1 or 2% air velocity measurement device for critical environments
- Analog or BACnet/Modbus® communications simplify device setup

PAGE 217

Modbus® is a registered trademark of Schneider Automation, Inc.

RECENT INNOVATIONS



CARBON DIOXIDE TRANSMITTER **SERIES CDWP**

- Single beam dual wavelength NDIR CO₂ sensor automatically corrects for aging effects
- Durable and rugged aluminum housing designed to withstand 168 hour salt spray test
- Ranges include 2,000, 5,000, and 10,000 PPM allowing for use in animal husbandry as well as mechanical rooms utilizing CO₂ based refrigerants

PAGE 226



CARBON MONOXIDE TRANSMITTER AND SWITCH **SERIES CMS300**

- Field selectable current or voltage analog outputs
- Integral SPDT relay contact for low or high alarm
- Jumper selectable alarm set points of 25, 60, or 150 PPM

PAGE 232



INSERTION ELECTROMAGNETIC FLOW TRANSMITTER **SERIES IEF**

- Field configurable
- Integral or remote displays allow for ultimate flexibility
- Multiple display configurations with a single unit



PAGE 292



ULTRASONIC ENERGY METERS **SERIES TUF**

- Manufactured to comply with EN1434-1 requirements
- Compact energy monitoring
- BACnet or Modbus[®] communication outputs

PAGE 293



INSERTION THERMAL ENERGY METER **SERIES IEFB**

- Field configurable
- Integral or remote display for ultimate flexibility
- Complies with high accuracy requirements of EN 1434-1, ASTM E3137, CSA C900.1-13 for accurate heat measurement

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STANDARD TERMS & CONDITIONS OF SALE

DWYER INSTRUMENTS, INC. - TERMS AND CONDITIONS OF SALE – MARCH 15, 2017

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.
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9. **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. Products qualifying for an extended warranty period will have the extended warranty as expressly indicated on the catalog page, web page, IOM, or will be covered by a specific written agreement that is (i) approved by an officer of Dwyer Instruments, Inc. and (ii) defines the warranty period. If no express statement of extended warranty is made, then the standard 1 year warranty applies. The Extended Limited Warranty only applies to products manufactured after April 1, 2017. The Warranty period extends from the date of shipment to the initial customer and not the project installation date or use.













Specific warranty exclusions include, but are not limited to:

- Specific product components not covered by the extended warranty:
 - o Humidity Sensors
 - o Batteries
 - o Electro-Chemical Gas Sensors
 - o Snap Switches
 - o Any component which exceed its normal life cycle
 - o Other Specific items added as required.
- Normal or excessive wear and tear is not cause for warranty replacement.
- Products not properly maintained, operated, installed, or use in an application not suited for the product.
- Modifications, alterations, changes, or additions outside those which are required for normal operation.
- Failure to notify Dwyer of any defect within a reasonable time.
- Damage which the customer has not taken timely action to minimize or mitigate.
- Products on which the labels, markings, nameplates, etc. have been tampered with.
- Products which contain broken factory seals or have been tampered with shall void warranty.

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. All products must be returned to the Seller, transportation prepaid, unless other arrangements have been pre-approved by Seller. 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.

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11. **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. By placing an order you accept our terms and conditions. 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.

<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, Transmitters pages 34-37</p>	 <p>Differential Pressure Gages/Switches, Dial pages 38-44</p>	 <p>Differential Pressure Switches pages 45-57</p>	 <p>Differential Pressure Transmitters, Air & Gas pages 58-69</p>	 <p>Differential Pressure Transmitters, Liquid & Gas pages 70-79</p>
 <p>Single Pressure Gages, Dial pages 80-81</p>	 <p>Single Pressure Gages, Digital pages 82-84</p>	 <p>Single Pressure Gages/Switches/Transmitters, Digital pages 85-87</p>	 <p>Single Pressure Switches pages 88-96</p>	 <p>Single Pressure Transmitters pages 96-108</p>

FEATURED PRODUCTS

DIFFERENTIAL PRESSURE TRANSMITTER SERIES 629HLP | page 77



- Rugged, versatile, high accuracy device
- Compact, lightweight, capable to be installed in any arrangement making installation very simple

INDUSTRIAL PRESSURE TRANSMITTER SERIES 626 & 628 | pages 100-101



- High precision transmitter ensures 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

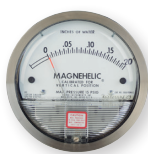
Pressure Gages



SERIES	2000 - pages 20-21	DM-1000 - page 25	2-5000 - pages 26-27
Ranges	-0.05 to 0.2 in w.c. (-10 to 50 Pa) up to 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 to 4% FS for most models. ±1 to 2% FS with HA option	±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

Bezels



SERIES	2000-SS - page 22	2000-SB - page 22	2000-CB - page 22	DH3-SS/3000MR(S)-SS/605-SS - pages 36, 42 & 64
Accessory	Bezel	Bezel	Bezel	Bezel
Material	304 brushed stainless steel	304 stainless steel	Chrome plated aluminum	304 brushed stainless steel
Dimensions	4-3/4" (120.7 mm) OD	4-3/4" (120.7 mm) OD	4-3/4" (120.7 mm) OD	4-3/4" (120.7 mm) OD
Aesthetics/Function	Tapered brushed/matte SS finish	Electro polished Ra 16	Chrome finish	Tapered brushed/matte SS finish
Part Sold Separately	Yes	Yes	Yes	Yes
Part Number	420141-40	420141-10	420141-00	815999-10

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




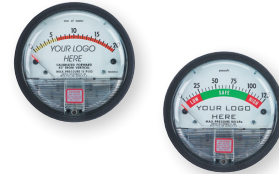
DIFFERENTIAL PRESSURE

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

Accessories

				
SERIES	AHU1/2 - page 22	A-464 - page 23	A-320-A - page 23	Scale Customization
Accessory	Surface mounting kit	Flush mounting kit	Enclosure	- Consult Factory
Material	ABS plastic	White ABS plastic	ABS	Customized logos/company name
Dimensions	4-1/2" x 4-1/2"	6-1/2" x 6-1/2"	4-23/32" x 3-37/64" x 6-19/64"	Printed on aluminum scale
Enclosure Rating	N/A	N/A	NEMA 1 (IP10)	As per customer requirement
Mounting Orientation	Surface	Flush	Wall	N/A
Aesthetics/Function	Quick Install accessory	Cleanroom mount	Quick install kit	Customize your application
Part Sold Separately	Yes	Yes	Yes	N/A
Part Number	A-607/A-607 with A-481	A-464	A-320-A	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

LOW DIFFERENTIAL PRESSURE

Pressure Switches







SERIES	ADPS - page 45	EDPS - page 45	1800 - page 47	1900 - page 49
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

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/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

LOW DIFFERENTIAL PRESSURE

Pressure Switches

				
SERIES	MDS - page 51	MDA - page 51	1831 - page 52	1640 - page 52
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

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	1620 - page 53	1630 - page 53	PG - page 54	1950 - page 55
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	No	No	No	No
Deadband				
Set Point Indication	No	Yes	Yes	No
Enclosure Rating	GP and WP	GP and WP	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

LOW DIFFERENTIAL PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers



SERIES	616KD - page 58	668B/D - page 60	608 - page 74
Ranges	1 to 20 in w.c. (250 to 5000 Pa) to 5000 Pa (Bi-directional available)	.1 to 100 in w.c. (25 to 25000 Pa) (Bi-directional available)	0.1 to 25 in w.c. (25 to 6200 Pa) (Bi-directional available)
Accuracy	616KD-A: $\pm 0.25\%$ FS; 616KD-B: $\pm 1\%$ FS; 616KD-C: $\pm 2\%$ FS	$\pm 0.8\%$ FS	$\pm 0.5\%$ or $\pm 0.25\%$ FS
Wetted Materials	Consult factory	Consult factory	Consult factory
Comp. Temp. Limits	20 to 122°F (-6.67 to 50°C)	40 to 170°F (4.4 to 77°C)	0 to 160°F (-18 to 71°C)
Oper. Temp. Limits	0 to 140°F (-17.8 to 60°C)	0 to 170°F (-18 to 77°C)	-20 to 185°F (-28 to 85°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, 0 to 10 VDC, or 0 to 5 VDC	4 to 20 mA
Elec. Connection	Screw-type terminal block	Screw-type terminal block	Screw-type terminal block, Two 1/2" female NPT conduit
Process Connection	Barbed for 1/8" and 3/16" ID rubber or vinyl tubing	3/16" OD barbed brass for 1/8" ID push-on tubing	1/4" female NPT
Enclosure Rating	NEMA 1 (IP20)	UL 94 V-0 rated	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.

LOW DIFFERENTIAL PRESSURE

Pressure Switches



SERIES	1950G - page 55	H3 - page 56	DX - page 57
Set Point Range	.07 to 20 in w.c. (.017 to 5 kPa)	180 in w.c. to 200 psid (0.5 to 13.5 bar)	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

LOW DIFFERENTIAL PRESSURE - INDICATING

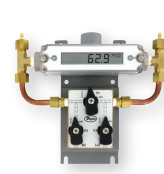
Pressure Transmitters and Transducers



SERIES	616W - page 62	DM-2000 - page 63	605 - page 64
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	±0.25% FS, display accuracy ±0.5%	±1% FS	±0.5% or ±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	4-20 mA (2-wire), 0-5 VDC, or 0-10 VDC (3-wire)	4-20 mA	4-20 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

WET-WET DIFFERENTIAL PRESSURE

Pressure Transmitters and Transducers



SERIES	3100D - pages 70-71	636D - page 75	629C - page 76	629C-3V - page 76
Ranges	6 in w.c. to 0-1000 psig	15 to 300 psi	5 to 500 psid (0.5 to 30 bar)	5 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	4-20 mA or HART® Communication	4-20 mA or 1 to 5 VDC	2-wire: 4-20 mA; 3-wire: Selectable 0-5, 1-5, 0-10, or 2-10 VDC	2-wire: 4-20 mA; 3-wire: Selectable 0-5, 1-5, 0-10, or 2-10 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)

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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 - INDICATING

Pressure Transmitters and Transducers



SERIES	MS2 - page 66	ISDP - page 69
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	4-20 mA (2-wire), 0-5 VDC, 0-10 VDC (3-wire)	4-20 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	NEMA 4X (IP66)	NEMA 4X (IP66)

WET-WET DIFFERENTIAL PRESSURE

Pressure Transmitters and Transducers






SERIES	629HLP - page 77	647 - page 78	645 - page 78	WWDP - page 79
Ranges	15 to 90 psi (1 to 6 bar)	1 in w.c. to 0-30 psid (245 Pa to 0-2.0 bar)	1 to 100 psid (0.07 to 6.5 bar) (Bi-directional ranges available)	5 to 250 psi
Accuracy	±1% FS	±1% FS	±0.25% FS	±1% FS
Wetted Materials	304 SS	Brass, vinyl, glass-filled polyester, silicon, fluorosilicone	17-4 PH SS, Fluoroelastomer, Silicone	Consult factory
Comp. Temp. Limits	-5 to 60°C (23 to 140°F)	N/A	30 to 150°F (-1 to 65°C)	32 to 130°F (0 to 54°C)
Oper. Temp. Limits	-10 to 80°C (14 to 176°F)	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	4-20 mA, 0-10 VDC	4-20 mA	4-20 mA	Selectable 0-5, 0-10, and 0-5 VDC; 4-20 mA
Elec. Connection	Form A DIN 43650	Screw-type terminal block	Screw-type terminal block	1/2" conduit
Process Connection	1/4" female NPT, 1/4" female BSPT	1/8" female NPT	1/4" female NPT	1/8" female NPT internal
Enclosure Rating	IP65	N/A	NEMA 4X (IP66)	NEMA 4 (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.

SINGLE PRESSURE

Pressure Gages

			
SERIES	LPG4/LPG5 - page 80	SGY & SGZ - pages 81	765 - page 81
Ranges	-235 to 160 in w.c. (-60 to 40 kPa)	-30" Hg to 1000 psi (-1 to 70 bar)	30" Hg to 20,000 psi (-100 to 135,000 kPa)
Service	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids
Wetted Materials	Brass, bronze or SS	Brass, bronze or SS	316L SS, Bourdon tube
Housing	LPG4: Drawn Steel; LPG5: Chrome plated	304 SS	Phenolic plastic with safety blow-out back
Accuracy	LPG4 ±1.5% FS; LPG5 ±3%-2%-3% FS	±1.5 to ±2.5% FS	±0.5% FS ANSI/ASME (Grade 2A)
Pressure Limits	100% FS	100% FS	110 to 125% FS
Temperature Limits	Ambient: -40 to 140°F (-40 to 60°C); LPG5 -4 to 140°F (-20 to 60°C)	-4 to 140°F (-20 to 60°C)	-40 to 200°F (-40 to 93°C)
Process Connection	1/4" male NPT	1/4" male NPT	1/4" or 1/2" male NPT
Enclosure Rating	N/A	NEMA 3 (IP54)	IP65 (NEMA 4)

HIGH SINGLE PRESSURE - INDICATING

Pressure Transmitters and Transducers



					
SERIES	DSGT - page 85	EDA - page 87	626/628-CB - pages 100-101	IWP - page 103	3200G - pages 104-105
Ranges	30 to 20,000 psig and 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	4-20 mA	4-20 mA, 1-6 VDC, 1-5 VDC, 0-5 VDC, or 0-10 VDC	4-20 mA	4-20 mA	4-20 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)

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DIGITAL SINGLE PRESSURE

Pressure Gages

					
SERIES	DPGA - page 82	DPGW - page 82	DPG-000 - page 83	DPG-100 - page 83	DPG-200 - page 85
Ranges	-30" Hg to 500 psig (-1.013 to 34.47 bar)	-30" Hg to 500 psig (-1.013 to 34.47 bar)	-14.7 to 8000 psig (-1.0 to 550 bar)	-14.7 to 8000 psig (-1.0 to 550 bar)	5 to 8000 psig (0.3 to 550 bar)
Service	Air and compatible gases	Compatible gases/liquids	Compatible liquids and combustible gases	Compatible liquids and combustible gases	Liquids and non-combustible compatible gases
Wetted Materials	316L SS, silicone sensor	316L SS	Type 316L SS	Type 316L SS	Type 316L SS
Housing	ABS plastic	ABS plastic	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	±1% FS	±1% FS	±0.5% FS	±0.25% FS	±0.25% FS
Pressure Limits	200% FS; 30 psig for vacuum models	200% FS; 30 psig for vacuum models	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	30 to 120°F (-1 to 49°C)	30 to 120°F (-1 to 49°C)	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	1/4" male NPT	1/4" male NPT
Enclosure Rating	N/A	N/A	NEMA 4/4X (IP66)	NEMA 4/4X (IP66)	NEMA 4X (IP66)

SINGLE PRESSURE

Pressure Switches







						
SERIES	EDA - page 87	DA/DS - pages 88-89	SA1100 - page 90	1000W/E - page 91	A1F - page 92	A1PS/A1VS - page 93
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)	2 to 450 psig (.14 to 10.3 bar)	28" Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	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®	Fluorocarbon and 316 SS	Zinc and Buna-N
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)	-40 to 175°F (-40 to 80°C)	-31 to 185°F (-35 to 85°C)
Pressure Limits	4500 psig (310 bar)	8000 psig (551 bar)	3000 psig (207 bar)	3000 psig (207 bar)	750 psig (51 bar)	600 psig (41 bar)
Power Requirement	12-30 VDC/AC	None	None	None	None	None
Repeatability	0.5%	1%	Consult factory	Consult factory	Consult factory	Consult factory
Adjustable Deadband	Yes	Yes	Yes	No	No	No
Set Point Indication	Yes	Yes	Yes	Yes	Yes	Yes
Enclosure Rating	WP	GP, WP, or EXP	WP and EXP	WP or EXP	GP or WP	GP
Switch Type	(2) SPDT	SPDT or DPDT	SPDT or DPDT	SPDT or DPDT	SPDT	SPDT
Multiple Stages	No	Yes	No	No	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	1/4" female and 1/2" male NPT	1/4" male NPT

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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	APS/AVS - page 93	A6 - page 94	AP - page 94	A2 - page 95	MVS - page 95	CXA - page 96
Set Point Range	28" Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)	.5 to 150 psig (.03 to 10.3 bar)	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	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	17-4 PH SS and 303 SS	Polyimide with brass or 304 SS	Steel and Buna-N 04 316 SS and Teflon®	Kapton® and brass	Polycarbonate and polyurethane	Silicone, steel, and SS
Temperature Limits	-65 to 225°F (-54 to 107°C)	-40 to 248°F (-40 to 120°C)	-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	750 psig (51 bar)	500 psig (34 bar)	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	None	None
Repeatability	Consult factory	±10%	Consult factory	5%	20%	±5 psig (.3 bar)
Adjustable Deadband	No	No	No	No	No	Yes
Set Point Indication	Yes	No	Yes	No	No	No
Enclosure Rating	GP	GP or WP	GP, WP, or EXP	GP or submersible	GP	GP
Switch Type	SPDT	(1) SPST NO and (1) SPST NC	SPDT or DPDT	SPST	SPDT	SPST NO or NC
Multiple Stages	No	No	No	No	No	No
Process Connection	1/8" mail NPT	1/4" male NPT	1/4" female NPT	1/8" male NPT	Consult factory	1/4" female NPT

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HIGH SINGLE PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers

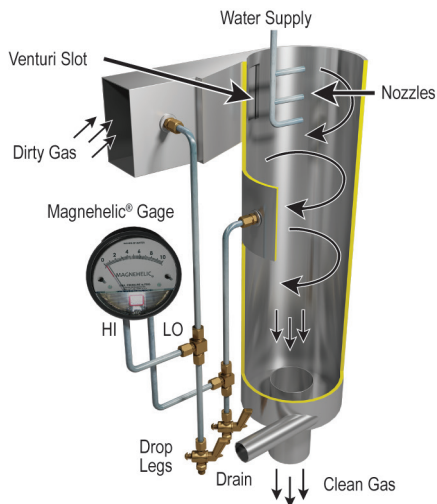
					
SERIES	681 - page 96	638R - page 97	682 - page 98	672 - page 98	673 - page 99
Ranges	1 to 100 psi	75 to 667 psia (5.2 to 46 bar(a))	25 to 10,000 psi	10 to 400 in w.c.	Compound, 1 to 1000 psi
Accuracy	±0.20% FS	±1.2% FS	±0.13% FS	±0.25% FS	±0.25% FS
Wetted Materials	316L SS	Brass, aluminum, or 316 SS	17-4 PH SS	318 Duplex SS, Ceramic, fluoroelastomer	17-4 PH SS
Comp. Temp. Limits	20 to 180°F (-7 to 80°C)	-40 to 275°F (-40 to 135°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 275°F (-40 to 135°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	4-20 mA	0.5-4.5 VDC ratiometric	4-20 mA	4-20 mA or 0-5 VDC	4-20 mA
Elec. Connection	15 ft (4.5 m) multi-conduit cable	Packard connection	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	7/16" 20 UNF (female) or 1/4" NPT (female)	1/4" male or female NPT or BSPT	1/4"-18 male NPT	1/4" male NPT
Enclosure Rating	NEMA 4X (IP66)	IP67	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)

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HIGH SINGLE PRESSURE - NON-INDICATING

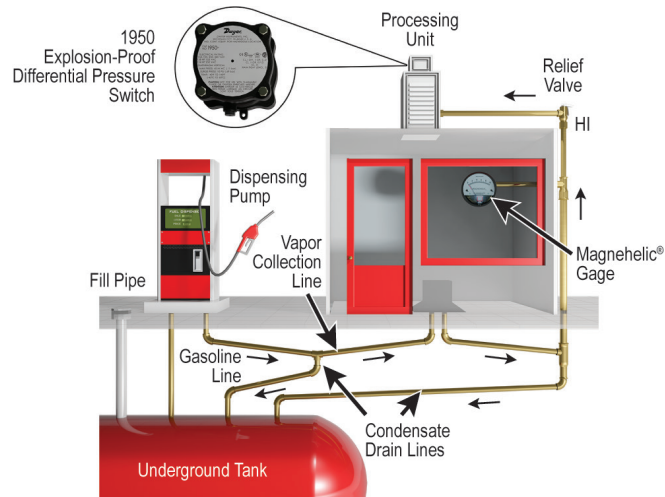
Pressure Transmitters and Transducers

				
SERIES	FDT - page 99	626/628-GH - pages 100-101	636 - page 102	IS626 - page 108
Ranges	100 to 10,000 psi (7 to 690 bar)	Up to 300 psia, 8000 psig, 16 bar abs, 550 bar	15 to 300 psi (1 to 20 bar)	15 to 8000 psig (1 to 550 bar); 15 to 30 psia (1 to 3 bara)
Accuracy	±0.5% FS	626: ±0.25% FS; 628: ±1% FS	±0.30% FS	±0.25% FS; 0.5% FS for absolute ranges
Wetted Materials	316 and 15-5 SS	316, 316L SS	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)	-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)	-40 to 212°F (-40 to 100°C)	0 to 176°F (-18 to 80°C)
Output Signal	4-20 mA or 0-5 VDC	4-20 mA	4-20 mA or 1-5 VDC	4-20 mA
Elec. Connection	4-pin	Cable, DIN connector, or 4-pin M12	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	1/2" female NPT	1/4" male or female NPT or BSPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)



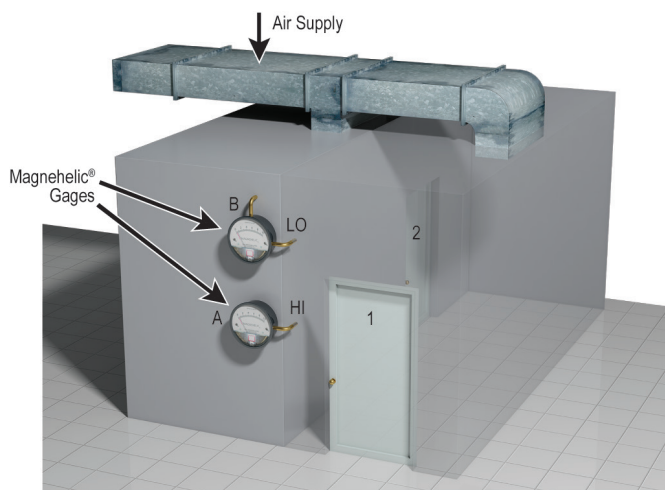
Differential pressure gage assists operator in adjusting venturi pressure drop in dust scrubber

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® Series 1950 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.



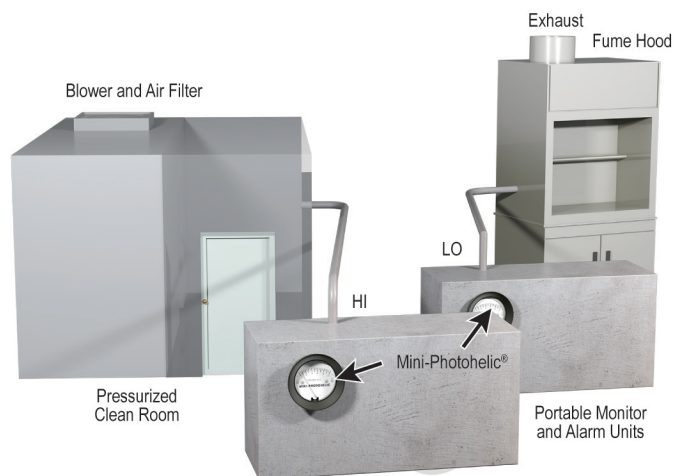
Dwyer® gages indicate pressurization of special rooms

A zero-center Dwyer® Magnehelic® differential pressure gage with a 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.



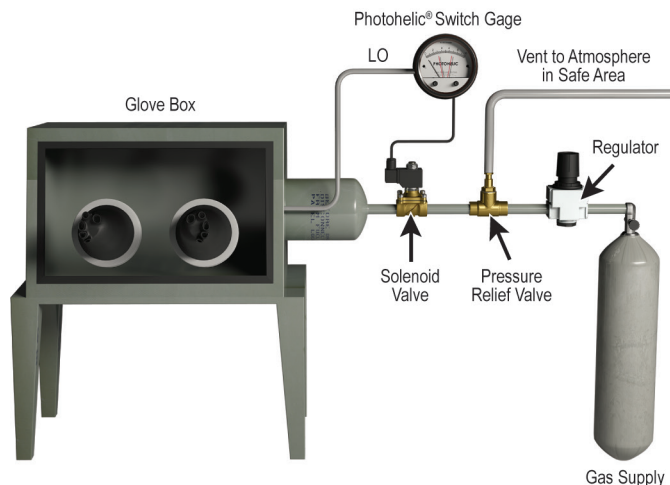
Filling scuba diver air tanks

The Dwyer® Series DPG differential pressure gage 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.



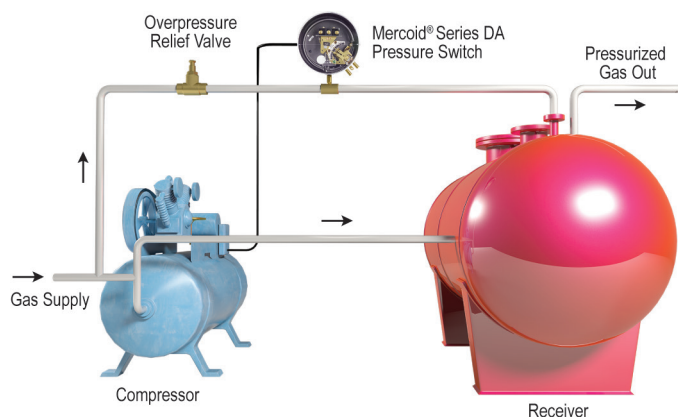
Compact switch/gage monitors pressure, actuates alarm

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.



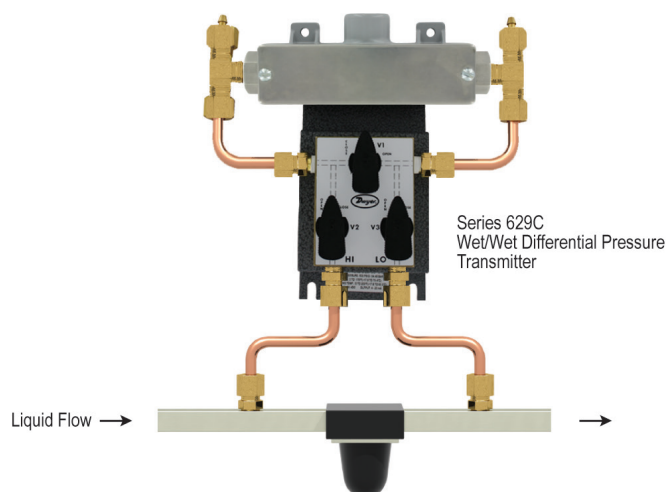
Zero-center switch/gage controls the inert atmosphere in glove box

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. Because of this, 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

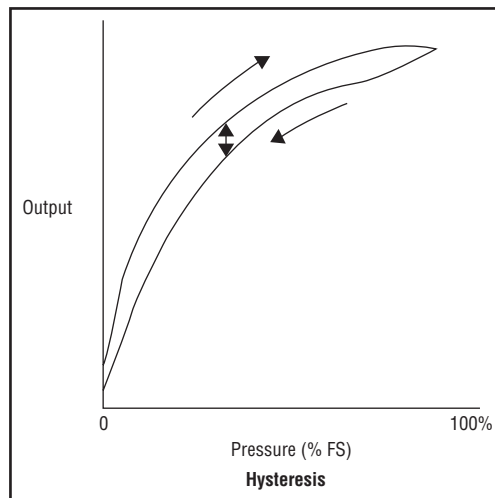
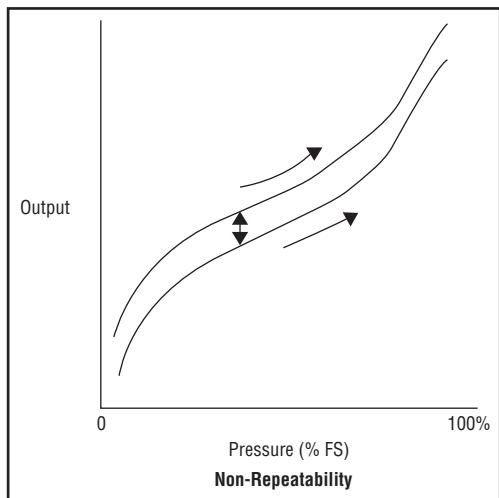
When using differential pressure transmitters in fluid applications, it is essential to periodically make sure that there is no air in the system, as this can cause erroneous readings. Unfortunately, the necessary three-valve bleed system is often expensive and large, making installation difficult and 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

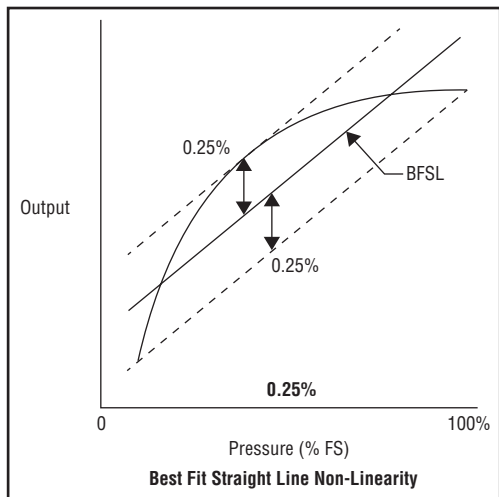


What is accuracy? The International Electrotechnical Commission (IEC) definition of accuracy is maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure. Unfortunately when it comes to defining 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.

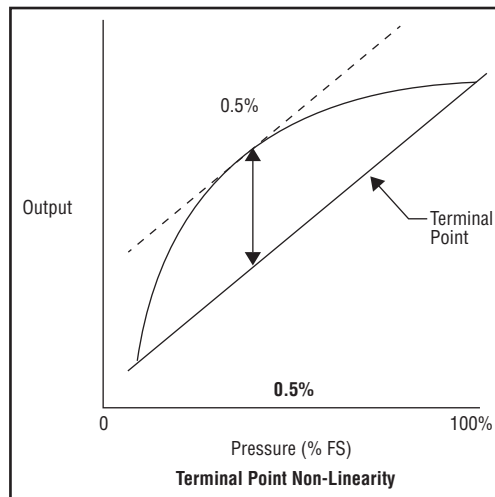
Even though there isn't a defined standard for pressure sensor accuracy there is an IEC standard that defines factors that make-up accuracy. IEC 61298-2 states that accuracy must include Hysteresis, Non-Repeatability and Non-Linearity. Non-Repeatability and Hysteresis are well defined. Hysteresis is 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 manufacturers start to differentiate is with Non-Linearity. IEC 61298-2 lists three methods of Non-Linearity, the two most popular methods used by sensor manufacturers 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% BFS
 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.