CT-WWS

Dwyer®

Manufacturing Excellence
Since 1931

WASTEWATER SYSTEMS

Pressure | Temperature | Flow | Level | Process Control | Valves

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

PROXIMITY® By Dwyer

W.E. Anderson® By Dwyer

Mercoid® By Dwyer

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
Fax | +61 (0) 2 4272 4055

HONG KONG

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

DWYER-INST.COM.HK
Phone | +852-23181007
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.

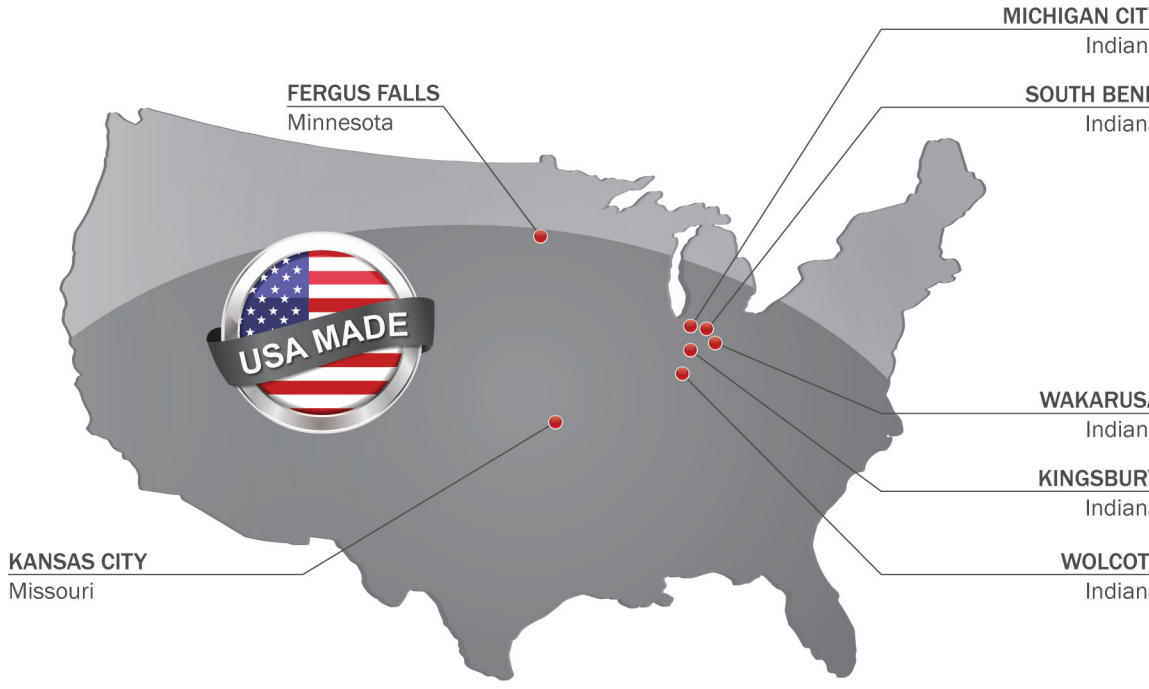
Dwyer holds over 650 technical patents and that number grows every year. We are an enthusiastic group of people headquartered in Michigan City, Indiana, with satellite locations around the globe. We take great pride in the intellect and integrity of our employees, who are passionate about the work we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

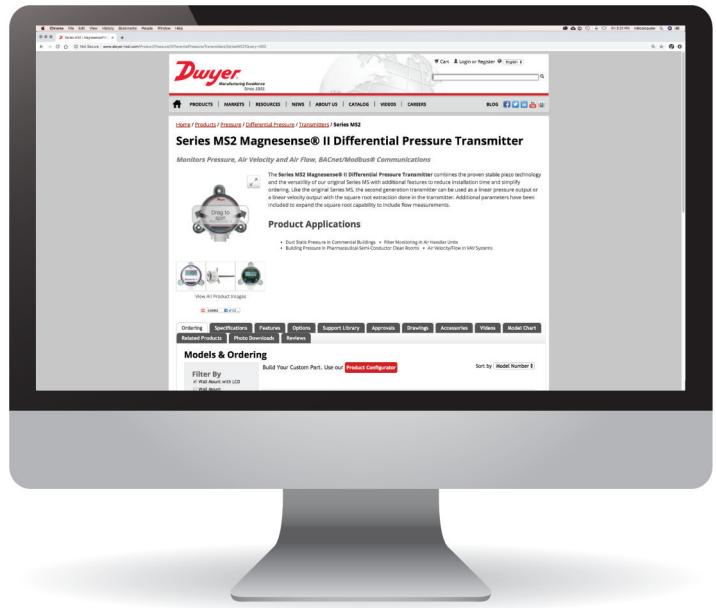
All of our technical sales staff members are degreed engineers trained to be product and industry experts. We listen to your needs and get you the answers you want quickly.

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-INST.COM



DWYER ONLINE

WEBSITE FEATURES

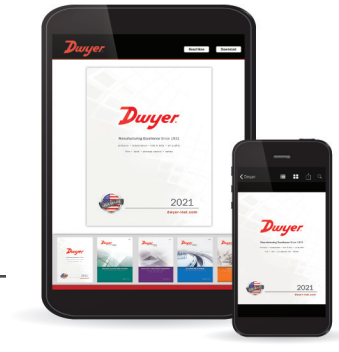
- **Product Search**
- **Free Literature** – Catalogs, Brochures, and Product Selection Guides
- **Product Application and Technical Guides**
- **Digital Catalogs**
- **Dedicated Support Product Pages**
- **Video Library**

PRODUCT PAGE FEATURES

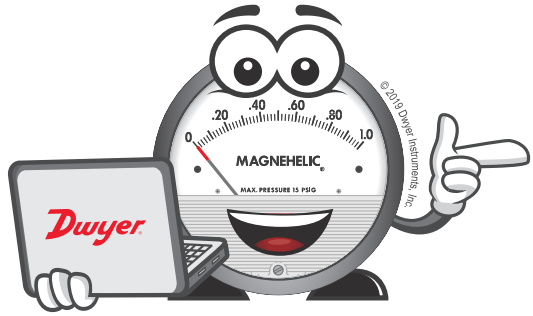
- **Easy Online Ordering**
- **Product Support Library** – Instruction Manuals, Catalog Pages, and Data Sheets
- **Product Configurator** – Customize a Dwyer product to your specific application needs
- **Agency Approval Certificates** – CE, IECEx, FM, UL, CSA and ATEX
- **Instructional and Informational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

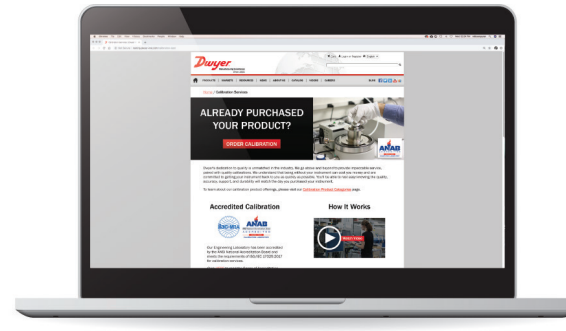
OFFERED IN A WIDE VARIETY OF DESIGNS, FEATURES & SCALES

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

ilac-MRA

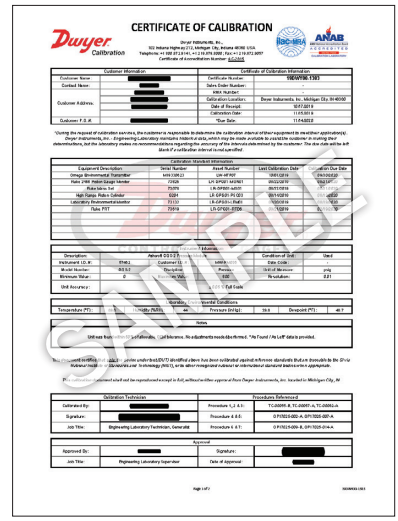
ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17025
CALIBRATION LABORATORY

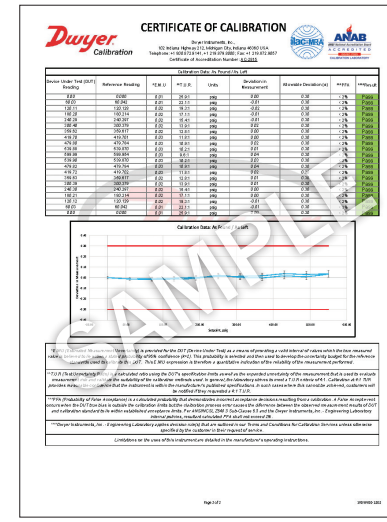
Our Engineering Laboratory has been accredited by the ANSI National Accreditation Board and meets the requirements of ISO/IEC 17025:2017 for calibration services.
See our scope of accreditation for details at **http://www.dwyer-inst.com/calibration/scope**

CALIBRATION & REPAIR SERVICES

— ISO/IEC 17025 ACCREDITED CERTIFICATE OF CALIBRATION

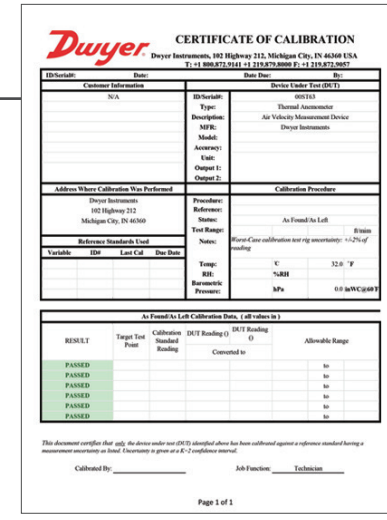
An ISO/IEC 17025 Accredited Certificate of Calibration is available on select products at an additional charge (email accreditedcal@dwyermail.com for additional information). This certificate is created in our ANAB Accredited Standards Laboratory guaranteeing the calibration work performed is in agreement 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.


CERTIFICATE OF CALIBRATION


CERTIFICATE OF CALIBRATION

— 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.


CERTIFICATE OF CALIBRATION

Dwyer Instruments, 102 Highway 212, Michigan City, IN 46360 USA

T: +1 800.872.9141 +1 219.879.8000 F: +1 219.872.9057

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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.
8. **Distribution:** Products sold to any entity located in the U.S. must remain in the U.S. unless a Global Distribution Agreement is in force with said entity. OEM's are excluded from this requirement. Those who violate this term are subject to a reduction of discount, loss of discount, or exclusion from purchasing future products. If you want to be a Global Distributor, please contact your Global Sales Manager in your region.
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.
   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.

10. **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.
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.

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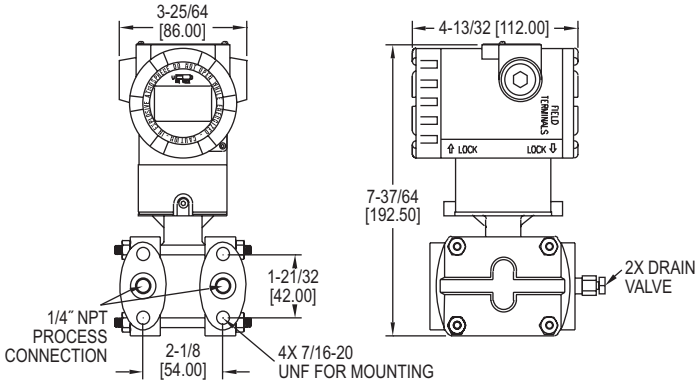
VALVES

Dwyer

SERIES 3100D | MERCOID® BY DWYER

EXPLOSION-PROOF DIFFERENTIAL PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)



Mercoid® **Series 3100D Explosion-Proof Smart Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push-button configuration, and programmable using HART® Communication. The Series 3100D is capable of being configured for differential pressure or level applications with the zero and span buttons. A field calibrator is not required for configuration. The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss.
The Series 3100D is FM or ATEX approved for use in hazardous (classified) locations. The 100:1 rangeability allows the smart transmitter to be configured to fit any application.

FEATURES/BENEFITS

- Configurable using zero/span buttons means no calibrator required reducing time to install and running
- Range-ability and selectable engineering units, allows transmitter to fit many applications reducing the number of different transmitters to meet specifications
- High accuracy (±0.075%) provides exceptional measurement for ensuring tight-control and minimizing costly out of specification conditions
- Automatic sensor temperature compensation improves performance of device for accurate measurement under different operating environments
- Fail-mode process function stores configuration settings in the event of shutdown or power-loss provides for faster restart to getting application back on-line
- A HART® Communication programmable device provides a reliable, long-term solution for plant operators who seek the benefits of intelligent devices with digital communication

APPLICATIONS

- Flow measurement
- Level monitoring
- Filter or pump differential pressure
- Critical process monitoring

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS, fluoroelastomer.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: 100:1 turn down.
Stability: ±0.125% FSO/yr.
Temperature Limits: Process: -40 to 248°F (-40 to 120°C); Ambient: Without LCD: -40 to 185°F (-40 to 85°C); With LCD: -22 to 176°F (-30 to 80°C).
Pressure Limits: Max pressure: Range: -14.5 to 2000 psi; Burst pressure: 10000 psi.
Thermal Effect: ±0.125% span/32°C.
Power Requirements: 11.9-45 VDC.
Output Signal: 4-20 mA / HART® Communication.
Response Time: 0.12 s.
Damping Time: 0.25 to 60 s.
Loop Resistance: Operation: 0 to 1500 Ω; HART® Communication: 250 to 500 Ω.
Electrical Connection: Two 1/2" female NPT conduit, screw terminal.
Process Connection: 1/4" female NPT.
Display: Optional 5 digit LCD.
Enclosure Rating: NEMA 4X (IP66) and explosion-proof for Class I, Div I, Groups A, B, C and D.
Weight: 8.6 lb (3.9 kg).
Agency Approvals: CE, FM, ATEX option available (consult factory).

MODEL CHART

Model	Calibrated Span (Min. to Max.)		Lower Range Limit		Upper Range Limit		LCD Display
3100D-2-FM-1-1	0.6 to 30 in w.c.	0.15 to 7.5 kPa	-30 in w.c.	-7.5 kPa	30 in w.c.	7.5 kPa	No
3100D-3-FM-1-1	1.5 to 150 in w.c.	0.373 to 37.3 kPa	-150 in w.c.	-37.3 kPa	150 in w.c.	37.3 kPa	No
3100D-4-FM-1-1	7.5 to 750 in w.c.	1.865 to 186.5 kPa	-750 in w.c.	-186.5 kPa	750 in w.c.	186.5 kPa	No
3100D-5-FM-1-1	1 to 100 psi	6.9 to 690 kPa	-100 psi	-690 kPa	100 psi	690 kPa	No
3100D-6-FM-1-1	3 to 300 psi	20.68 to 2068 kPa	-300 psi	-2068 kPa	300 psi	2068 kPa	No
3100D-2-FM-1-1-LCD	0.6 to 30 in w.c.	0.15 to 7.5 kPa	-30 in w.c.	-7.5 kPa	30 in w.c.	7.5 kPa	Yes
3100D-3-FM-1-1-LCD	1.5 to 150 in w.c.	0.373 to 37.3 kPa	-150 in w.c.	-37.3 kPa	150 in w.c.	37.3 kPa	Yes
3100D-4-FM-1-1-LCD	7.5 to 750 in w.c.	1.865 to 186.5 kPa	-750 in w.c.	-186.5 kPa	750 in w.c.	186.5 kPa	Yes
3100D-5-FM-1-1-LCD	1 to 100 psi	6.9 to 690 kPa	-100 psi	-690 kPa	100 psi	690 kPa	Yes
3100D-6-FM-1-1-LCD	3 to 300 psi	20.68 to 2068 kPa	-300 psi	-2068 kPa	300 psi	2068 kPa	Yes

Note: Consult factory for custom calibration.

EXPLOSION-PROOF DIFFERENTIAL PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)

MODEL CHART															
Example	**3100D**	**-2**	**-FM**	**-3**	**-1**	**-LEC**	**S2**	**A1**	**05**	**S**	**2**	**-05**	**-10**	**-LCD**	**3100D-2-FM-3-1-LECS2A105S2-05-10-LCD**
Series	3100D														Explosion-proof differential pressure transmitter
Range		1 2 3 4 5 6 7													0 to 6 in w.c. 0 to 30 in w.c. 0 to 150 in w.c. 0 to 750 in w.c. 0 to 100 psi 0 to 300 psi 0 to 1000 psi
Approval			FM ATEX WP												FM approved ATEX approved Weatherproof only (only available with 316 SS housing)
Process Connection				1 3											1/4″ female NPT Diaphragm seal
Electrical Connection					1										1/2″ female NPT
Diaphragm Seal Type						LEC LED LEH LEL LFC LFD LFH LFL									2 extended diaphragm seals capillary type 1 extended diaphragm seal direct mount high side 1 extended diaphragm seal capillary type high side 1 extended diaphragm seal capillary type low side 2 flush diaphragm seals capillary type 1 flush diaphragm seal direct mount high side 1 flush diaphragm seal capillary type high side 1 flush diaphragm seal capillary type low side
Mounting Flange							S2 S3								2″ (50 mm) 316L SS 3″ (80 mm) 316L SS
Mounting Flange Rating								A1 A2 D1 D2 J1 J2							ANSI class 150# ANSI class 300# DIN PN 10/16 DIN PN 25/40 JIS 10 K JIS 20 K
Extension Length									00 05 10 15						No extension [standard for flush mount] 2″ extension 4″ extension 6″ extension
Diaphragm Material										S P H T					316L SS diaphragm PTFE and 316L SS diaphragm Hastelloy C-276 diaphragm Tantallum diaphragm
Fill Fluid											2				Silicon oil (-40 to 400°F)
Capillary Length High Side												XX			0 to 20 feet
Capillary Length Low Side													XX		0 to 20 feet
Options														LCD SSH NIST CC	5 digit LCD 316 SS housing (Only available with WP approval) NIST calibration Custom calibration

CUSTOM CALIBRATION VALUES	
Primary Units	in w.c., ft in w.c., mm in w.c., in Hg, psig, g/cm^2 , kg/cm^2, MPa, Pa, kPa, bar, mbar, Torr, Atm, mm Hg
Upper Range Limit	20 mA value
Lower Range Limit	4 mA value
Output	Linear or square root
Damping Time	0 to 60 seconds
Display Mode	Unit, %, mA, rotate
Display Units	Primary unit or Engineering unit
Engineering Units*	**Volumetric Flow Units** US gal/s, US gpm, US gal/hr, US gpd, imp gal/s, imp gpm, imp gal/hr, imp gpd, l/s, l/min, l/hour, ft/s, m/s, metric gal/day, metric l/day, ft^3/s, ft^3/min, ft^3/h, ft^3/day, m^3/s, m^3/min, m^3/hr, m^3/day, normal l/hr, normal m^3/hr, standard ft^3/min, barrels/s, barrels/min, barrels/hr, barrels/day **Mass Flow Units** g/s, g/min, g/hr, kg/s, kg/min, kg/hr, kg/day, metric ton/min, metric ton/hour, metric ton/day, lb/s, lb/min, lb/hr, lb/day, short ton/min, short ton/hr, short ton/day, long ton/hr, long ton/day **Volume Units** gallons, liters, imp gallons, m^3, barrels, bushels, yd^3, ft^3, in^3, bbl liq, normal cubic meter, normal liter, standard cubic feet, hectoliters
Engr. Upper Range Limit*	Engr. upper value
Engr. Lower Range Limit*	Engr. lower value
Engr Function*	Linear or square root
*Engineering Units, Engr. Upper Range Limit, Engr. Lower Range Limit and Engr. Function values are only required if engineering unit is selected.	

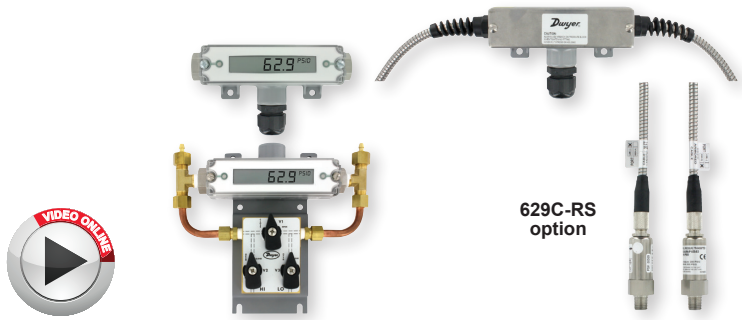
ACCESSORIES	
Model	**Description**
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-1F	Flanged 3-valve block manifold
BBV-22F	Flanged 5-valve block manifold
DevCom2000	HART® communication protocol software

Dwyer

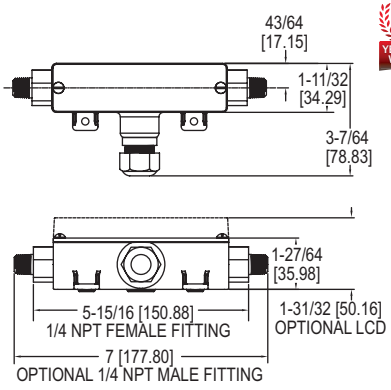
SERIES 629C

WET/WET DIFFERENTIAL PRESSURE TRANSMITTERS

0.5% Accuracy, NEMA 4X (IP66) Enclosure



Conduit housing with remote sensor available in 10´ or 20´ shielded or armored cable



The **Series 629C Wet/Wet Differential Pressure Transmitters** monitor differential pressure of air and compatible gases and liquids with 0.5% accuracy. The design employs dual pressure sensors converting pressure changes into a standard 4-20 mA output signal or field selectable voltage. Small internal volume and minimal moving parts result in exceptional response and reliability. The terminal block, as well as a zero adjustment button, are easily accessed under the top cover. The Series 629C Differential Pressure Transmitter is designed to meet NEMA 4X (IP66) construction.

FEATURES/BENEFITS

- Powered by either DC or AC - take advantage of most readily available power source reducing installation costs
- Optional LCD does not need a separate power supply - lowers installed cost
- Selectable voltage range - provides flexible choice for changing design or inputs for process/HVAC controllers being used to monitor and control
- Push-button zero (versus trim pot) - more simple zeroing provides easy install and calibration reducing installation time and possibility of operator error
- Optional LCD indicator provides local status to identify operational condition
- Remote sensor option reduces installation labor and material

APPLICATIONS

- Flow elements
- Heat exchangers
- Filters
- Coils
- Chiller
- Pumps

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Without valve: 316, 316L SS. Additional wetted parts with valve option: Buna-N, silicone grease, PTFE, brass 360, copper, and reinforced copolymer.
Accuracy: ±0.5% FS (includes linearity, hysteresis & repeatability).
Stability: ±1% FS/year.
Temperature Limits: 0 to 200°F (-18 to 93°C).
Compensated Temperature Limits: 0 to 175°F (-18 to 79°C).
Pressure Limits: See range table.
Thermal Effects: Avg 0.04%/°F (0.072%/°C) (includes zero and span).
Power Requirements: 2-wire: 10-35 VDC; 3-wire: 13-35 VDC or isolated 16-33 VAC (reverse polarity protected).
Output Signal: 2-wire: 4-20 mA; 3-wire: Field selectable 0-5, 1-5, 0-10, or 2-10 VDC.
Zero and Units: Push-buttons inside conduit enclosure.
Response Time: 400 msec.
Loop Resistance: Current output: 0 to 1250 Ω (max), Rmax = 50(Vps-10); Voltage output: Minimum load resistance = 5 kΩ.
Current Consumption: 28 mA (max).
Electrical Connections: Removable terminal block; 1/2″ female NPT conduit.
Process Connections: 1/4″ female or male NPT.
Display: Optional 4-1/2 digit LCD field attachable display.
Enclosure Rating: Designed to meet NEMA 4X (-RS maintains NEMA 4X on sensors and housing).
Mounting Orientation: Not position sensitive.
Weight: 629C-XX-CH: 10.1 oz (286 g); 629C-XX-R2-P1-E5-XX: 2.3 lbs (1.04 kg); 629C-XX-R6-P1-E5-XX: 4.55 lbs (2.06 kg).
Agency Approvals: CE.

MODEL CHART

Example	629C	-01	-CH	-P1	-E1	-S1	-3V	629C-01-CH-P1-E1-S1-3V
Series	629C							Wet/wet differential pressure transmitter
Range		01						0 to 5 psid
		02						0 to 10 psid
		03						0 to 25 psid
		04						0 to 50 psid
		05						0 to 100 psid
		06						0 to 150 psid
		07						0 to 200 psid
		08						0 to 300 psid
		09						0 to 500 psid
		11						0 to 0.5 bar differential
		12						0 to 1 bar differential
		13						0 to 2 bar differential
		14						0 to 4 bar differential
		15						0 to 6 bar differential
		16						0 to 10 bar differential
		17						0 to 15 bar differential
		18						0 to 20 bar differential
		19						0 to 30 bar differential
Housing			CH					Conduit housing, NEMA 4X (IP66)
			R1					Conduit housing, NEMA 4X (IP66) with Remote Sensor and 10´ shielded cable
			R2					Conduit housing, NEMA 4X (IP66) with Remote Sensor and 20´ shielded cable
			R5					Conduit housing, NEMA 4X (IP66) with Remote Sensor and 10´ armored cable
			R6					Conduit housing, NEMA 4X (IP66) with Remote Sensor and 20´ armored cable
Process Connection				P1				1/4″ male NPT
				P2				1/4″ female NPT
				P3				1/4″ male BSPT
				P4				1/4″ female BSPT
Electrical Connection					E1			Cable gland with 3´ of prewired cable
					E2			Cable gland with 6´ of prewired cable
					E3			Cable gland with 9´ of prewired cable
					E5			1/2″ female NPT conduit
					E9			M-12 4 pin connector
Signal Output						S1		4-20 mA
						S3		Field selectable 0-5, 1-5, 0-10, 2-10 VDC
Options							3V	3-way valve
							AT	Aluminum tag
							FC	Factory calibration certificate
							LCD	LCD indication
							NIST	NIST traceable certificate

Note: -3V option is only available with -P2 process connection.

RANGE

Range Number	Range	Working Pressure*	Over Pressure
01	0 to 5 psid	10 psi	50 psi
02	0 to 10 psid	20 psi	50 psi
03	0 to 25 psid	50 psi	120 psi
04	0 to 50 psid	100 psi	250 psi
05	0 to 100 psid	200 psi	500 psi
06	0 to 150 psid	300 psi	750 psi
07	0 to 200 psid	400 psi	1000 psi
08	0 to 300 psid	600 psi	1200 psi
09	0 to 500 psid	1000 psi	2000 psi
11	0 to 0.5 bar differential	1 bar	3 bar
12	0 to 1 bar differential	2 bar	8 bar
13	0 to 2 bar differential	4 bar	8 bar
14	0 to 4 bar differential	8 bar	18 bar
15	0 to 6 bar differential	12 bar	18 bar
16	0 to 10 bar differential	20 bar	50 bar
17	0 to 15 bar differential	30 bar	60 bar
18	0 to 20 bar differential	40 bar	80 bar
19	0 to 30 bar differential	60 bar	120 bar

*Pressures exceeding the working pressure limit may cause a calibration shift of up to ±3% of full-scale.

Note: Over pressure of all models with 3-way valve is 100 psi.

ACCESSORIES

Model	Description
A-155	Cable gland with 1/2″ NPT male
A-228	12″ SS flex hose
A-62X-LCD	Field-upgradeable LCD
BBV-1B	Mini SS 3-valve block manifold

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Dwyer

SERIES SGY & SGZ

2.5″ INDUSTRIAL PRESSURE GAGES

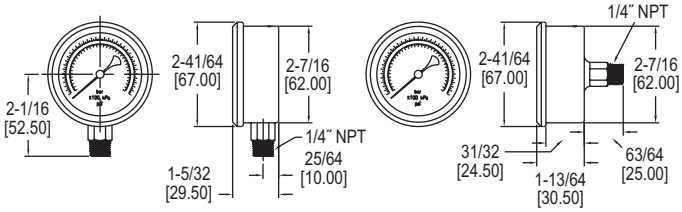
1.5% Full-Scale Accuracy, 316 SS or Brass Wetted Parts, Dual Psi/Bar x100 kPa Scales

SGZ bottom

SGZ back with accessory pointers

SGY bottom

SGY back with accessory pointers



The **Series SGY & SGZ 2″ Industrial Pressure Gages** have dual psi and bar (x100 kPa) scales with ±1.5% full-scale accuracy. The Series SGZ and SGY gages are designed with 304 SS housings and the SGZ is designed with 316 SS wetted parts for excellent chemical compatibility or SGY brass wetted parts for compatible gases. These gages cover a wide variety of ranges in either bottom or back connection configurations. Series SGZ gages employ an easy-open breather plug on top, which allows liquid filled units to breathe, relieving any built up internal pressures. Plug easily pops open and does not need to be entirely removed or cut like a typical gages' rubber plug grommet.

FEATURES/BENEFITS
- Stainless steel housing and wetted parts to resist ambient corrosion for longer service life in harsh environments
- Higher accuracy gage for value-sensitive applications requiring more precise measurement and where vibration is a concern
- Optional sliding pointer clearly mark to make visible critical ranges and high and low points
- Liquid fillable gage with easy open breather plug provides smoother damped movement of pointer
- Back or bottom mounting and compact size provides for mounting with dimensional limitations

APPLICATIONS
- Vacuums in pneumatic conveying lines
- Positive pressure in compressed air headers
- Corrosive ambient environments

ACCESSORIES	
Model	**Description**
A-445D	U-bracket mounting kit for 2.5″ gage
A-499R	Red sliding color pointer
A-499Y	Yellow sliding color pointer
A-499G	Green sliding color pointer

OPTIONS	
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS	
Service: Compatible gases and liquids. **Wetted Materials:** SGZ: 316 L SS Tube, 316 SS connector; SGY: Brass connection, bronze tube. **Housing:** 304 SS. **Lens:** Polycarbonate. **Accuracy:** ±1.5% FS. **Pressure Limit:** FS range.	**Temperature Limits:** -4 to 140°F (-20 to 60°C). **Size:** 2.5″ (63 mm). **Process Connections:** 1/4″ male NPT. **Weight:** 4.9 oz (141 g) bottom, 5.8 oz (164 g) back. Add 3.7 oz (104 g) for glycerin fill.

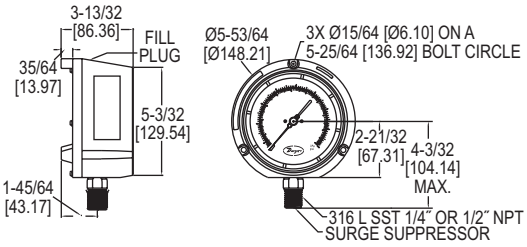
MODEL CHART			
Model	**Range**	**Model**	**Range**
SGZ-D10122N	30″ Hg to 0	**SGY-D10122N**	30″ Hg to 0
SGZ-D10322N	0 to 30 psi	**SGY-D10322N**	0 to 30 psi
SGZ-D10422N	0 to 60 psi	**SGY-D10422N**	0 to 60 psi
SGZ-D10522N	0 to 100 psi	**SGY-D10522N**	0 to 100 psi
SGZ-D10622N	0 to 160 psi	**SGY-D10622N**	0 to 160 psi
SGZ-D10722N	0 to 200 psi	**SGY-D10722N**	0 to 200 psi
SGZ-D11022N	0 to 300 psi	**SGY-D11022N**	0 to 300 psi
SGZ-D11122N	0 to 500 psi	**SGY-D11122N**	0 to 500 psi
SGZ-D11222N	0 to 1000 psi	**SGY-D11222N**	0 to 1000 psi
Note: To order with glycerin fill, add -GF to the end of the model. For back connect, change 22N to 42N.			

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES 765

PROCESS GAGE WITH DAMPENED MOVEMENT

±0.5% Accuracy, Safety Blow-Out Back



The **Series 765 Process Gage with Dampened Movement** minimizes effects of vibration without liquid filling. With this dampened movement the 765 gages are ideal for use in any application where high pulsation or vibration exists. The 765 gages offer dual scale range (psi/kPa) with ±0.5% full-scale accuracy. They are designed with a Phenolic safety-case and have a solid front with a blow-out back. Excellent chemical compatibility is insured with the 316L SS socket and Bourdon tube. A wide offering of ranges are available from full vacuum to 20,000 psi. The 765 process gage comes standard with bottom 1/4″ or 1/2″ male NPT connections.

FEATURES/BENEFITS
- Liquid-free dampened movement minimizes effect of vibration and cost to maintain
- Stainless steel socket and Bourdon tube permit use in chemical applications
- High accuracy gage for applications requiring more precise measurement
- Models that support vacuum to high pressure ranges provide a selection to meet specific applications
- Specified with high ambient and process temperature ratings mean more robust uses and longer service-life

APPLICATIONS
- Process applications
- Chemical
- Refinery
- Fertilizer
- Petrochemical
- Power
- Pharmaceutical
- Pulp and paper
- Cement

OPTIONS	
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS	
Service: Compatible gases and liquids. **Wetted Materials:** 316L SS socket and Bourdon tube. **Housing:** Phenolic plastic with safety blow-out back. **Lens:** Polycarbonate. **Accuracy:** ±0.5% ANSI/ASME Grade 2A. **Pressure Limit:** 125% FS < 1500 psi, 115% FS for 2000 to 5000 psi, 110% FS > 10,000 psi.	**Temperature Limits:** -40 to 200°F (-40 to 93°C). **Size:** 4-1/2″ (114.3 mm) dial face. **Process Connections:** 1/4″ or 1/2″ NPT male. **Enclosure Rating:** IP65 (NEMA 4). **Weight:** 37 oz (1040 g). **Agency Approval:** Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

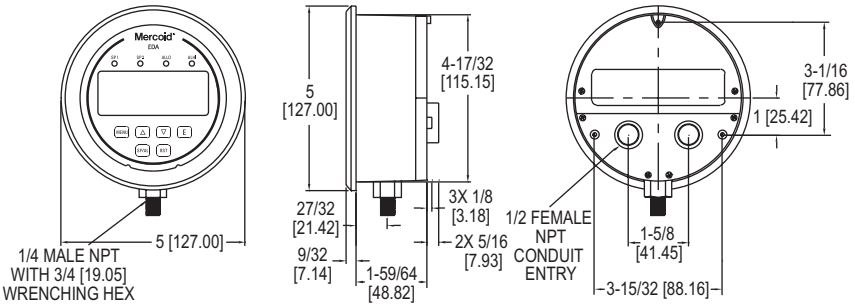
MODEL CHART					
Example	**765**	**-01**	**2N**	**-FMR**	**765-012N-FMR**
Series	765				4.5″ process gage
Range		01 02 03 04 05 06 07 08 09 10 11			30″ Hg-0 VAC (-100 to 0 kPa) 0 to 30 psi (0 to 206 kPa) 0 to 60 psi (0 to 410 kPa) 0 to 100 psi (0 to 680 kPa) 0 to 160 psi (0 to 1100 kPa) 0 to 200 psi (0 to 1370 kPa) 0 to 300 psi (0 to 2060 kPa) 0 to 400 psi (0 to 2770 kPa) 0 to 500 psi (0 to 3400 kPa) 0 to 600 psi (0 to 4100 kPa) 0 to 1000 psi (0 to 6800 kPa)
Process Connection			2N 4N		1/4″ male NPT 1/2″ male NPT
Additional Options				FMR SG45	Flush mounted ring Safety glass lens
Note: For additional ranges contact factory.					

Dwyer

SERIES EDA | MERCOID® BY DWYER

ELECTRONIC PRESSURE CONTROLLER

2 Switches, Indicating Gage, and Transmitter in One Package



Series EDA Electronic Pressure Controller is an extremely versatile compact package that can replace a separate gage, two switches, and a transmitter in a system saving money, installation time, and panel space. The EDA incorporates two SPDT relays that have the on and off points fully adjustable over the range for control or alarm use. Front face has LED indicators for switch status and a large backlight two-line display showing process value and indication units. Programming is easy with simple menu structure, two-line display, and external programming buttons. Weatherproof housing is ideal for a wide variety of applications with panel mount, flush mount, or pipe mount ability. Features include zero set, adjustable dampening, menu lock out, peak and valley indication, removable terminal blocks, adjustable time delay, and scalable transmitter output.

FEATURES/BENEFITS

- Can replace separate gages, two switches and a transmitter in a system saving money, installation time, and panel space with its versatile and compact functionality
- Meets simple and complex application needs with fully programmable software
- Easily test switch and transmitter output function through the test mode that simulates input over the range without pressuring the system
- Protection in case of sensor failure, over pressure, high temperature limit, low temperature limit, or keypad short with fail-safe relay output choices
- Even wear on duplex pump applications via selectable alternation of the set points between relays
- Ideal for a wide variety of applications with panel mount,flush mount, or pipe mount ability due to its rugged weatherproof housing
- Eliminate the need of a step down transformer with the -HV 120/240 VAC power

APPLICATIONS

- Process control
- Compressor control
- Filter status
- Duct or building static pressure
- Damper and fan control

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Materials: 316L SS.
Housing: Polycarbonate.
Accuracy: ±1% of FS including linearity, hysteresis, and repeatability (indicator and transmitter).
Stability: < ±2% of FS per year.
Pressure Limits: 1.5 x range.
Temperature Limits: Ambient: 20 to 140°F (-6.6 to 60°C); Process: 0 to 176°F (-18 to 80°C).
Compensated Temperature Limits: 32 to 122°F (0 to 50°C).
Thermal Effect: ±0.05% of FS/°F.
Display: 4-digit backlit LCD (digits: 0.60″H x 0.33″ W).
Power Requirements: 12-28 VDC/AC 50/60 Hz. (Can work at 8 VDC for 45 s). For T5 option: 14-30 VDC/AC 50/60 Hz. For -HV option: 120-240 VAC.
Power Consumption: 12-28 VDC/VAC: 2.5 watts; 120-240 VAC: 4.5 watts.
Electrical Connections: Removable terminal blocks with two 1/2″ female NPT conduit connections.
Enclosure Rating: Meets NEMA 4X (IP66).
Warm Up Time: <10 s.
Mounting Orientation: Any position.
Weight: 1.18 lb (535 g).
Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 5 A @ 120/240VAC, 1 A @ 30 VDC.
Repeatability: ±1% of FS (switching only).
Set Points: Adjustable 0-100% of FS.
Switch Indication: External LED for each relay on the front panel.
Switch Reset: Manual or automatic.

TRANSMITTER SPECIFICATIONS

Output Signal: 4-20 mA, 1-6 VDC, 1-5 VDC, 0-5 VDC, or 0-10 VDC (direct or reverse output selection).
Minimum Excitation: 14 VDC.
Zero and Span Adjustments: Menu scalable within the range.

MODEL CHART

Example	EDA	W	-N1	E1	-02	T0	-AT	EDAW-N1E1-02T0-AT
Series	EDA							Electronic pressure controller
Housing		W						Weatherproof
Process Connection			N1					1/4″ NPT male bottom
Electrical Connection				E1				Two 1/2″ female NPT conduit connections
Range					02 03 04 05 06 07 08 09 10			0-20 psi (1.379 bar) 0-60 psi (4.14 bar) 0-100 psi (6.89 bar) 0-150 psi (10.34 bar) 0-300 psi (20.68 bar) 0-600 psi (41.4 bar) 0-1000 psi (68.9 bar) 0-1500 psi (103.4 bar) 0-3000 psi (206.8 bar)
Transmitter Output						T0 T1 T2 T3 T4 T5		None 4-20 mA 1-5 VDC 0-5 VDC 1-6 VDC 0-10 VDC
Options							23444 AT HV NIST	Oxygen cleaning Aluminum adhesive tag 120-240 VAC power NIST certificate

ACCESSORIES

Model	Description
A-590	1/2″ conduit plug, watertight
A-EDA-BRK	Flush mount bracket for EDA, bracket is then surface mounted, steel with gray hammertone epoxy finish

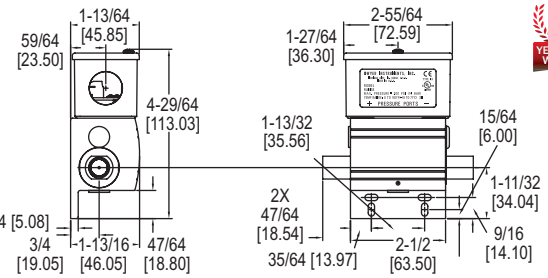
A-EDA-BRK with EDA installed

Dwyer

SERIES DX

WET/WET DIFFERENTIAL PRESSURE SWITCH

NEMA 4X Enclosure, Low Differential Set Points



The **Series DX Wet/Wet Differential Pressure Switch** makes a contact output based on the differential between two pressure sources. Wetted materials of brass and fluoroelastomer are suitable for use with most gases and water based solutions. The switch can be used for low differential pressure indication with set point on a decrease of pressure as low as 1 psid (0.07 bar). Differential set point ranges are available from 2.5 to 75 psid (0.17 to 5.17 bar) on increasing differential pressure and 1.0 to 67 psid (0.07 to 4.62 bar) on decreasing differential pressure. Unit features a high static pressure rating of 200 psig (13.8 bar). Weatherproof, UL type 4X, enclosure for dust laden, outdoor, or wash-down installation environments. Externally adjustable set point, integral mounting flange and a removable electrical terminal block for quick and easy installation.

FEATURES/BENEFITS

- Differential pressure switch that is suitable for most gas and water-based applications allows multiple uses in the most sophisticated designs
- Weatherproof housing provides protection in the harsh, wet or dirty environments ensuring switch's long-service life
- Removable terminal block reduces installation time

APPLICATIONS

- Indicating filter condition
- Proof of flow indicator monitoring
- Proving flow through a pump
- Proving flow through a chiller
- Proving flow through a heat pump or AC unit

OPTIONS	
To order add suffix:	**Description**
-PRESET	Preset unit
Example: DXW-11-153-1-PRESET	

USA: California Proposition 65

⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Connection: Brass; Diaphragm: Fluoroelastomer.
Temperature Limits: 30 to 140°F (-1 to 60°C).
Pressure Limits: 200 psig (13.8 bar). Continuous single side only pressure should not exceed 1.25 x full differential range.
Enclosure Rating: Weatherproof UL type 4X (IP65).
Repeatability: ±2% of full range.
Switch Type: SPDT snap switch.
Electrical Rating: 5 A @ 125/250 VAC (~), 5 A res. @ 30 VDC (⎓).
Electrical Connection: Removable terminal block.
Conduit Connection: 0.871″ diameter hole for 1/2″ conduit fitting.
Process Connection: 1/4″ NPT female.
Mounting Orientation: Ports on horizontal plane, ±10°.
Set Point Adjustment: External screw.
Housing Materials: Body: Aluminum; Housing: Polycarbonate; Cover: 300 SS.
Vibration and Shock: Set point repeats after 2.5 Gs, 5 to 500 Hz. Set point repeats after a 15 Gs, 10 millisecond duration.
Humidity Limit: 80% (non-condensing).
Pollution Degree: 2.
Environment: Intended for indoor and outdoor use.
Weight: 1 lb 3 oz (0.54 kg).
Agency Approvals: CE, cULus.

MODEL CHART

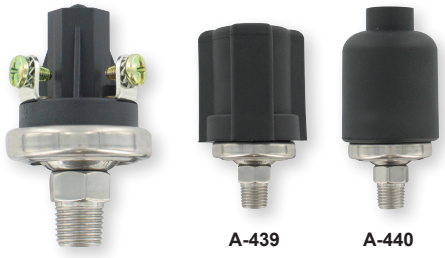
Model	Adjustable Differential Range (on increase) [psid (bar)]	Fixed Deadband [psid (bar)] Low Set Point	Fixed Deadband [psid (bar)] High Set Point
DXW-11-153-1	2.5 to 10 (0.17 to 0.69)	1.5 (0.10)	2.5 (0.17)
DXW-11-153-2	10 to 25 (0.69 to 1.72)	2.5 (0.17)	3.5 (0.24)
DXW-11-153-3	25 to 50 (1.72 to 3.45)	3.5 (0.24)	6.0 (0.41)
DXW-11-153-4	50 to 75 (3.46 to 5.17)	6.0 (0.41)	8.0 (0.55)

Note: Set points on decrease will be the range minus the deadband.

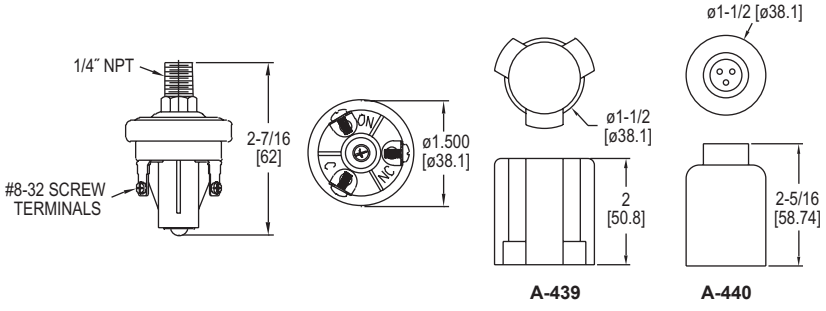
SERIES A6 | MERCOID® BY DWYER

DURABLE PRESSURE SWITCHES

Designed for Extended Duty, Simple and Reliable



A-439 A-440



A-439 A-440

Series A6 Durable Pressure Switches have been specifically designed to stand up to extended duty applications. These switches are constructed with a polyimide film diaphragm and are compatible with a variety of fluids. For ease of installation, the switches come with a 1/4″ male NPT process connection and can be mounted in any orientation. The Series A6 pressure switches are compact and have great set point integrity, and feature simple, easy set point field adjustment.

FEATURES/BENEFITS

- High switch cycle means long life for extended duty applications
- Mounting in any position and feature simple makes a reliable switching for equipment and OEM applications

APPLICATIONS

- OEM
- Process equipment
- Process applications

MODEL CHART

Model	Set Point Range psi (bar) NC	Set Point Range psi (bar) NO
A6-153221	0.5 to 1 (0.03 to 0.07)	1.1 to 3.1 (0.08 to 0.21)
A6-253221	1.1 to 3 (0.08 to 0.21)	2.27 to 6.05 (0.16 to 0.42)
A6-353221	3.1 to 7 (0.21 to 0.48)	4.22 to 10.75 (0.29 to 0.74)
A6-453221	8 to 13 (0.55 to 0.90)	12.3 to 17.5 (0.85 to 1.21)
A6-553221	14 to 24 (0.97 to 1.66)	18.6 to 31.8 (1.28 to 2.19)
A6-653221	25 to 50 (1.73 to 3.45)	33.1 to 61 (2.28 to 4.21)
A6-753221	51 to 90 (3.52 to 6.21)	65.6 to 112.3 (4.53 to 7.75)
A6-853221	91 to 150 (6.28 to 10.35)	114.7 to 198.3 (7.94 to 13.68)

SPECIFICATIONS

Service: Air, motor oils, transmission oils, jet fuels, and similar hydrocarbon media. (Not for water use)
Wetted Materials: Base: 304 SS; Diaphragm: Polyamide film.
Temperature Limits: -40 to 248°F (-40 to 120°C).
Pressure Limits: Operating pressure: 150 psi (10.3 bar) for 0.5-24 psi set point ranges, 250 psi (17.2 bar) for 25 to150 psi set point ranges; Proof pressure: 500 psi (34.5 bar); Burst pressure: 750 psi (51.7 bar) for 0.5-24 psi set point ranges, 1250 psi (86.2 bar) for 25-150 psi set point ranges.
Enclosure Rating: General purpose or with cover: IP65 - weatherproof.
Repeatability: ±10% of set point.
Set Point Tolerance: ±15% of range.
Switch Type: 1 SPST NO, 1 SPST NC. NO and NC switch independent from each other.
Electrical Ratings: Resistive: 15 A @ 6 VDC, 8 A @ 12 VDC, 4 A @ 24 VDC; Inductive: 1 A @ 120 VAC, 0.5 A @ 240 VAC.
Electrical Connections: #8-32 screw terminals.
Process Connection: 1/4″ NPT male.
Mounting Orientation: Switch can be installed in any position.
Set point Adjustment: Screw.
Weight: 0.13 lb (0.06 kg).

ACCESSORIES

Model	Description
A-439	Weatherproof IP65 cover
A-440	Weatherproof IP65 with fly-wire holes

USA: California Proposition 65

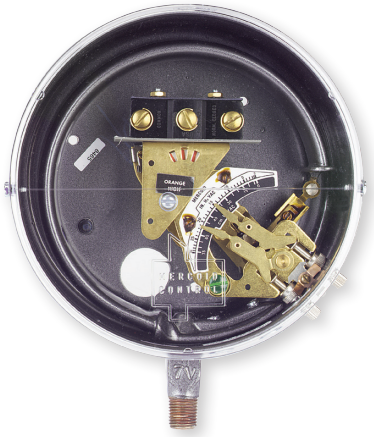
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

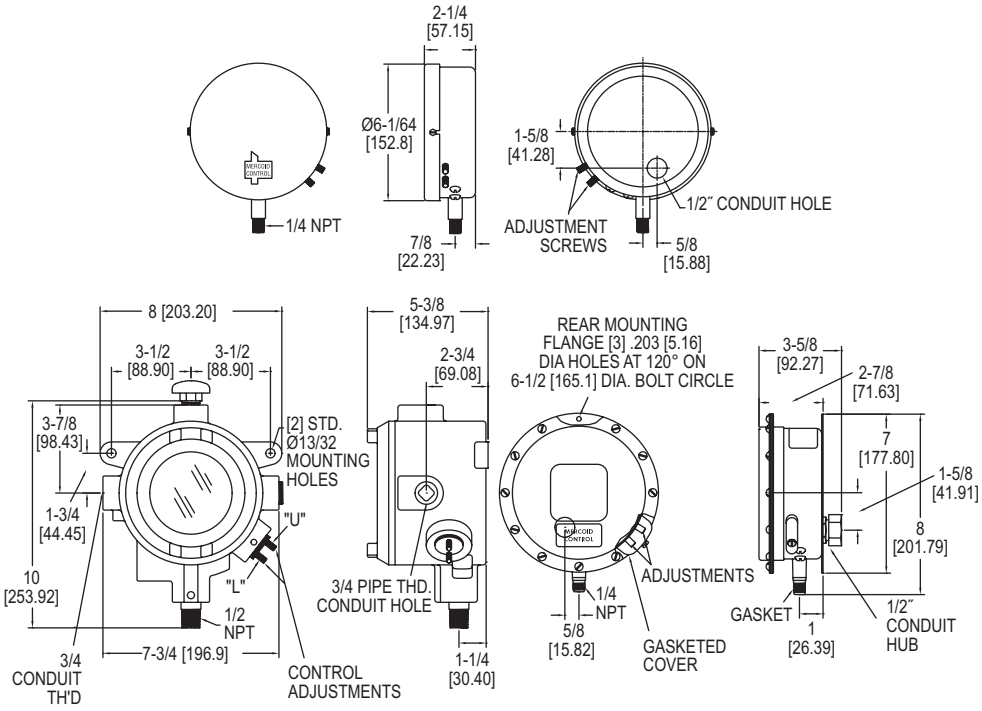
Dwyer

SERIES DA/DS | MERCOID® BY DWYER

BOURDON TUBE PRESSURE SWITCH

Pressure Ranges to 8000 psi (551.6 bar)





Customers tell us that the **Series DA/DS Bourdon Tube Pressure Switch** is the best pressure switch made. The Mercoid DA/DS Series is one of the world's broadest lines of pressure switches. The DA/DS Series has extremely high sensitivity and great repeatability. The DA Models are equipped with two external adjustments, one for setting high pressure operating point, the other for setting low pressure operating point. Deadband, the difference between high and low setpoints, is adjustable over the full-scale. The DS Models are equipped with a single external adjustment for setting operating point only. For mercury-free switches, choose between the snap action switch or hermetically sealed snap action switch. Hermetically sealed mercury switch also available.

FEATURES/BENEFITS

- Visible calibrated dial provides an easy and fast check without having to open device causing dangerous conditions to operators
- On/off indication (except hermetically sealed snap switch models) gives operator clear indication of state of switched equipment that could be located in another location
- Adjustable or fixed deadband supports control applications by reducing equipment wear-out by unnecessary recycling
- External switch set point adjustment reduces set-up time
- Pressure ranges of full vacuum to 8000 psig gives application designers the ability to specify standard equipment, simplifying install and training, and reducing servicing costs
- UL listed, CSA approved, many models FM approved to support rigorous process applications and regulations
- General purpose, weatherproof or explosion-proof enclosures for a variety of indoor or outdoor environments meeting the needs of multiple applications and uses

APPLICATIONS

- Compressors
- Mechanical HVAC or process equipment
- Pump control

SPECIFICATIONS

Wetted Materials: Brass, 403 SS, or 316 SS.
Temperature Limit: 180°F (82°C).
Pressure Limit: Maximum pressure of the operating range.
Enclosure Rating: General purpose, weatherproof or explosion-proof.
Repeatability: ±1% of full operating range, ±1.5% on DS-7300 models.
Switch Type: SPST mercury switch, SPDT mercury switch, SPDT snap switch, or SPDT hermetically sealed snap switch. Other circuit types available.
Electrical Rating: See model charts.
Electrical Connections: Screw terminal.
Conduit Connection: General purpose: 1/2″ hole for conduit hub; Weatherproof: 1/2″ conduit hub; Explosion-proof: 3/4″ female NPT.
Process Connection: General purpose and weatherproof: 1/4″ male NPT, 1/2″ male NPT on ranges 15S and 16S; Explosion-proof: 1/2″ male NPT and 1/4″ female NPT.
Mounting Orientation: Vertical.
Set Point Adjustment: Thumbscrew.
Weight: General purpose: 4 lb (1.8 kg); Weatherproof: 6 lb (2.7 kg); Explosion-proof: 8 lb (3.5 kg).
Deadband: See model chart.
Agency Approvals: CSA, FM, UL (mercury switch units are not CE approved) (Consult factory for FM approved models).

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

BOURDON TUBE PRESSURE SWITCH

Pressure Ranges to 8000 psi (551.6 bar)

MODEL CHART - D SERIES PRESSURE SWITCH WITH SNAP ACTION SWITCH AND GENERAL PURPOSE ENCLOSURE

		Adjustable Deadband SPDT: 10 A @ 120/240 VAC		Fixed Deadband SPDT: 15 A @ 120/240 AC		Hermetically Sealed, Fixed Deadband SPDT: 5 A @ 120/240 VAC, 5 A res. @ 30 VDC	
Bourdon Tube Material	Adjustable Operating Range (psig)	Minimum Deadband (psig)	Model	Fixed	Model	Fixed	Model
Brass	0 to 30″ Hg VAC	13.5″ Hg	DA-7031-153-2	3″ Hg	DS-7231-153-2	5″ Hg	DS-7331-153-2
Brass	10″ Hg VAC to 12	6	DA-7031-153-3	1.5	DS-7231-153-3	3	DS-7331-153-3
Brass	25″ Hg VAC to 50	12	DA-7031-153-27	2.5	DS-7231-153-27	3.75	DS-7331-153-27
Brass	1/8 to 15	6	DA-7031-153-1	1.5	DS-7231-153-1	3	DS-7331-153-1
Brass	1/8 to 20	6	DA-7031-153-3A	1.5	DS-7231-153-3A	3	DS-7331-153-3A
Brass	1 to 35	7.5	DA-7031-153-4	1.5	DS-7231-153-4	3	DS-7331-153-4
Brass	2 to 60	9	DA-7031-153-5	2	DS-7231-153-5	3	DS-7331-153-5
Brass	5 to 100	13.5	DA-7031-153-6	2.5	DS-7231-153-6	3.75	DS-7331-153-6
Brass	5 to 150	24	DA-7031-153-7	3	DS-7231-153-7	5.25	DS-7331-153-7
Brass	10 to 200	24	DA-7031-153-8	4	DS-7231-153-8	6.75	DS-7331-153-8
Brass	10 to 300	37.5	DA-7031-153-9	5	DS-7231-153-9	9	DS-7331-153-9
403 stainless steel	30″ Hg VAC to 60	18	DA-7021-153-25S	3.5	DS-7221-153-25S	5.25	DS-7321-153-25S
403 stainless steel	30″ Hg VAC to 75	22.5	DA-7021-153-26S		DS-7221-153-26S	5.25	DS-7321-153-26S
403 stainless steel	2 to 60	13.5	DA-7021-153-5S	3	DS-7221-153-5S	4.5	DS-7321-153-5S
403 stainless steel	5 to 100	19.5	DA-7021-153-6S	3.5	DS-7221-153-6S	5.25	DS-7321-153-6S
403 stainless steel	10 to 200	22.5	DA-7021-153-8S	4	DS-7221-153-8S	7.125	DS-7321-153-8S
403 stainless steel	10 to 300	28.5	DA-7021-153-9S	6	DS-7221-153-9S	10.5	DS-7321-153-9S
403 stainless steel	40 to 350	30	DA-7021-153-9AS	6	DS-7221-153-9AS	10.5	DS-7321-153-9AS
403 stainless steel	25 to 600	67.5	DA-7021-153-10S	10	DS-7221-153-10S	18	DS-7321-153-10S
403 stainless steel	50 to 1000	142.5	DA-7021-153-11S	20	DS-7221-153-11S	33	DS-7321-153-11S
403 stainless steel	100 to 1500	195	DA-7021-153-12S	30	DS-7221-153-12S	52.5	DS-7321-153-12S
403 stainless steel	300 to 2500	390	DA-7021-153-13S	60	DS-7221-153-13S	90	DS-7321-153-13S
403 stainless steel	500 to 5000	1350	DA-7021-153-15S	200	DS-7221-153-15S	300	DS-7321-153-15S
403 stainless steel	800 to 8000	2250	DA-7021-153-16S	500	DS-7221-153-16S	5.25	DS-7341-153-26E
316 stainless steel	30″ Hg VAC to 75	15	DA-7041-153-26E	3.5	DS-7241-153-26E	6	DS-7341-153-23E
316 stainless steel	5 to 75	12	DA-7041-153-23E	4	DS-7241-153-23E	5.25	DS-7341-153-6E
316 stainless steel	10 to100	15	DA-7041-153-6E	3.5	DS-7241-153-6E	6.75	DS-7341-153-24E
316 stainless steel	10 to 150	16.5	DA-7041-153-24E	4	DS-7241-153-24E	12	DS-7341-153-9E
316 stainless steel	10 to 300	42	DA-7041-153-9E	8	DS-7241-153-9E	18	DS-7341-153-21E
316 stainless steel	30 to 400	78	DA-7041-153-21E	10	DS-7241-153-21E	37.5	DS-7341-153-22E
316 stainless steel	75 to 800	180	DA-7041-153-22E	25	DS-7241-153-22E	52.5	DS-7341-153-11E
316 stainless steel	100 to 1000	285	DA-7041-153-11E	35	DS-7241-153-11E	112.5	DS-7341-153-13E
316 stainless steel	200 to 2500	600	DA-7041-153-13E	75	DS-7241-153-13E		

MODEL CHART - D SERIES PRESSURE SWITCH WITH MERCURY SWITCH AND GENERAL PURPOSE ENCLOSURE

		Adjustable Deadband			
Bourdon Tube Material	Adjustable Operating Range (psig)	Minimum Deadband (psig)	SPDT 4 A @ 120 V, 2 A @ 240 V AC/DC	SPST Open on Increase 10 A @ 120 V, 5 A @ 240 V AC/DC	SPST Close on Increase 10 A @ 120 V 5 A @ 240 V AC/DC
Brass	30″ to 0 Hg VAC	2″ Hg	DA-31-153-2	DA-31-2-2	DA-31-3-2
Brass	10″ Hg VAC to 12	1	DA-31-153-3	DA-31-2-3	DA-31-3-3
Brass	25″ Hg VAC to 50	3.5	DA-31-153-27	DA-31-2-27	DA-31-3-27
Brass	1/8 to 15	1	DA-31-153-1	DA-31-2-1	DA-31-3-1
Brass	1/8 to 20	1	DA-31-153-3A	DA-31-2-3A	DA-31-3-3A
Brass	1 to 35	1.75	DA-31-153-4	DA-31-2-4	DA-31-3-4
Brass	2 to 60	3	DA-31-153-5	DA-31-2-5	DA-31-3-5
Brass	5 to 100	3.75	DA-31-153-6	DA-31-2-6	DA-31-3-6
Brass	5 to 150	6	DA-31-153-7	DA-31-2-7	DA-31-3-7
Brass	10 to 200	8	DA-31-153-8	DA-31-2-8	DA-31-3-8
Brass	10 to 300	12	DA-31-153-9	DA-31-2-9	DA-31-3-9
403 stainless steel	30″ Hg VAC to 60	6	DA-21-153-25S	DA-21-2-25S	DA-21-3-25S
403 stainless steel	30″ Hg VAC to 75	8	DA-21-153-26S	DA-21-2-26S	DA-21-3-26S
403 stainless steel	2 to 60	4	DA-21-153-5S	DA-21-2-5S	DA-21-3-5S
403 stainless steel	5 to 100	6	DA-21-153-6S	DA-21-2-6S	DA-21-3-6S
403 stainless steel	10 to 200	8	DA-21-153-8S	DA-21-2-8S	DA-21-3-8S
403 stainless steel	10 to 300	14	DA-21-153-9S	DA-21-2-9S	DA-21-3-9S
403 stainless steel	40 to 350	14	DA-21-153-9AS	DA-21-2-9AS	DA-21-3-9AS
403 stainless steel	25 to 600	25	DA-21-153-10S	DA-21-2-10S	DA-21-3-10S
403 stainless steel	50 to 1000	60	DA-21-153-11S	DA-21-2-11S	DA-21-3-11S
403 stainless steel	100 to 1500	90	DA-21-153-12S	DA-21-2-12S	DA-21-3-12S
403 stainless steel	300 to 2500	150	DA-21-153-13S	DA-21-2-13S	DA-21-3-13S
403 stainless steel	500 to 5000	450	DA-21-153-15S	DA-21-2-15S	DA-21-3-15S
403 stainless steel	800 to 8000	750	DA-21-153-16S	DA-21-2-16S	DA-21-3-16S
316 stainless steel	30″ Hg VAC to 75	7	DA-41-153-26E	DA-41-2-26E	DA-41-3-26E
316 stainless steel	5 to 75	3	DA-41-153-23E	DA-41-2-23E	DA-41-3-23E
316 stainless steel	10 to100	7	DA-41-153-6E	DA-41-2-6E	DA-41-3-6E
316 stainless steel	10 to 150	6	DA-41-153-24E	DA-41-2-24E	DA-41-3-24E
316 stainless steel	10 to 300	18	DA-41-153-9E	DA-41-2-9E	DA-41-3-9E
316 stainless steel	30 to 400	30	DA-41-153-21E	DA-41-2-21E	DA-41-3-21E
316 stainless steel	75 to 800	75	DA-41-153-22E	DA-41-2-22E	DA-41-3-22E
316 stainless steel	100 to 1000	100	DA-41-153-11E	DA-41-2-11E	DA-41-3-11E
316 stainless steel	200 to 2500	210	DA-41-153-13E	DA-41-2-13E	DA-41-3-13E

OPTIONS

Weatherproof Enclosure - Series DAW

Note: To order, add "W" to model number after DA or DS, change 1 to 3.
Example: DAW-33-153-7

Explosion-Proof Enclosure - Series DAH

Suitable for Class I, Groups C and D; NEMA 7; Class II, Groups E, F, G; Class III NEMA 9 and 9A, Division 1.

Note: To order, add "H" to model number after DA or DS. **Example:** DAH-31-153-7

FM Approved

For general purpose and explosion-proof models see agency approvals.

Note: To order, add "F" to model number after DA, DS, DAH or DSH.
Examples: DAF-31-153-7 or DAHF-31-153-7

Other Options (Consult Factory)

DPDT switches or other switch types, fixed deadband mercury switch units for low deadband applications, manual reset operation, two-stage operation, acetal bushed movement for applications with high amounts of vibration and/or pulsation, fungus proofing, siphon, diaphragm seals, mounting flange and remote connection.

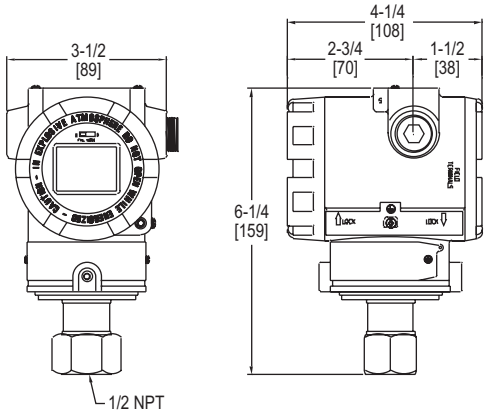
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES 3200G | MERCOID® BY DWYER

EXPLOSION-PROOF PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)



The Mercoid® **Series 3200G Explosion-Proof Smart Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push-button configuration, and programmable using HART® Communication. The Series 3200G is capable of being configured with the zero and span buttons, a field calibrator is not required for configuration. The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss. The Series 3200G is FM approved for use in hazardous (Classified) locations. The 100:1 rangeability allows the smart transmitter to be configured to fit any application.

FEATURES/BENEFITS

- Completely configurable using zero/span buttons (no calibrator required)
- Rangeability (100:1)
- High accuracy (±0.075%)
- Automatic sensor temperature compensation
- Fail-mode process function

APPLICATIONS

- Water and wastewater
- Chemical and petrochemical
- Pulp and paper
- Oil and gas
- Food and beverage

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: 100:1 turn down.
Stability: ±0.125% FSO/yr.
Temperature Limits: Process: -40 to 248°F (-40 to 120°C); Ambient: Without LCD -40 to 185°F (-40 to 85°C); With LCD -22 to 176°F (-30 to 80°C).
Thermal Effect: ±0.125% span/32°C.
Power Requirements: 11.9-45 VDC.
Output Signal: 4-20 mA / HART® Communication.
Response Time: 0.12 s.
Damping Time: 0.25 to 60 s.
Loop Resistance: Operation: 0 to 1500 Ω; HART® Communication: 250 to 500 Ω.
Electrical Connection: Two 1/2″ female NPT conduit, screw terminal.
Process Connections: 1/2″ female NPT.
Display: Optional 5 digit LCD.
Enclosure Rating: NEMA 4X (IP66) and explosion proof for Class I, Div I Groups A, B, C and D.
Weight: 5.5 lb (2.5 kg).
Agency Approvals: ATEX, CE, FM.

MODEL CHART

Model	Range psi (kPa)	Span Limits*		Maximum Pressure psi (bar)	LCD Display
		Minimum psi (kPa)	Maximum psi (kPa)		
3200G-1-FM-1-1	-14.5 to 21 (-100 to 150) (Factory set 0 to 21 psig)	0.22 (1.5)	21 (150)	58 (4)	No
3200G-2-FM-1-1	-14.5 to 217 (-100 to 1500) (Factory set 0 to 217 psig)	2 (15)	217 (1500)	580 (40)	No
3200G-3-FM-1-1	0 to 725 (0 to 5000)	7.25 (50)	725 (5000)	2000 (138)	No
3200G-4-FM-1-1	0 to 3600 (0 to 25000)	36 (250)	3600 (25000)	10000 (690)	No
3200G-5-FM-1-1	0 to 8500 (0 to 60000)	87 (600)	8700 (60000)	11600 (800)	No
3200G-1-FM-1-1-LCD	-14.5 to 21 (-100 to 150) (Factory set 0 to 21 psig)	0.22 (1.5)	21 (150)	58 (4)	Yes
3200G-2-FM-1-1-LCD	-14.5 to 217 (-100 to 1500) (Factory set 0 to 217 psig)	2 (15)	217 (1500)	580 (40)	Yes
3200G-3-FM-1-1-LCD	0 to 725 (0 to 5000)	7.25 (50)	725 (5000)	2000 (138)	Yes
3200G-4-FM-1-1-LCD	0 to 3600 (0 to 25000)	36 (250)	3600 (25000)	10000 (690)	Yes
3200G-5-FM-1-1-LCD	0 to 8500 (0 to 60000)	87 (600)	8700 (60000)	11600 (800)	Yes

Note: Contact factory for custom calibration.
*Span = Upper range limit - Lower range limit.

ACCESSORIES

Model	Description
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-0N	2-valve block manifold
DevCom2000	HART® communication protocol software

EXPLOSION-PROOF PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)

MODEL CHART														
Example	**3200G**	**-2**	**-FM**	**-3**	**-1**	**-LES**	**S2**	**A1**	**05**	**S**	**2**	**-05**	**-LCD**	**3200G-2-FM-3-1-LESS2A105S2-05-LCD**
Series	3200G													Explosion-proof pressure transmitter
Range		1 2 3 4 5												-14.5 to 21 psig (factory set 0 to 21 psig) -14.5 to 217 psig (factory set 0 to 217 psig) 0 to 725 psig 0 to 3600 psig 0 to 8500 psig
Approval			FM ATEX WP											FM approved ATEX approved Weatherproof only (only available with 316 SS housing)
Process Connection				1 3										1/2″ female NPT Diaphragm seal
Electrical Connection					1									1/2″ female NPT
Diaphragm Seal Type						LED LES LFD LFS								1 extended diaphragm seal direct mount 1 extended diaphragm seal capillary type high 1 flush diaphragm seal direct mount 1 flush diaphragm seal capillary type
Mounting Flange							S2 S3							2″ (50 mm) 316 L SS 3″ (80 mm) 316 L SS
Mounting Flange Rating								A1 A2 D1 D2 J1 J2						ANSI class 150# ANSI class 300# DIN PN 10/16 DIN PN 25/40 JIS 10 K JIS 20 K
Extension Length									00 05 10 15					No extension (standard for flush mount) 2″ extension 4″ extension 6″ extension
Diaphragm Material										S P H T				316L SS diaphragm PTFE and 316L SS diaphragm Hastelloy C-276 diaphragm Tantallum diaphragm
Fill Fluid											2			Silicon oil (-40 to 400°F)
Capillary Length												XX		0 to 20 feet
Options													LCD SSH NIST CC	5 digit LCD 316 SS housing (only available with WP approval) NIST calibration Custom calibration

CUSTOM CALIBRATION VALUES	
Primary Units	in w.c., ft w.c., mm w.c., in Hg, psig, g/cm^2, kg/cm^2, Pa, kPa, bar, mbar, Torr, Atm, mm Hg
Upper Range Limit	20 mA value
Lower Range Limit	4 mA value
Damping Time	0 to 60 seconds
Display Mode	Primary unit, %, mA, rotate

Dwyer

SERIES 626 & 628

INDUSTRIAL PRESSURE TRANSMITTERS

Complete Offering of Ranges, Connections and Outputs

626/628 pressure transmitters
with general purpose housing (-GH)

626/628 pressure transmitters
with conduit box housing (-CB) and LCD display

VIDEO ONLINE

*Please see our website for dimensional drawings.

The **Series 626 Industrial Pressure Transmitters** possess a highly precise 0.25% full-scale accuracy piezo-resistive sensor contained in a compact, rugged, NEMA 4X (IP66) stainless steel general purpose housing or cast aluminum conduit housing. The **Series 628 Industrial Pressure Transmitters** are ideal for OEMs with 1% full-scale accuracy sensors. The corrosion resistant 316L stainless steel wetted parts allow the Series 626 and 628 transmitters to measure the pressure in a multitude of processes from hydraulic oils to chemicals. The Series 626 and 628 are available in absolute and gage pressure ranges with a variety of optional outputs, process connections and electrical terminations to allow you to select the right transmitter for your application.

FEATURES/BENEFITS

- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Robust 316 SS oil filled sensor provides shock and vibration resistance insuring stability in controlling pressure for process applications
- A wide range of models and connections that can meet pressure measurement specifications from low to very high

APPLICATIONS

- Compressors
- Pumping systems
- Irrigation equipment
- Hydraulic
- Industrial process monitoring

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Type 316L SS.
Accuracy: 626: 0.25% FS; 626: 0.20% RSS; 628: 1.0% FS; 628: 0.5% RSS; 626 Absolute Ranges: 0.5% FS; 626 absolute ranges: 0.30% RSS. (Includes linearity, hysteresis, and repeatability.)
Temperature Limit: 0 to 200°F (-18 to 93°C).
Compensated Temperature Range: 0 to 175°F (-18 to 79°C).
Thermal Effect: ±0.02% FS/°F (includes zero and span).
Pressure Limits: See table.
Power Requirements: 10-30 VDC (for 4-20 mA, 0-5, 1-5, 1-6 VDC outputs); 13-30 VDC (for 0-10, 2-10 VDC outputs); 5 VDC ±0.5 VDC (for 0.5-4.5 VDC ratio-metric output), 10-35 VDC (for 4-20 mA with -CB option); 13-35 VDC or isolated 16-33 VAC (for selectable output with -CB option).
Output Signal: 4-20 mA, 0-5 VDC,1-5 VDC, 0-10 VDC, or 0.5-4.5 VDC, or selectable 0-5, 1-5, 0-10, 2-10 VDC for -CB option.
Response Time: 300 ms.
Loop Resistance: 0 to 1000 Ω max. R max = 50 (Vps-10) Ω (4-20 mA output), 0-1250 Ω max. Rmax = 50(Vps-10) Ω (4-20 mA output with -CB option), 5K Ω (0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output).
Stability: 1.0% FS/year (Typ.).
Current Consumption: 38 mA maximum (for 4-20 mA output); 10 mA maximum (for 0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output); 140 mA maximum (for all 626/628/629-CH with optional LED).
Electrical Connections: See model chart.
Process Connection: See model chart.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Mount in any position.
Weight: 10 oz (283 g).
Agency Approvals: CE, NSF, UL.

Dwyer

SERIES 626 & 628

INDUSTRIAL PRESSURE TRANSMITTERS

Complete Offering of Ranges, Connections and Outputs

MODEL CHART								
Example	**626**	**-00**	**-CH**	**-P1**	**-E1**	**-S1**	**-AT**	**626-00-CH-P1-E1-S1-AT**
Accuracy	626 628							0.25% full-scale accuracy 1.0% full-scale accuracy
Range		00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 22 15 16 18 19 26 67 71 75 81						0 to 15 psia⑤ 0 to 30 psia⑤ 0 to 50 psia⑤ 0 to 100 psia⑤ 0 to 200 psia⑤ 0 to 300 psia⑤ 0 to 5 psi 0 to 15 psi 0 to 30 psi 0 to 50 psi 0 to 100 psi 0 to 150 psi 0 to 200 psi⑥ 0 to 300 psi⑥ 0 to 500 psi⑥ 0 to 600 psi⑥ 0 to 1000 psi 0 to 1500 psi⑥ 0 to 3000 psi 0 to 5000 psi 0 to 8000 psi 0 to 0.5 bar 0 to 2.5 bar 0 to 10 bar 0 to 40 bar
Housing			CB GH					Conduit box housing General purpose housing
Process Connection				P1 P2 P3 P5 P9				1/4″ male NPT 1/4″ female NPT 1/4″ male BSPT 1/4″ female SAE with refrigerant valve depressor① 1/2″ male NPT①
Electrical Connection					E1 E3 E4 E5 E6 E8 E9			Cable gland with 3′ of prewired cable Cable gland with 9′ of prewired cable DIN EN 175801-803-C① 1/2″ female NPT conduit② M-12 4 pin connector-UL④ Packard connector M-12 4 pin connector non-UL
Signal Output						S1 S2 S4 S5 S7 S8		4-20 mA 1-5 VDC 0-5 VDC 0-10 VDC 0.5-4.5 VDC①③ Selectable 0-5, 1-5, 0-10, 2-10 VDC②
Options							AT LCD NIST NW	Aluminum tag LCD indication② NIST traceable certificate NSF/ANSI 61/372 certified

①Available with -GH housing only, NEMA 4 (IP65) ②Available with -CB housing only ③Power requirement: 5 VDC ±10%
④Available with -GH housing only ⑤Absolute ranges for 626 are 0.5% FS accuracy and for 628 are 2% FS accuracy
⑥ UL listed pump controllers, fire-component on 4-20 mA "-S1" signal output models only - See online certificate for information and limitations

Note: Bar and absolute ranges are only available with -GH housing.

PRESSURE LIMITS							
Range Number	**Pressure Range**	**Maximum Pressure (psig)**	**Over Pressure (psig)**	**Range Number**	**Pressure Range (psig)**	**Maximum Pressure (psig)**	**Over Pressure (psig)**
00	0 to 15 psia	30	45	12	0 to 200	400	1000
30	15 to 0 psia	30	45	13	0 to 300	600	1500
06	0 to 5 psig	10	50	14	0 to 500	1000	2500
07	0 to 15 psig	30	150	15	0 to 1000	2000	5000
08	0 to 30 psig	60	300	16	0 to 1500	3000	5000
09	0 to 50 psig	100	300	18	0 to 3000	6000	7500
10	0 to 100 psig	200	500	19	0 to 5000	7500	10000
11	0 to 150 psig	300	750	26	0 to 8000	10000	12000

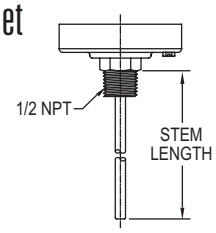
ACCESSORIES	
Model	**Description**
A-164	16.4′ (5 m) cable with M-12 4-pin female connector
A-62X-LCD	Field-upgradeable LCD
A-960	3′ packard cable
A-961	9′ packard cable
A-962	20′ packard cable

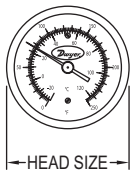
Dwyer

SERIES BT

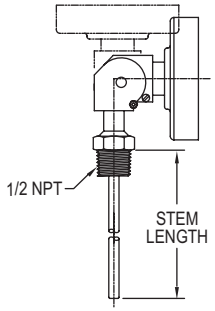
BIMETAL THERMOMETER

2″, 3″ or 5″ Dial, Dual Scale, ±1% Full-Scale Accuracy, External Reset





Back connection



Adjustable angle connection

The **Series BT Bimetal Thermometer** offers accurate, reliable service even in the toughest environments. These corrosion resistant units are constructed from stainless steel and are hermetically sealed to prevent crystal fogging.

FEATURES/BENEFITS
- Hermetically sealed
- Adjustable dial position models

APPLICATIONS
- Chiller or boiler water temperature monitoring
- Treatment plant temperature monitoring

SPECIFICATIONS

Wetted Materials: 304 SS.
Housing Material: Series 300 SS.
Lens: Glass.
Accuracy: ±1% FS.
Response Time: ≤ 40 s.
Temperature Limits: Head: 200°F (93°C); Stem: Not to exceed 50% over-range or 1000°F (538°C) or 800°F (427°C) continuously.
Process Connection: 1/4″ NPT on 2″ dial size; 1/2″ NPT on 3″ or 5″ dial size.
Stem Diameter: 1/4″ OD.
Immersion Depth: Minimum 2″ in liquids, 4″ in gas.

MODEL CHART

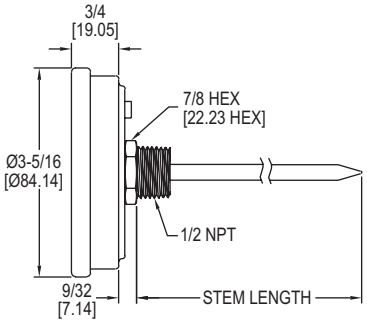
Model	Dial Size	Stem Length	Connection	Range °F (°C)	Degree Div °F (°C)	Model	Dial Size	Stem Length	Connection	Range °F (°C)	Degree Div °F (°C)
BTB22551*	2″	2-1/2″	Back	0 to 250	2	**BTB3605D**	3″	6″	Back	0 to 250 (-20 to 120)	2 (2)
BTB2405D	2″	4″	Back	0 to 250 (-20 to 120)	2 (2)	**BTA54010D**	5″	4″	Adjustable	0 to 200 (-20 to 100)	2 (2)
BTB2409D	2″	4″	Back	200 to 1000 (100 to 550)	10 (5)	**BTA5405D**	5″	4″	Adjustable	0 to 250 (-20 to 120)	2 (2)
BTB32510D	3″	2-1/2″	Back	0 to 200 (-20 to 100)	2 (2)	**BTA5407D**	5″	4″	Adjustable	50 to 550 (10 to 290)	5 (5)
BTB3255D	3″	2-1/2″	Back	0 to 250 (-20 to 120)	2 (2)	**BTA56010D**	5″	6″	Adjustable	0 to 200 (-20 to 100)	2 (2)
BTB3257D	3″	2-1/2″	Back	50 to 550 (10 to 290)	5 (5)	**BTA5605D**	5″	6″	Adjustable	0 to 250 (-20 to 120)	2 (2)
BTB34010D	3″	4″	Back	0 to 200 (-20 to100)	2 (2)	**BTA5607D**	5″	6″	Adjustable	50 to 550 (10 to 290)	5 (5)
BTB3405D	3″	4″	Back	0 to 250 (-20 to 120)	2 (2)	**BTC3255D**	3″	2-1/2″	Lower	0 to 250 (-20 to 120)	2 (2)
BTB3407D	3″	4″	Back	50 to 550 (10 to 290)	5 (5)						

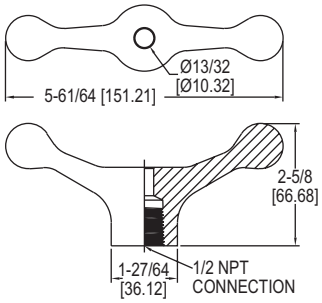
*Model offered in Fahrenheit scale only.

SERIES BTLRN

LONG REACH BIMETAL THERMOMETER

Extra-long Stems Reach Remote Areas, Gripping Handle Available





The **Series BTLRN Long Reach Bimetal Thermometer** reaches areas that other thermometers can't. A gripping handle is available as an accessory to comfortably hold the thermometer during temporary installations.

FEATURES/BENEFITS
- Stem lengths from 12″ to 72″

APPLICATIONS
- Large container monitoring
- Duct temperature measurement

SPECIFICATIONS

Wetted Materials: 304 SS.
Housing Materials: Series 300 SS.
Lens: Glass.
Accuracy: ±1%.
Temperature Limits: Ambient: -40 to 392°F (-40 to 200°C).
Dial Size: 3″.
Process Connection: 1/2″ NPT.
Resolution: 2°F (1°C).
Weight: 1.0 lb (0.45 kg).

MODEL CHART

Model	Stem Length	Range*
BTLRN312101	12″	0 to 200°F
BTLRN318101	18″	0 to 200°F
BTLRN324101	24″	0 to 200°F
BTLRN336101	36″	0 to 200°F
BTLRN348101	48″	0 to 200°F
BTLRN360101	60″	0 to 200°F
BTLRN372101	72″	0 to 200°F

*Dual scale units available by changing last digit to D. **Example:** BTLRN31210D

ACCESSORIES

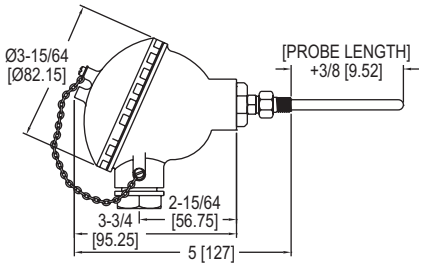
Model	Description
BTLR-GH	Gripping handle

Dwyer

SERIES TTW

WEATHERPROOF IMMERSION TEMPERATURE TRANSMITTER

Pt100 RTD, PC Programmable Transmitter



The **Series TTW Weatherproof Immersion Temperature Transmitter** offers a field adjustable temperature transmitter pre-assembled with an RTD sensor and weatherproof enclosure.

FEATURES/BENEFITS

- Preset to 32 to 212°F (0 to 100°C) output range
- USB port for easy output scale adjustment in the field

APPLICATIONS

- Immersion temperature sensing in HVAC systems

MODEL CHART	
Model	**Probe Length**
TTW-104	4″
TTW-106	6″
TTW-108	8″
TTW-112	12″
TTW-118	18″

SPECIFICATIONS

TEMPERATURE SENSOR
Accuracy: ±3°F (±1.7°C).
Temperature Limits: Operating: -40 to 302°F (-40 to 150°C).
Sensor Curves: Pt100 RTD (TE Series Curve D).

TEMPERATURE TRANSMITTER
Input Range: -328 to 986°F (-200 to 530°C).
Output: Two-wire 4-20 mA.
Output Impedance: 600 Ω @ 24 VDC.
Power Requirements: 12-35 VDC.
Accuracy: ±0.2% FS.
Temperature Limits: -40 to 185°F (-40 to 85°C).
Response Time: <100 ms.

ENCLOSURE
Temperature Limits: -40 to 212°F (-40 to 100°C).
Rating: NEMA 4X (IP65).
Material: Painted aluminum housing.

FREE software download: See page 132 (Series TBU-00)

THERMOWELLS - MACHINED❶			
Model	**Material**	**Length**	**Connection (Internal/External) (NPT)**
TE-TNS-N044N-14	304 SS	4″	1/4″ / 1/2″
TE-TNS-N064N-14	304 SS	6″	1/4″ / 1/2″
TE-TNS-N094N-14	304 SS	9″	1/4″ / 1/2″
TE-TNS-N124N-14	304 SS	12″	1/4″ / 1/2″

Machined thermowell

❶Technical Specifications and Additional Thermowell Models: See page 16 (Series TE-TNS)

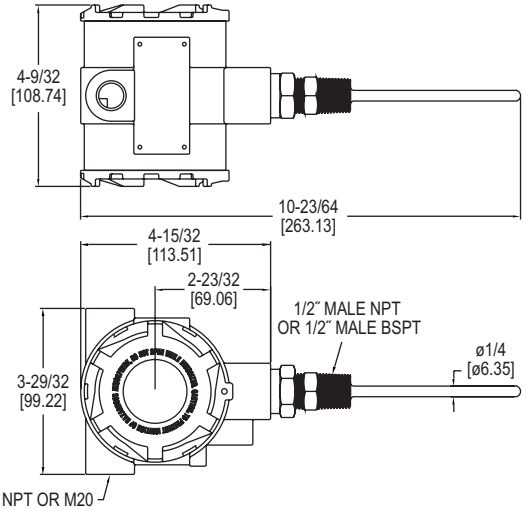
Dwyer

SERIES TTE

EXPLOSION-PROOF RTD TEMPERATURE TRANSMITTER

User Selectable Ranges, Optional LCD Display

Shown with optional LCD display



The **Series TTE Explosion-Proof RTD Temperature Transmitter** is the ideal product for hazardous temperature measurement applications. The TTE series has seven pre-programmed temperature ranges that are selectable via an internal dip switch. For those applications that need a custom range, the transmitter can be easily configured for any range between -30 to 250°F with a minimum span of 40°F. The span and zero can be quickly adjusted with a simple push-button design. This unit has optional listings of FM for use in Class I, Division 1, Groups B, C and D, Class II, Division 1, Groups E, F and G and Class III atmospheres or ATEX (Directive 2014/34/EU) for CE Ex 2813 II 2 G Ex db IIC T6...T4 Gb (-20°C ≤ Ta ≤ + 70°C), CE Ex 2813 II 1 D Ex ta IIIC T111°C Da (-20°C ≤ Ta ≤ + 70°C) and IECEx for Ex db IIC T6...T4 Gb (-20°C ≤ Ta ≤ + 70°C), Ex ta IIIC T111°C Da (-20°C ≤ Ta ≤ + 70°C). The compact housing allows for the transmitter to be mounted in virtually any application.

FEATURES/BENEFITS

- FM approved for Class I, Groups B, C, D; Class II, Groups E, F, G classified explosive environments
- Optional LCD
- Output span selected from seven common ranges or user determined

APPLICATIONS

- Explosive process environments
- Offshore HVAC monitoring

SPECIFICATIONS

Temperature Sensor: Pt1000, 0.00385 DIN.
Output Temperature Ranges: User selectable – any range between -30 to 250°F with a minimum span of 40°F.
Temperature Limits: Ambient: -4 to 158°F (-20 to 70°C); Process: -30 to 250°F (-34.4 to 120°C).
Accuracy: Transmitter ±0.1% FS; Probe ±0.3% FS.
Thermal Drift Effects: ±0.02%/°C max.
Response Time: 250 ms.
Wetted Materials: 316 SS.
Process Connection: 1/2″ male NPT or 1/2″ male BSPT.
Conduit Connection: 1/2″ female NPT or M20.
Probe Length: 2″ to 18″ (depending on model).
Pressure Limits: 2000 psi (137.9 bar).
Power Requirements: 10-35 VDC.
Output Signal: 4-20 mA (2-wire loop powered).
Optional Display: 2 lines X 8 character LCD.
Enclosure Rating: Weatherproof NEMA4X (IP66) and Explosion-proof. Listed with FM for Class I, Division 1, Groups B, C and D, and dust-ignitionproof for Class II, Division 1, Groups E, F and G and Class III atmospheres.
ATEX Certified: CE 2813 Ex II 2 G Ex db IIC T6...T4 Gb, CE Ex 2813 II 1 D Ex ta IIIC T111°C Da, T6 Process Temp ≤80°C, Temperature Class T5 Process Temp ≤95°C, Temperature Class T4 Process Temp ≤120°C as defined on nameplate. EU-type Cerificate No.: EMT17ATEX0021 X.
ATEX Standards: EN 60079-0:2012+A11:2013; EN 60079-1:2015; EN 60079-31:2014.
IECEx Certified: For Ex db IIC T6...T4 Gb, Ex ta IIIC T111°C Da, T6 Process Temp ≤80°C, Temperature Class T5 Process Temp ≤95°C, Temperature Class T4 Process Temp ≤120°C as defined on nameplate.
IECEx Certificate of Conformity: Element IECEx EMT 17.0007X; IECEx Standards: IEC 60079-0:2011 (Edition 6); IEC 60079-1:2014 (Edition 7); IEC 60079-31:2013 (Edition 2).
Weight: 2 lb 8 oz (1134 g).
Agency Approvals: FM, CE, ATEX/IECEx.

MODEL CHART

Example	TTE	-1	04	-W	-LCD	TTE-104-W-LCD
Series	TTE					Explosion-proof RTD temperature transmitter
Agency		1				FM*
		2				ATEX/IECEx flameproof
Probe Length			02			2″ probe
			04			4″ probe
			06			6″ probe
			09			9″ probe
			12			12″ probe
			15			15″ probe
			18			18″ probe
Construction				W		Well probe
Options					Blank	No LCD display
					BSPT	1/2 male BSPT process connection
					C5	C5-M housing paint specification
					LCD	LCD display
					M20	Female M20 thread electrical connection

*Options that do not have ATEX and IECEx.

Attention: Units without the "2" suffix following "TTE" are not directive 2014/34/EU (ATEX) Complaint. These units are not intended for use in potentially hazardous atmospheres in the EU. These units may be CE marked for other directives of the EU.

THERMOWELLS - MACHINED❶

Model	Material	Length	Connection (Internal/External) (NPT)
TE-TNS-N044N-12	304 SS	4″	1/2″ / 3/4″
TE-TNS-N064N-12	304 SS	6″	1/2″ / 3/4″
TE-TNS-N094N-12	304 SS	9″	1/2″ / 3/4″
TE-TNS-N124N-12	304 SS	12″	1/2″ / 3/4″

Machined thermowell

ACCESSORIES

Model	Description
A-287	Mounting bracket for pipe or surface mounting (Includes bracket and two 2″ U-bolts)

FIELD-SELECTABLE RANGES

40 to 90°F (4.4 to 32.2°C)
-20 to 140°F (-28.9 to 60°C)
0 to 100°F (-17.8 to 37.8°C)
30 to 240°F (-1.1 to 115.6°C)
32 to 212°F (0 to 100°C)
32 to 122°F (0 to 50°C)
-30 to 65°C (-1.1 to 18.3°C)
Custom range between -30 to 250°F (-34.4 to 121.1°C)

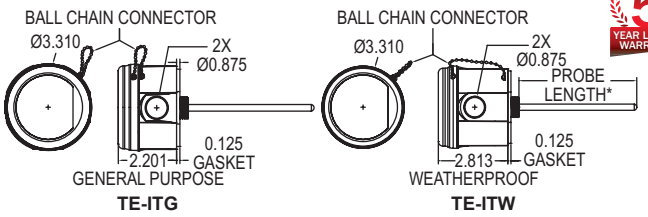
❶Technical Specifications and Additional Thermowell Models: See page 16 (Series TE-TNS)

Dwyer

SERIES TE-I

IMMERSION TEMPERATURE SENSORS

Integral Mounting Connection, Welded Thermowells



5 YEAR LIMITED WARRANTY

The **Series TE-I Immersion Style Temperature Sensors** accurately measure water temperature inside chilled and hot water loops in HVAC systems. Thermowells are required to protect the electrical connection from the process water and to allow replacement of the sensors without draining the system.

FEATURES/BENEFITS
- Integral 1/2″ NPSM connection for direct mounting to a thermowell
- 1/4 turn housing cover with chain to prevent dropping
- Multiple conduit knockouts for easy installation positioning
- General purpose or weatherproof enclosure options
- Terminal connection eliminates need for wire nuts

APPLICATIONS
- Chiller or boiler loops
- Building automation

SPECIFICATIONS

Accuracy: Thermistor temperature sensor: ±0.22°C @ 25°C (±0.4°F @ 77°F); RTD temperature sensor DIN Class A: ±0.15°C @ 0°C (±0.28°F @ 32°F).
Temperature Limits: Operating: -40 to 302°F (-40 to 150°C).
Sensor Curves: See page reference ❶ below.
Housing Material: Meets UL, 94 V-0 polycarbonate plastic.
Thermowell Material: 304 SS.
Thermowell Connections: Internal = 1/2″ NPSM; External = 1/2″ NPT.
Weight: 5.3 oz (150.3 g).

MODEL CHART

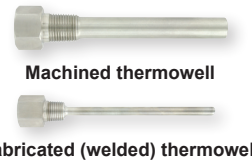
Example	TE	-ITG	-A	25	4	4	-00	TE-ITG-A2544-00
Series	TE							Duct and immersion building automation temperature sensor
Mounting Configuration		ITG ITW						Immersion in general purpose housing Immersion in NEMA 4X housing
Sensor Type			A B C D E F Q					10k Ω type III thermistor 10k Ω type II thermistor 3k Ω thermistor Pt100 Ω RTD Pt1000 Ω RTD 20k Ω thermistor 10k Ω type III with 11k Ω shunt
Probe Length*				25 04 06 08 12 18				2.5″ 4″ 6″ 8″ 12″ 18″
Probe Diameter					4			1/4″ double encapsulated
Termination						4		4″ flying leads terminal block
Fittings							00	None (integral)

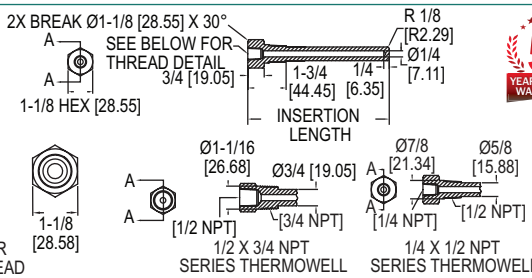
*Actual probe length is approximately 0.75″ longer than listed probe length to ensure maximum immersion into thermowells.

TE-TNS

THERMOWELLS

Thermowells for Building Automation Temperature Sensors





5 YEAR LIMITED WARRANTY

The **Series TE-TNS Stainless Steel Thermowells** are used to separate the instrument from the surrounding media. When used with the Series TE and TE-I Immersion Temperature Sensors, further protection is offered from aggressive media, high pressures, and flow rates while allowing for quick and easy installation of temperature sensors without having to drain process media.
Thermowells are offered in both 304 and 316 stainless steel allowing for superior corrosion resistance. Fabricated, or welded, thermowells are constructed from a tube that is closed at the tip by a welded solid tip. Solid-machined thermowells are manufactured from barstock.

FEATURES/BENEFITS
- Configurable materials and sizes
- Fabricated (welded) or machined construction
- 1/2″ or 3/4″ NPT process connections

APPLICATIONS
- Building automation
- Chiller or boiler loops
- Chemical industry or process technology

MODEL CHART

Example	TE-TNS	-N	09	5N	-14	TE-TNS-N095N-14
Series	TE-TNS					Stainless steel thermowell
Thread Type		N				NPT
Length			25 04 06 09 12 18			2.5″ 4″ 6″ 9″ 12″ 18″
Material and Construction				3N 4N 5N		304 SS fabricated (welded) 304 SS machined 316 SS machined
Connection (Internal & External)					00 12 14	1/2″ NPSM / 1/2″ NPT 1/2″ NPT / 3/4″ NPT 1/4″ NPT / 1/2″ NPT

SPECIFICATIONS

Maximum Pressure: Fabricated: 140 psi; Machined: 304 SS: 3700 psi; 316 SS: 5500 psi.
Maximum Temperature: Fabricated: 1000°F (538°C); Machined: 1200°F (648°C).
Construction: Fabricated (welded) or machined model specific.

MODEL CHART

Model	Material	Length	Construction	Connection (Internal/External)
TE-TNS-N254N-12	304 SS	2.5″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N254N-14	304 SS	2.5″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N044N-14	304 SS	4″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N044N-12	304 SS	4″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N064N-14	304 SS	6″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N064N-12	304 SS	6″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N094N-14	304 SS	9″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N094N-12	304 SS	9″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N124N-14	304 SS	12″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N124N-12	304 SS	12″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N045N-14	316 SS	4″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N045N-12	316 SS	4″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N065N-14	316 SS	6″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N065N-12	316 SS	6″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N095N-14	316 SS	9″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N095N-12	316 SS	9″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N125N-14	316 SS	12″	Machined	1/4″ NPT / 1/2″ NPT
TE-TNS-N125N-12	316 SS	12″	Machined	1/2″ NPT / 3/4″ NPT
TE-TNS-N253N-00	304 SS	2.5″	Fabricated	1/2″ NPSM / 1/2″ NPT
TE-TNS-N043N-00	304 SS	4″	Fabricated	1/2″ NPSM / 1/2″ NPT
TE-TNS-N063N-00	304 SS	6″	Fabricated	1/2″ NPSM / 1/2″ NPT
TE-TNS-N083N-00	304 SS	8″	Fabricated	1/2″ NPSM / 1/2″ NPT
TE-TNS-N123N-00	304 SS	12″	Fabricated	1/2″ NPSM / 1/2″ NPT
TE-TNS-N183N-00	304 SS	18″	Fabricated	1/2″ NPSM / 1/2″ NPT

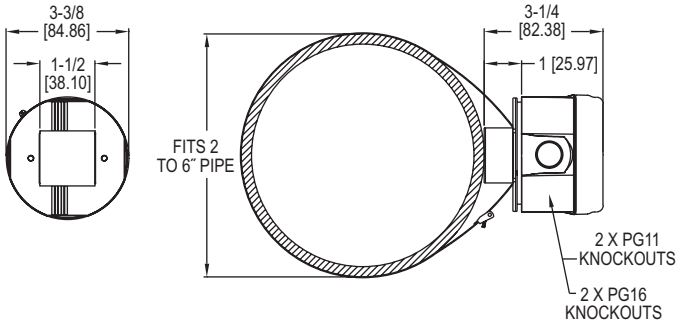
Dwyer

SERIES TE-SNW

WEATHER RESISTANT SURFACE TEMPERATURE SENSOR

Strap On Design, Twist Off Cover, 2 to 6″ Pipe Sizes

5 YEAR LIMITED WARRANTY



VIDEO ONLINE

The **Series TE-SNW Weather Resistant Surface Temperature Sensor** non-intrusively measures the process temperature in hot and cold water loops in buildings. In order to work with most common building controllers, the output of the sensor can be chosen from 6 different RTD and Thermistor curves.

FEATURES/BENEFITS

- Easy to mount external tab housing
- 1/4 turn housing cover with chain
- Multiple conduit knockouts for easy installation positioning
- Non-intrusive temperature measurement of 2 to 6″ pipes

APPLICATIONS

- Heating or cooling loop line temperature monitoring
- HVAC systems

SPECIFICATIONS
Accuracy: Thermistor temperature sensor: ±0.22°C @ 25°C (±-0.4°F @ 77°F); RTD temperature sensor: DIN Class A ±0.15°C @ 0°C (±0.28°F @ 32°F).
Temperature Limits: Operating: -32 to 240°F (-35.5 to 115.5°C).
Sensor Curves: See website for Series TE-SNW Resistance vs. Temperature Table.
Housing Material: Meets UL 94 V-0 polycarbonate plastic, NEMA 3R.
Weight: 7 oz (198 g).

MODEL CHART	
Model	**Sensor Type**
TE-SNW-A	10k Ω type III thermistor
TE-SNW-B	10k Ω type II thermistor
TE-SNW-C	3k Ω thermistor
TE-SNW-D	Pt100 Ω RTD
TE-SNW-E	Pt1000 Ω RTD
TE-SNW-F	20k Ω thermistor

Dwyer

SERIES VFC & VFCII

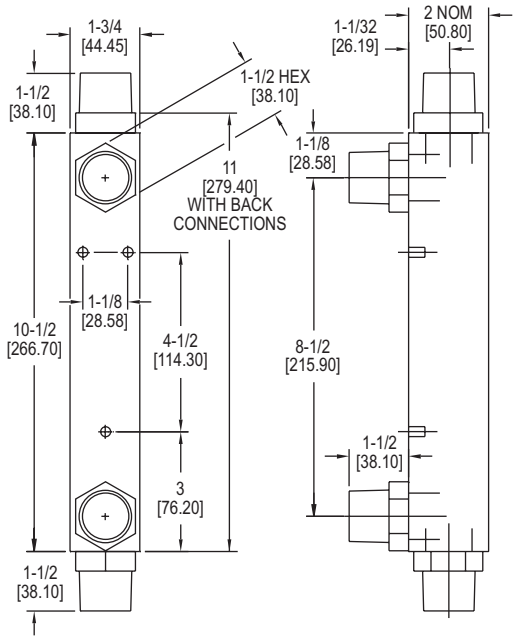
VISI-FLOAT® ACRYLIC FLOWMETERS

5″ Scale, In-Line or Back Connection Options

VFCII with 1″ MNPT end connections

VFC with 1″ FNPT end connections

VFC with 1″ FNPT back connections



The **Series VFC Visi-Float® Acrylic Flowmeters** are direct reading, precision machined, clear acrylic body flowmeters suitable for both gas and liquid applications. This Series consists of two 5″ (127 mm) scale flowmeters, the VFC and VFC II. The VFC features PVC 1″ female NPT connections and the VFC II units are equipped with acetal thermoplastic 1″ male NPT fittings.

FEATURES/BENEFITS

- Bodies are cut and precision machined from solid, clear acrylic blocks allowing for complete visual inspection
- White background allows for better visibility of the float increasing reading accuracy
- Direct reading scales are hot stamped into the plastic eliminating the need for troublesome conversions and increasing product operating life
- Precision machined tapered bore enables high repeatability
- Low installation costs with back or end connection options

APPLICATIONS

- Medical equipment
- Laboratory equipment
- Air samplers
- Gas analyzers
- Pollution monitors
- Chemical injectors
- Cabinet purging
- Remediation
- Osmosis skids

RANGE CHART - 5″ SCALE - POPULAR RANGES			
Range No.	**SCFM Air**	**Range No.**	**GPM Water**
121	4 to 25	141	.5 to 5
122	5 to 50	142	1 to 10
123	10 to 100	143	2 to 20
Range No.	**LPM Air**	**Range No.**	**LPM Water**
131	100 to 700	151	2 to 20
132	200 to 1400	152	4 to 40
133	300 to 2800	153	10 to 75

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Body: Acrylic plastic; O-ring: Buna-N (fluoroelastomer available); Metal parts: SS; Float: SS; Fittings: VFC: PVC; VFCII: Acetal thermoplastic.
Temperature and Pressure Limits: 100 psig (6.9 bar) @ 120°F (48°C).
Accuracy: 2% of FS.
Process Connection: VFC: 1″ female NPT back connections. End connections optional; VFCII: 1″ male NPT back connections. End connections optional.
Scale Length: 5″ typical length.
Mounting Orientation: Mount in vertical position.
Weight: 24 to 25 oz (.68 to .71 kg).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART		
Model	**Thread Type**	**Process Connection**
VFC-X	1″ FNPT	Back
VFCII-X	1″ MNPT	Back
VFC-X-EC	1″ FNPT	In-line end
VFCII-X-EC	1″ MNPT	In-line end

How To Order: Series-Range No.-Option
Example: VFC-123-EC
(Series VFC with 10-100 SCFM air range and 1″ female NPT end connections)

OPTIONS	
To order add suffix:	**Description**
-VIT	Fluoroelastomer O-rings
-FDA	316 SS float and guide rod (only available on VFCII with fluoroelastomer O-rings)
-NIST	NIST traceable calibration certificate
-BSPT	BSPT process connections

Dwyer

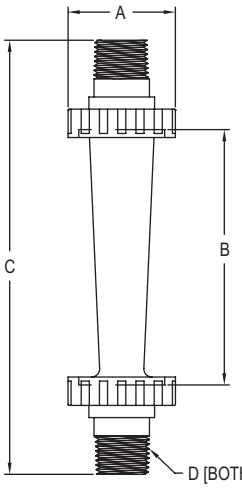
SERIES LFMA, LFMB, LFMC, LFMD, LFME & LFMF

POLYCARBONATE FLOWMETERS

Chemically Resistant, In-Line or Panel Mount Options, Adjustable Set Point Indicator Option

LFMA

LFMC



Model	AØ	B	C	D
LFMA	1-21/32 (42.07)	3-15/16 (100.01)	6-45/64 (170.26)	1/2 NPT
LFMB	1-63/64 (50.40)	6-5/16 (160.34)	8-55/64 (225.03)	1/2 NPT
LFMC	1-63/64 (50.40)	5-9/32 (134.14)	8-9/32 (210.34)	1/2 NPT
LFMD	2-21/64 (59.13)	6-45/64 (170.26)	9-27/32 (250.03)	3/4 NPT
LFME	2-27/32 (72.23)	8-55/64 (225.03)	12-19/64 (312.34)	1 NPT
LFMF	3-15/16 (100.01)	11-27/64 (290.12)	15-3/4 (400.05)	2 NPT

The **Series LFM Polycarbonate Flowmeters** are made of precision, injection molded polycarbonate bodies and fittings. This series consists of LFMA, LFMB, LFMC, LFMD, LFME and LFMF flowmeters with 3″ (76 mm), 6″ (152 mm), 5″ (127 mm), 6″ (152 mm), 8″ (203 mm) and 11″ (279 mm) respective scales. They feature dual, direct reading scales measuring in both GPM and LPM.

FEATURES/BENEFITS

- Low installation costs with standard in-line male NPT process connections and 90° elbow fitting for panel mount option
- Heat and chemically resistant polycarbonate body and fittings feature a low cost for high durability
- Textured background on flowmeter bodies enhance scale readability saving time
- Easy to clean bodies yield low maintenance costs
- Adjustable set point indicator allows for easy visual set point indication decreasing costly flow reading error for LFMC, LFMD, LFME & LFMF

APPLICATIONS

- Chill water flow
- Reverse osmosis systems
- Deionized water systems

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Polycarbonate; Flange nut: ABS; Float stop: LFMA, LFMB, LFMC: ABS; LFMD, LFME, LFMF: Polypropylene; O-rings: Fluoroelastomer; Rod and float: 316 SS; Connections: 20 mm and 63 mm metric union fittings: ABS; 32 mm and 40 mm metric union fittings: PVC; 1/2″ & 3/4″ male NPT fittings for LFMA, LFMB, LFMC: ABS; 3/4″ male and female NPT fittings for LFMD: PA66 nylon; 1″ and 2″ male NPT fittings: PA66 nylon.
Pressure Limit: 87 psi (6 bar) at 68°F (20°C); 90° elbow fittings 116 psi (8 bar) at 68°F (20°C).
Accuracy: ±5%.
Process Connection: LFMA: 1/2″ male NPT. Optional 20 mm metric union; LFMB: 1/2″ male NPT. Optional 20mm metric union or 1/2″ male NPT with 90° elbow; LFMC: 1/2″ male NPT. Optional 20 mm metric union, 3/4″ male NPT, or 1/2″ male NPT with 90° elbow; LFMD: 3/4″ male NPT. Optional 32 mm metric union, 3/4″ female NPT, or 3/4″ male NPT with 90° elbow; LFME: 1″ male NPT. Optional 40 mm metric union, 1″ female NPT, or 1″ male NPT with 90° elbow; LFMF: 2″ male NPT. Optional 63 mm metric union or 2″ female NPT.
Weight: LFMA: 2 oz (56.7 g); LFMB: 3 oz (85.0 g); LFMC: 4 oz (113.4 g); LFMD: 10 oz (283.5 g); LFME: 15 oz (425.2 g); LFMF: 40 oz (1.1 kg).

CAUTION: Series LFM Flowmeters are for indoor use only or areas without direct sunlight. Polycarbonate is adversely affected by ultraviolet light.

MODEL CHART	
Model	**Range (GPM Water)**
LFMA-01-A2	0.1 to 1 (.5 to 4 LPM)
LFMA-02-A2	0.2 to 2 (1 to 7 LPM)
LFMA-03-A2	0.5 to 5 (1.8 to 18 LPM)
LFMB-04-A2	0.1 to 1 (.5 to 4 LPM)
LFMB-05-A2	0.2 to 2 (1 to 7 LPM)
LFMB-06-A2	0.5 to 5 (1.8 to 18 LPM)

MODEL CHART		
Model	**Range (GPM Water)**	**Process Connection**
LFMC-07-A2	0.25 to 2.5 (1 to 10 LPM)	1/2″ male NPT
LFMC-08-A2	0.5 to 5 (1.8 to 18 LPM)	1/2″ male NPT
LFMC-09-A2	0.8 to 8 (3 to 30 LPM)	1/2″ male NPT
LFMD-10-C2	0.8 to 8 (3 to 30 LPM)	3/4″ male NPT
LFMD-11-C2	1 to 10 (4 to 40 LPM)	3/4″ male NPT
LFME-12-F2	1.2 to 12 (5 to 50 LPM)	1″ male NPT
LFME-13-F2	2 to 20 (8 to 80 LPM)	1″ male NPT
LFME-14-F2	2.5 to 25 (10 to 100 LPM)	1″ male NPT
LFMF-15-I2	2.5 to 25 (10 to 100 LPM)	2″ male NPT
LFMF-16-I2	5 to 45 (20 to 180 LPM)	2″ male NPT
LFMF-17-I2	7 to 70 (25 to 250 LPM)	2″ male NPT

OPTIONS	
Use order code:	**Description**
NISTCAL-FL1	NIST traceable calibration certificate

ACCESSORIES - LFMA	
Model	**Description**
A-560	20 mm metric union fittings - ABS
A-566	1/2″ male NPT fittings - ABS

ACCESSORIES - LFMB	
Model	**Description**
A-561	20 mm metric union fittings - ABS
A-567	1/2″ male NPT fittings - ABS
A-575	1/2″ male NPT with 90° elbow fittings - PVC

ACCESSORIES - LFMC	
Model	**Description**
A-562	20 mm metric union fittings - ABS
A-567	1/2″ male NPT fittings - ABS
A-568	3/4″ male NPT fittings - ABS
A-576	1/2″ male NPT with 90° elbow fittings - PVC

ACCESSORIES - LFMD	
Model	**Description**
A-563	32 mm metric union fittings - PVC
A-569	3/4″ male NPT fittings - nylon
A-572	3/4″ female NPT fittings - nylon
A-577	3/4″ male NPT with 90° elbow fittings - PVC

ACCESSORIES - LFME	
Model	**Description**
A-564	40 mm metric union fittings - PVC
A-570	1″ male NPT fittings - nylon
A-573	1″ female NPT fittings - nylon
A-578	1″ male NPT with 90° elbow fittings - PVC

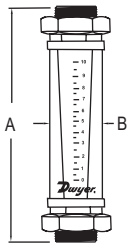
ACCESSORIES - LFMF	
Model	**Description**
A-565	63 mm metric union fittings - ABS
A-571	2″ male NPT fittings - nylon
A-574	2″ female NPT fittings - nylon

Dwyer

SERIES VAT

VARIABLE AREA FLUOROPOLYMER FLOWMETER

In-Line, Chemically Inert



Connection	A	B
1/4″	5-11/16″ [144]	1-1/4″ [31.8]
3/8″	5-11/16″ [144]	1-1/4″ [31.8]
1/2″	10-1/2″ [267]	2″ [50.8]
3/4″	10-1/2″ [267]	2″ [50.8]

The **Series VAT Variable Area Fluoropolymer Flowmeter** is ideal for high purity or corrosive liquid applications. This series of flowmeters features a 0 to 10 scale for flow indication. Each unit is individually leak tested to a leak integrity rating of 1 x 10 -7 sccs Helium or better.

FEATURES/BENEFITS

- Chemically inert wetted components yield long life even in corrosive liquid applications
- All units are individually leak tested for no additional cost

APPLICATIONS

- Chemical injectors
- Deionized water systems

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Flowtube: PFA; Float and end fittings: PTFE; Guide rods: PCTFE.
Temperature Limit: 250°F (121°C).
Pressure Limit: 100 psig (6.9 bar).
Accuracy: ±5% FS @ 70°F (21.1°C) and 14.7 psia (1 atm absolute).
Process Connections: See chart.
Leak Integrity: 1 x 10-7 sccs of helium.
Scale: Direct reading.
Mounting: Vertical, in-line.

MODEL CHART

Model		Low Range	
With Valve	Without Valve	Connections	Flow Rate GPH (ml/min)
VAT-311	VAT-301	1/4″ female NPT	1.98 (125)
VAT-312	VAT-302	1/4″ female NPT	3.91 (250)
VAT-313	VAT-303	1/4″ female NPT	6.34 (400)
VAT-314	VAT-304	1/4″ female NPT	7.92 (500)
VAT-315	VAT-305	1/4″ female NPT	15.85 (1000)
VAT-316	VAT-306	3/8″ female NPT	31.69 (2000)
VAT-317	VAT-307	3/8″ female NPT	39.62 (2500)
VAT-318	VAT-308	3/8″ female NPT	47.54 (3000)
VAT-319	VAT-309	3/8″ female NPT	79.23 (5000)

MODEL CHART

Model		High Range	
With Valve	Without Valve	Connections	Flow Rate GPM (L/min)
VAT-6110	VAT-6010	1/2″ female NPT	3.43 (13)
VAT-6111	VAT-6011	1/2″ female NPT	5.28 (20)
VAT-6112	VAT-6012	3/4″ female NPT	7.93 (30)
VAT-6113	VAT-6013	3/4″ female NPT	10.57 (40)
VAT-6114	VAT-6014	3/4″ female NPT	11.89 (45)

OPTIONS

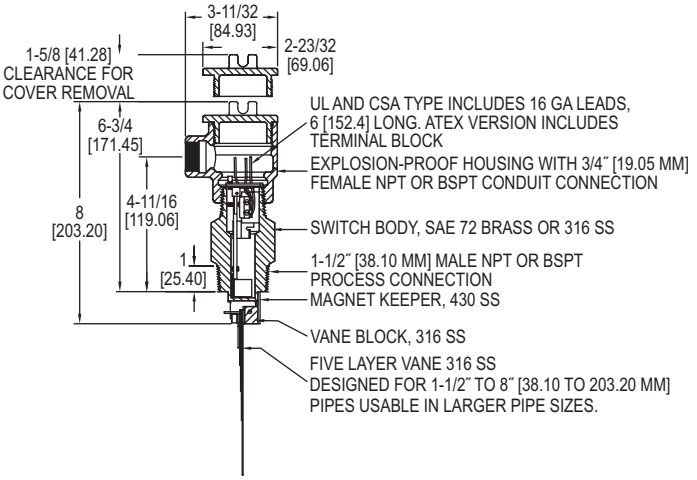
Use order code:	Description
NISTCAL-FL1	NIST traceable calibration certificate

Dwyer

SERIES V4 | W. E. ANDERSON™ BY DWYER

FLOTECT® VANE OPERATED FLOW SWITCH

Field Adjustable — Dependable Protection Against Flow Variation or Stopping in Pipelines for Fluids, Gases and Flowing Solids



VIDEO ONLINE

The **Series V4 Flotect® Vane Operated Flow Switch** is rugged and reliable, ideal for automatically protecting equipment and pipeline systems against damage from reduction or loss of flow. Time tested in thousands of pipeline installations and processing plants around the world this Series is Weatherproof, designed to meet NEMA 4 and Explosion-proof (listing included in specifications). This series can be used in pipes 1-1/2″ (38.10 mm) and up.

FEATURES/BENEFITS

- Unique magnetically actuated switching design gives superior performance
- Features a free-swinging vane which attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm with no bellows, springs, or seals to fail
- Leak proof body machined from bar stock
- Electrical assembly can be easily replaced without removing the unit from installation so that the process does not have to be shut down
- Installs directly and easily into pipeline with a thredolet, tee, or flange (see application drawings)
- High pressure rating of 1000 psig (69 bar) with the brass body and 2000 psig (138 bar) with the 316 SS body
- Choice of custom vane calibrated for your application, Model V4, or field adjustable multilayer vane, Model V4-2-U (see set point chart)

APPLICATIONS

- Protects pumps, motors and other equipment against low or no flow
- Controls sequential operation of pumps
- Automatically starts auxiliary pumps and engines
- Stops liquid cooled engines, machines and processing when coolant flow is interrupted
- Shuts down burner when air flow through heating coil fails
- Controls dampers according to flow

SPECIFICATIONS

Service: Gases or liquids compatible with wetted materials.
Wetted Materials: Vane: 316 SS; Body: Brass or 316 SS standard; Magnet keeper: 430 SS standard, 316 SS optional; Options: Other materials also available, consult factory (e.g. PVC, hastelloy, nickel, monel, titanium).
Temperature Limit: -4 to 275°F (-20 to 135°C) standard, MT high temperature option 400°F (205°C) [MT option not UL, CSA, ATEX or IECEx] ATEX and IECEx options, ambient temperature -4 to 163°F (-20 to 73°C); Process temperature -4 to 163°F (-20 to 73°C).
Pressure Limit: Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar), optional 5000 psig (345 bar) available with 316 SS body and SPDT switch only.
Enclosure Rating: Weatherproof and Explosion-proof. **Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G.
ATEX CE 2813 Ex II 2 G Ex db IIB T6 Gb -20°C≤Tamb≤73°C.
-20°C≤Process Temp≤73°C.
EU-Type Certificate No.: KEMA 03 ATEX 2383.
ATEX Standards: EN 60079-0:2012+A11:2013; EN 60079-1:2014.
IECEx Certified: For Ex db IIB T6 Gb -20°C≤Tamb≤73°C. -20°C≤Process Temp≤73°C.
IECEx Certificate of Conformity: IECEx DEK 11.0071.
IECEx Standards: IEC 60079-0:2011; IEC 60079-1:2014.
Zone I. Also FM approved.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL, FM, ATEX and IECEx models 10 A @ 125/250 VAC (V~). CSA models: 5 A @ 125/250 VAC (V~); 5 A res., 3 A ind. @ 30 VDC (V⎓). MV option: 1 A @125 VAC (V~); 1 A res., .5 A ind. @ 30 VDC (V⎓). MT option: 5 A @ 125/250 VAC (V~). [MT and MV option not UL, CSA, FM, ATEX or IECEx].
Electrical Connections: UL and CSA models: 16 AWG, 6″ (152 mm) long. ATEX and IECEx unit: Terminal block.
Conduit Connection: 3/4″ female NPT or 19.05 mm standard or M25 with -BSPT option.
Process Connection: 1-1/2″ male NPT or 1-1/2″ male BSPT or 38.10 mm.
Mounting Orientation: Within 5° of vertical for proper operation. Units for horizontal installation (vertical pipe with up flow) available.
Set Point Adjustment: For universal vane: five vane combinations.
Weight: 4 lb 8 oz (1.9 kg).
Agency Approvals: ATEX, CE, CSA, FM, IECEx, UL**.

**No housing option (-NH) has no approvals.

MODEL CHART

Model	Description	Connection Type
V4-2-U	Brass body, universal vane	NPT
V4-SS-2-U	316 SS* body, universal vane	NPT
V4-2-U-NH**	Brass body, universal vane, no housing	NPT
V4	Brass body, custom vane	NPT
V4-SS	316 SS* body, custom vane	NPT
V4-NH**	Brass body, custom vane, no housing	NPT
V4-2-U-BSPT	Brass body, universal vane	BSPT
V4-SS-2-U-BSPT	316 SS* body, universal vane	BSPT
V4-BSPT	Brass body, custom vane	BSPT
V4-SS-BSPT	316 SS* body, custom vane	BSPT

Note: Consult factory for price and availability of fittings for V4 installation. Thredolets, bushings, and tees are available in a variety of sizes and materials.
Note: For custom vane models, please supply factory with following information: pipe size, flow direction (horizontal, up), mounting, pressure, temperature, specific gravity, flow rates (maximum normal, actuation/deactuation†), etc.

*316 SS body with 430 SS magnet keeper.
**No housing option (-NH) has no approvals.
†When both values are supplied, note which is critical.

OPTIONS

To order add suffix:	Description
-D	DPDT contacts
-MV	Gold plated contacts, options for dry circuits*
-MT	High temperature, option rated 400°F (204°C)*
-TRI	Increasing flow time delay relay option with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes*
-TRD	Decreasing flow time delay relay option with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes*
-316	316 SS magnet keeper, option to replace standard 430 SS
-V	Vertical up flow, option for upward flow in vertical pipe
-AT	ATEX compliant construction
-IEC	IECEx certified construction
-BSPT	Female BSPT process connection and M25 conduit connection

*See electrical rating in specification, no listings or approvals.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

FLOTECT® VANE OPERATED FLOW SWITCH

Field Adjustable – Dependable Protection Against Flow Variation or Stopping in Pipelines for Fluids, Gases and Flowing Solids

V4 UNIVERSAL VANE FLOW CHARTS

Values shown in both charts are nominal. If normal flows exceed actuation rates by less than 10%, custom vanes are recommended.
Figures are based on standard vertical installation in a 1-1/2" threaded branch connection in a horizontal run of pipe.

APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR COLD WATER; GPM (LPM)

Vane Layers	1.5″ Pipe	2″ Pipe	3″ Pipe	4″ Pipe	6″ Pipe	8″ Pipe	10″ Pipe	12″ Pipe	14″ Pipe	16″ Pipe	18″ Pipe	20″ Pipe
1	7-3 (26.67-11.67)	15-8 (56.7-30)	45-22 (167-83.3)	95-40 (367-150)	210-120 (800-450)	375-175 (1417-667)	600-300 (2267-1133)	900-450 (3400-1700)	1200-600 (4550-2267)	1400-800 (5300-3033)	2000-1000 (7567-3783)	2400-1200 (9083-4550)
1 and 2		7-4 (26.7-15)	23-14 (86.7-53.3)	50-35 (190-132)	130-90 (500-333)	230-150 (867-567)	450-250 (1700-950)	650-350 (2467-1317)	900-500 (3400-1900)	1200-650 (4550-2467)	1450-800 (5483-3033)	1800-1000 (6817-3783)
1, 2 and 3			11-7 (41.7-26.7)	27-19 (102-71.7)	80-60 (300-233)	160-115 (600-433)	300-180 (1133-683)	450-275 (1700-1033)	600-350 (2267-1317)	750-450 (2750-2083)	1000-600 (3783-2267)	1200-700 (4550-2650)
1, 2, 3 and 4				17-12 (65-45)	60-45 (233-167)	120-90 (450-333)	230-150 (867-567)	310-200 (1167-750)	430-280 (1633-1067)	550-360 (2083-1367)	700-450 (2650-1700)	850-550 (3217-2083)
1, 2, 3, 4 and 5					40-30 (152-113)	80-65 (300-250)	135-100 (517-383)	200-140 (750-533)	290-200 (1100-750)	360-250 (1367-950)	460-325 (1733-1233)	575-400 (2183-1517)

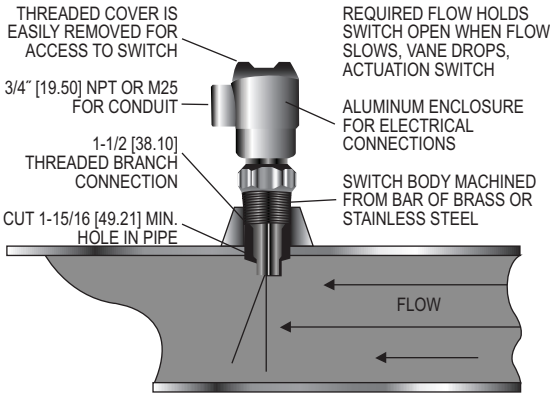
Note: Actuation rates are based on cold water at a specific gravity of 1.0.
Note: For fluids of different specific gravity, actuation rates may be approximated by dividing the rate shown by the square root of the specific gravity.

APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR COLD AIR; SCFM (LPS)

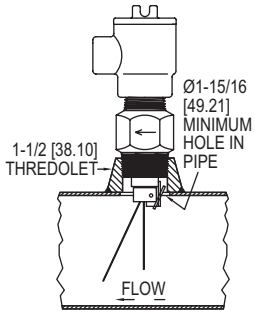
Vane Layers	1.5″ Pipe	2″ Pipe	3″ Pipe	4″ Pipe	6″ Pipe	8″ Pipe	10″ Pipe	12″ Pipe	14″ Pipe	16″ Pipe	18″ Pipe	20″ Pipe
1	32-17 (15-8)	65-32 (30-20)	210-105 (100-50)	400-200 (190-90)	950-475 (450-220)	1550-850 (730-400)	2400-1300 (1100-600)	3450-1900 (1600-900)	4700-2600 (2200-1200)	6400-3500 (3000-1700)	8000-4400 (3800-2100)	10000-5500 (4700-2600)
1 and 2		23-13 (10-6)	120-70 (60-30)	195-140 (90-70)	550-375 (260-180)	1100-700 (520-330)	1850-1200 (870-570)	2700-1750 (1300-800)	3400-2200 (1600-1000)	4800-3100 (2300-1500)	6000-3900 (2800-1800)	7400-4800 (3500-2300)
1, 2 and 3			60-48 (30-20)	135-100 (60-50)	375-265 (180-130)	725-500 (340-240)	1200-850 (570-400)	1850-1300 (870-610)	2600-1800 (1200-800)	3350-2350 (1600-1100)	4300-3000 (2000-1400)	5300-3700 (2500-1700)
1, 2, 3 and 4				65-50 (30-20)	260-200 (120-90)	500-400 (240-190)	875-700 (410-330)	1250-1000 (590-470)	1900-1500 (900-710)	2500-2000 (1200-900)	3100-2500 (1500-1200)	3900-3100 (1800-1500)
1, 2, 3, 4 and 5					130-100 (60-50)	310-250 (150-120)	650-525 (310-250)	1000-800 (470-380)	1600-1250 (760-590)	2200-1750 (1040-830)	2800-2250 (1300-1100)	3550-2850 (1700-1300)

Note: Actuation rates are based on air at standard conditions.
Note: For gases at other pressures, temperatures, or specific gravities, consult factory for equivalent flow approximations.

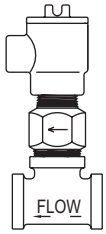
APPLICATION DRAWINGS FOR FLOTECT® AUTOMATIC FLOW SWITCHES



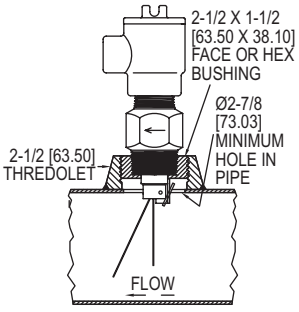
Threaded branch connection installation.
May also be installed using tee, flange or coupling.



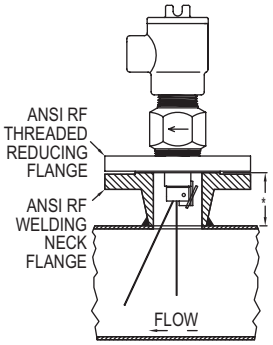
Standard installation



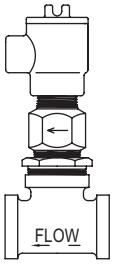
1-1/2″ x 1-1/2″x 1-1/2″ (38.10 x 38.10 x 38.10 mm) tee installation



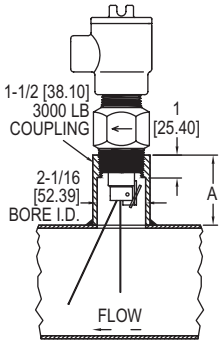
2-1/2″ (63.50 mm) threaded branch connection



Flange installation
*Flange face to pipe O.D. specified by customer. Normally should not exceed 5″ (172)



2″ x 2″ x 2″ (50.80 x 50.80 x 50.80 mm) tee installation



Not recommended, unless coupling is bored out to 2-1/16″ (52.4) as shown

Pipe Size	Dim. A
2″ (50.80 mm)	2-5/8 (66.7)
3″ (76.20 mm)	2-1/2 (63.5)
4″ (101.60 mm)	2-7/16 (61.9)

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

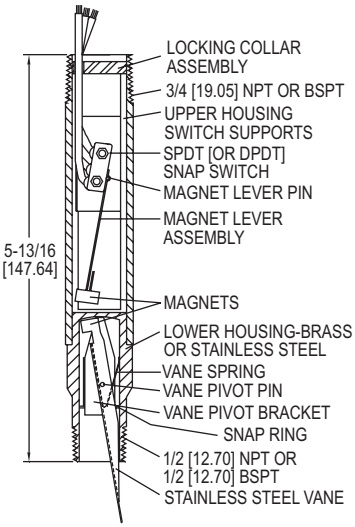
Dwyer

SERIES V6 | W. E. ANDERSON™ BY DWYER

FLOTECT® MINI-SIZE FLOW SWITCHES

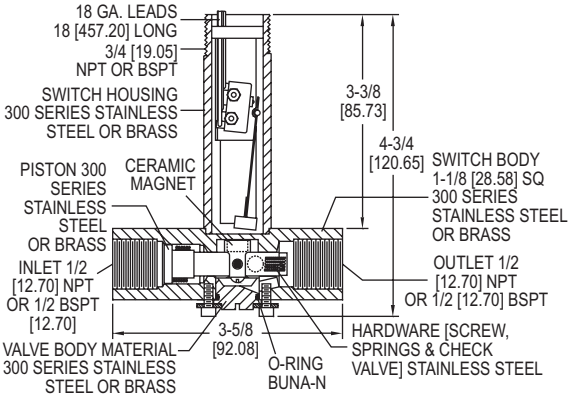
Monitor Flow in 1/2″ to 2″ (12.70 to 50.80 mm) Pipe, Explosion-Proof, Compact

V6 with tee



OVERALL LENGTH WITH 1-1/4″ TEE CONNECTION APPROXIMATELY 8″ [31.75 to 203.20 MM]

V6 low flow



VIDEO ONLINE

The **Series V6 Flotect® Mini-Size Flow Switches** are surprisingly compact, and specifically engineered to monitor liquid, gas, or air flows. Time tested in thousands of pipeline installations and processing plants around the world, this Series is Weatherproof, designed to meet NEMA 4 and Explosion-proof (listing included in specifications). Tees are available for installation in pipelines from 1/2″ to 2″ (12.70 to 50.80 mm). With bushings added the unit is easily adapted to 1/4″ and 3/8″ (6.35 and 9.53 mm) piping.

FEATURES/BENEFITS

- Unique magnetically actuated switching design gives superior performance
- Features a free-swinging vane which attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm with no bellows, springs, or seals to fail
- Leak proof body machined from bar stock
- Electrical assembly can be easily replaced without removing the unit from installation so that the process does not have to be shut down
- Choice of models in a tee with calibrated vane or field adjustable trimmable vane
- Easy installation with simple pipe insert via tee and simple electrical switch connections
- High-pressure rating of 1000 psig (69 bar) with brass body and 2000 psig (138 bar) with stainless steel body
- Low flow model offers field adjustable set point

APPLICATIONS

- Protects pumps, motors and other equipment against low or no flow
- Controls sequential operation of pumps
- Automatically starts auxiliary pumps and engines
- Stops liquid cooled engines, machines and processing when coolant flow is interrupted
- Shuts down burner when air flow through heating coil fails
- Controls dampers according to flow
- Signals alarm when emergency shower or eyewash station in use

SPECIFICATIONS

Service: Gases or liquids compatible with wetted materials.
Wetted Materials: Standard V6 models: Vane: 301 SS; Lower body: brass or 303 SS; Magnet: Ceramic; Other: 301, 302 SS; Tee: Brass, iron, forged steel, or 304 SS. V6 low flow models: Lower body: Brass or 303 SS; Tee: Brass or 304 SS; Magnet: Ceramic; O-ring: Buna-N standard, Fluoroelastomer optional; Other: 301, 302 SS.
Temperature Limits: -4 to 220°F (-20 to 105°C) standard, MT high temperature option 400°F (205°C) (MT not UL, CSA, ATEX, IECEx or KC) ATEX Compliant AT, IECEx IEC option and KC (KC option); Ambient temperature: -4 to 167°F (-20 to 75°C); Process temperature: -4 to 220°F (-20 to 105°C).
Pressure Limit: Brass lower body with no tee models 1000 psig (69 bar), 303 SS lower body with no tee models 2000 psig (138 bar). Brass tee models 250 psi (17.2 bar), iron tee models 1000 psi (69 bar), forged and SS tee models 2000 psi (138 bar), low flow models 1450 psi (100 bar).
Enclosure Rating: Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on stainless steel body models only).
ATEX CE 2813 Ex II 2 G Ex db IIC T6 Gb Process Temp ≤75°C Alternate Temperature Class T5 Process Temp ≤90°C, 115°C (T4) Process Temp ≤105°C consult factory. EU-Type Certificate No.: KEMA 04ATEX2128.
ATEX Standards: EN 60079-0:2012+A11:2013; EN 60079-1:2014.
IECEx Certified: For Ex db IIC T6 Gb Process Temp≤75°C Alternate Temperature Class T5 Process Temp ≤90°C, 115°C (T4) Process Temp≤105°C consult factory.
IECEx Certificate of Conformity: IECEx DEK 11.0039;
IECEx Standards: IEC 60079-0:2011; IEC 60079-1:2014;
Korean Certified (KC) for: Ex d IIC T6 Gb Process Temp ≤75°C;
KTL Certificate Number: 12-KB4BO-0091.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL models: 5 A @125/250 VAC. CSA, ATEX and IECEx models: 5 A @ 125/250 VAC (V~); 5 A res., 3 A ind. @ 30 VDC (V⎓). MV option: .1 A @ 125 VAC (V~). MT option: 5 A @125/250 VAC (V~). [MT option not UL, CSA, ATEX or IECEx].
Electrical Connections: UL models: 18 AWG, 18″ (457.20 mm) long. ATEX/CSA / IECEx models: Terminal block.
Upper Body: Brass or 303 SS.
Conduit Connections: 3/4″ (19.05 mm) male NPT standard, 3/4″ (19.05 mm) female NPT or M25 with BSPT option on junction box models.
Process Connection: 1/2″ (12.70 mm) male NPT or 1/2″ (12.70 mm) male BSPT on models without a tee.
Mounting Orientation: Switch can be installed in any position but the actuation/deactuation flow rates in the charts are based on horizontal pipe runs and are nominal values.
Set Point Adjustment: Standard V6 models none. Without tee models vane is trimmable. Low flow models are field adjustable in the range shown. See set point charts❶.
Weight: 2 to 6 lb (.9 to 2.7 kg) depending on construction.
Options not Shown: Custom calibration, bushings, PVC tee, reinforced vane, DPDT relays.
Agency Approvals: ATEX, CE, CSA, IECEx, KTL, UL.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

❶Set Point Charts: See page 24 (Series V6)

FLOTECT® MINI-SIZE FLOW SWITCHES

Monitor Flow in 1/2″ to 2″ (12.70 to 50.80 mm) Pipe, Explosion-Proof, Compact

MODEL CHART									
Example	**V6**	**EP**	**B-B**	**-S**	**-2**		**-B**	**-MT**	**V6EPB-B-S-2-B-MT**
Series	V6								Flow switch
Construction		EP							Explosion proof
Body			B-B S-S						Brass SS
Circuit (Switch)				S D					SPDT DPDT
Tee Connection Size+					1 2 3 4 5 6 LF LF				1/2″ (12.70 mm) 3/4″ (19.50 mm) 1″ (25.40 mm) 1-1/4″ (31.75 mm) 1-1/2″ (38.10 mm) 2″ (50.80 mm) Low flow model (1/2″ connection-brass) Low flow model (1/2″ connection-SS)
Process Connection						- E			NPT BSPT
Tee Material+							MI FS B S 0		Iron Forged steel Brass SS No tee, field trimmable vane** (For LF model no tee material chosen, tee material matches body choice)
Options								AT CSA IEC MT MV VIT	ATEX compliant construction with junction box CSA approved construction with junction box* IECEx certified construction with junction box High temperature option rated 400°F (205°C) (see specifications for ratings)* Gold contacts on snap switch for dry circuits (see specifications for ratings) Fluoroelastomer O-rings in place of Buna-N on low flow models

Note: M25 is not available with the CSA housing.
+Additional adders dependent on tee connection size and tee material, consult factory for these adders.
*Options that do not have ATEX.
**Vane will be trimmed to the connection size. If full field trimmable vane is desired, must select with tee connection size 6.

MODEL CHART			
Model	**Size/Connection**	**Body**	**Tee**
V6EPB-B-S-1-B	1/2″ (12.70 mm) NPT	Brass	Brass
V6EPB-B-S-2-B	3/4″ (19.50 mm) NPT	Brass	Brass
V6EPB-B-S-3-B	1″ (25.40 mm) NPT	Brass	Brass
V6EPB-B-S-4-B	1-1/4″ (31.75 mm) NPT	Brass	Brass
V6EPB-B-S-5-B	1-1/2″ (38.10 mm) NPT	Brass	Brass
V6EPB-B-S-6-B	2″ (50.80 mm) NPT	Brass	Brass
V6EPB-B-S-1-MI	1/2″ (12.70 mm) NPT	Brass	Iron
V6EPB-B-S-2-MI	3/4″ (19.50 mm) NPT	Brass	Iron
V6EPB-B-S-3-MI	1″ (25.40 mm) NPT	Brass	Iron
V6EPB-B-S-4-MI	1-1/4″ (31.75 mm) NPT	Brass	Iron
V6EPB-B-S-5-MI	1-1/2″ (38.10 mm) NPT	Brass	Iron
V6EPB-B-S-6-MI	2″ (50.80 mm) NPT	Brass	Iron
V6EPS-S-S-1-FS	1/2″ (12.70 mm) NPT	SS	FS
V6EPS-S-S-2-FS	3/4″ (19.50 mm) NPT	SS	FS
V6EPS-S-S-3-FS	1″ (25.40 mm) NPT	SS	FS
V6EPS-S-S-4-FS	1-1/4″ (31.75 mm) NPT	SS	FS
V6EPS-S-S-5-FS	1-1/2″ (38.10 mm) NPT	SS	FS
V6EPS-S-S-6-FS	2″ (50.80 mm) NPT	SS	FS
V6EPS-S-S-1-S	1/2″ (12.70 mm) NPT	SS	SS
V6EPS-S-S-2-S	3/4″ (19.50 mm) NPT	SS	SS
V6EPS-S-S-3-S	1″ (25.40 mm) NPT	SS	SS
V6EPS-S-S-4-S	1-1/4″ (31.75 mm) NPT	SS	SS
V6EPS-S-S-5-S	1-1/2″ (38.10 mm) NPT	SS	SS
V6EPS-S-S-6-S	2″ (50.80 mm) NPT	SS	SS
V6EPB-B-S-6-0	No tee	Brass	None
V6EPS-S-S-6-0	No tee	SS	None
V6EPB-B-S-LF	1/2″ (12.70 mm) NPT	Brass	LF, brass
V6EPS-S-S-LF	1/2″ (12.70 mm) NPT	SS	LF, SS
V6EPB-B-S-LFE	1/2″ (12.70 mm) BSPT	Brass	Brass
V6EPB-B-S-1E-B	1/2″ (12.70 mm) BSPT	Brass	Brass
V6EPB-B-S-2E-B	3/4″ (19.50 mm) BSPT	Brass	Brass
V6EPB-B-S-3E-B	1″ (25.40 mm) BSPT	Brass	Brass
V6EPB-B-S-4E-B	1-1/4″ (31.75 mm) BSPT	Brass	Brass
V6EPB-B-S-5E-B	1-1/2″ (38.10 mm) BSPT	Brass	Brass
V6EPB-B-S-6E-B	2″ (50.80 mm) BSPT	Brass	Brass
V6EPB-B-S-6E-0	No tee	Brass	Brass
V6EPS-S-S-LFE	1/2″ (12.70 mm) BSPT	SS	SS
V6EPS-S-S-1E-S	1/2″ (12.70 mm) BSPT	SS	SS
V6EPS-S-S-2E-S	3/4″ (19.50 mm) BSPT	SS	SS
V6EPS-S-S-3E-S	1″ (25.40 mm) BSPT	SS	SS
V6EPS-S-S-4E-S	1-1/4″ (31.75 mm) BSPT	SS	SS
V6EPS-S-S-5E-S	1-1/2″ (38.10 mm) BSPT	SS	SS
V6EPS-S-S-6E-S	2″ (50.80 mm) BSPT	SS	SS
V6EPS-S-S-6E-0	No tee	SS	SS

V6 SET POINT CHARTS - FACTORY INSTALLED TEE

APPROXIMATE ACTUATION/ DEACTUATION FLOW RATES FOR AIR; SCFM (LPM)		
Pipe Size	**Actuate**	**Deactuate**
1/2″	6.50 (180)	5.00 (120)
3/4″	10.0 (300)	8.00 (240)
1″	14.0 (420)	12.0 (360)
1-1/4″	21.0 (600)	18.0 (540)
1-1/2″	33.0 (960)	30.0 (840)
2″	43.0 (1200)	36.0 (1020)

APPROXIMATE ACTUATION/ DEACTUATION FLOW RATES FOR COLD WATER; GPM (LPM)		
Pipe Size	**Actuate**	**Deactuate**
1/2″	1.50 (5.667)	1.00 (3.83)
3/4″	2.00 (7.5)	1.25 (4.67)
1″	3.00 (11.33)	1.75 (6.67)
1-1/4″	4.00 (15.17)	3.00 (11.3)
1-1/2″	6.00 (22.67)	5.00 (18.9)
2″	10.00 (37.83)	8.50 (32.2)

V6 LOW FLOW SET POINT CHART

MIN-MAX FLOW RATES IN 1/2″ PIPE		
Media	**Actuate**	**Deactuate**
GPM-water	.04-0.75	.03-0.60
LPM-water	.15-2.84	.11-2.27
SCFM-air	.18-2.70	.15-2.0
LPS-air	.09-1.3	.07-.95
Pressure drop (head loss) is a function of both set point and flow rate. Typically, pressure drop at actuation flow rate listed will be 5-10 psid (.34-.69 bar). Pressure drops at other flow rates will vary in proportion to the (change in flow).		

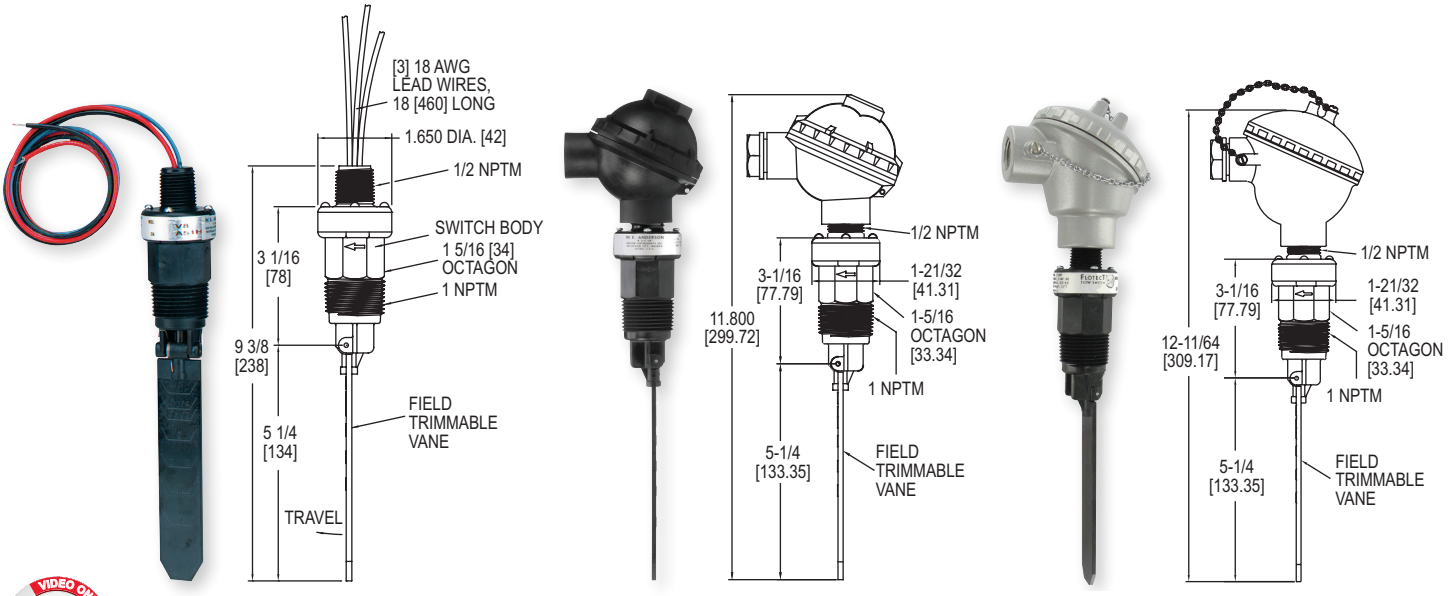
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES V8 | W. E. ANDERSON™ BY DWYER

FLOTECT® VANE OPERATED FLOW SWITCHES

Field Adjustable – 1 to 6 Inch Pipe, Leak Proof Body, Chemical Resistance



VIDEO ONLINE

V8 **V8-WP** **V8-WP2**

The **Series V8 Flotect® Vane Operated Flow Switches** are ideal for protecting unattended equipment from damage or loss of production. This Series is available for installation in a 1 to 6″ pipe with operating pressures are up to 150 psig (10 bar) and temperatures to 212°F (100°C).

FEATURES/BENEFITS

- UL recognized as an industrial motor controller per UL standard 508, suitable for mounting in a protected environment
- Magnetically actuated switching design gives superior performance with free-swinging vane which attracts a magnet within the switch body, actuating a snap switch with no bellows, springs, or seals to fail
- Leak proof body and vane constructed of tough durable polyphenylene sulfide which has excellent chemical resistance
- A full size trimmable vane is provided with molded-in graduations

APPLICATIONS

- Chemical processing
- Air conditioning
- Refrigeration
- Heating systems
- Cooling lines
- Machinery
- Liquid transfer systems
- Water treatment
- Food processing
- Machine tools

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Vane and body: Polyphenylene Sulfide (PPS); Pin and spring: 316 SS or Inconel®; Magnet: Ceramic 8.
Temperature Limit: 212°F (100°C).
Pressure Limit: 150 psig (10.34 bar).
Enclosure Rating: General purpose, WP/WP2 option is weatherproof.
Switch Type: SPDT snap switch, MV option: SPDT gold contact snap switch.
Electrical Rating: 5 A @ 125/250 VAC, 5 A resistive, 3 A inductive @ 30 VDC; MV option: 1 A @ 125 VAC, 1 A resistive, 0.5 A inductive @ 30 VDC.
Electrical Connections: 18 AWG, 18″ (460 mm) long.
Conduit Connection: 1/2″ male NPT, 1/2″ female NPT on WP and WP2.
Process Connection: 1″ male NPT.
Mounting Orientation: Actuation/deactuation flow rates are based on horizontal pipe runs and are nominal values. Unit cannot be used with vertical down flow.
Set Point Adjustment: Vane is trimmable.
Weight: 4.5 oz (0.13 kg).
Agency Approvals: CE, cURus.

MODEL CHART

Model	Description
V8	Flow switch

APPROXIMATE ACTUATION/ DEACTUATION FLOW RATES FOR COLD WATER; GPM (LPM)

Pipe Size	Actuate/Deactuate
1″	10.8/9.1 (40.9/34.6)
1-1/4″	9.8/8.3 (37.2/31.4)
1-1/2″	8.6/6.8 (32.4/25.7)
2″	10.9/8.8 (41.2/33.4)
3″	12.9/8.9 (48.8/33.5)
4″	21.1/13.8 (79.7/52.2)
6″	45/33 (170.2/124.7)

APPROXIMATE ACTUATION/ DEACTUATION FLOW RATES FOR AIR; SCFM (LPM)

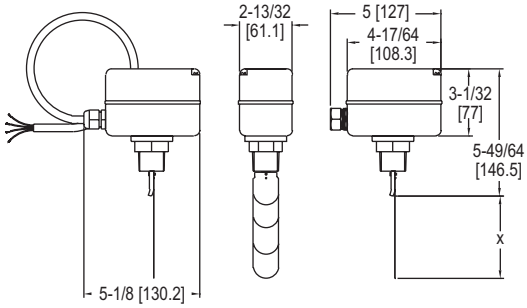
Pipe Size	Actuate/Deactuate
1″	39/32.6 (1105/923)
1-1/4″	37.5/32.2 (1062/912)
1-1/2″	33.4/26.7 (945/757)
2″	43/36.8 (1218/1042)
3″	52.7/38.9 (1493/1100)
4″	87.6/63.6 (2482/1802)
6″	168.6/137.4 (4775/3890)

OPTIONS

To order add suffix:	Description
-MV	Gold plated contacts, for dry circuits; rated 1A @ 125 VAC; 1A resistive, 0.5A inductive @ 30 VDC
Example: V8-MV	
-INC	Inconel® alloy option; Inconel® alloy replaces standard 316 SS wetted parts; wetted parts are Inconel® alloy, ceramic 8, and polyphenylene sulfide
Example: V8-INC	
-WP	Weatherproof enclosure; optional housing is phenylpolioxide and provides weatherproof protection for electrical wiring; not UL approved
Example: V8-WP	
-WP2	Optional housing is aluminum and provides weatherproof protection for electrical wiring; not UL approved
Example: V8-WP2	

VANE FLOW SWITCH

Low Cost, Field Adjustable Set Point and Paddle



Shown with conduit connection option

The **Series FS-2 Vane Flow Switch** offers an economical flow proving solution. The FS-2 paddles are adjustable to fit 1 to 8″ size pipe.

FEATURES/BENEFITS

- Field adjustable set point adjustment screw allows for easy flow switch modification
- Custom application set points enabled by field adjustable vane layers
- Aluminum weatherproof housing permits outdoor installation

APPLICATIONS

- Boiler flow proving
- Hot water heaters
- Chillers
- Cooling lines
- Machinery
- Liquid transfer systems

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Bellow: Tin-bronze; Vane: SS; Body: Forged brass.
Temperature Limit: 230°F (110°C).
Pressure Limit: 145 psig (10 bar).
Enclosure Rating: NEMA 4 (IP64).
Switch Type: SPDT snap switch.
Electrical Rating: 10 A res, 3 A ind @ 250 VAC.
Electrical Connection: Cable gland with attached wire leads or optional conduit connection.
Process Connection: 1″ male NPT or BSPT.
Mounting Orientation: Switch must be installed vertically on horizontal pipe runs.
Set Point Adjustment: Four vane combinations and an adjustment screw.
Enclosure: Die-cast aluminum alloy.
Weight: 28.22 oz (0.8 kg).
Agency Approvals: CE.

APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR WATER; GPM (LPM)

Pipe Size	Blade Vane Length in (mm) Dim. X	Minimum Setting		Maximum Setting	
		Actuate	Deactuate	Actuate	Deactuate
1″	1.34 (34)	4.0 (15.0)	1.8 (6.7)	8.8 (33.3)	6.6 (25.0)
1-1/4″	1.34 (34)	5.3 (20.0)	2.6 (10.0)	11.4 (43.3)	8.4 (31.7)
1-1/2″	2.24 (57)	7.0 (26.7)	4.0 (15.0)	14.5 (55.0)	11.4 (43.3)
2″	2.24 (57)	14.1 (53.3)	9.7 (36.7)	31.3 (118.3)	22.5 (85.0)
2-1/2″	3.46 (88)	18.5 (70.0)	15.4 (58.3)	35.2 (133.3)	30.8 (116.7)
3″	3.46 (88)	27.7 (105.0)	25.1 (95.0)	52.8 (200.0)	46.2 (175.0)
4″	3.46 (88)	59.4 (225.0)	52.8 (200.0)	123.3 (466.7)	114.5 (433.3)
5″	6.57 (167)	52.8 (200.0)	39.6 (150.0)	132.1 (500.0)	123.3 (466.7)
6″	6.57 (167)	75.7 (286.7)	52.8 (200.0)	154.1 (583.3)	140.9 (533.3)
8″	6.57 (167)	184.9 (700.0)	158.5 (600.0)	396.3 (1500.0)	374.2 (1416.7)

MODEL CHART

Model	Description
FS-2	Paddle flow switch

OPTIONS

To order add suffix:	Description
-BSPT	Process connection
Example: FS-2-BSPT	
-CND	Conduit connection, 1″ NPT female conduit connection with no wire leads.
Example: FS-2-CND	

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

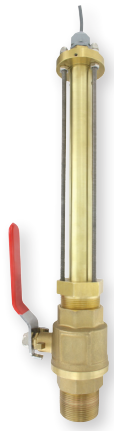
SERIES PFT | W. E. ANDERSON® BY DWYER

PADDLEWHEEL FLOW SENSOR

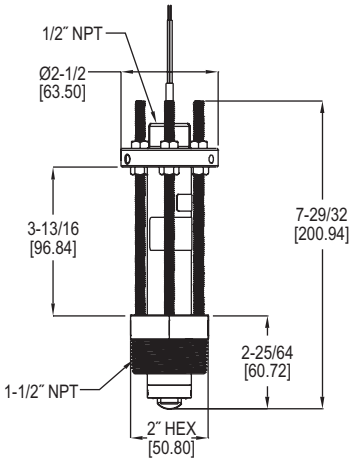
Non-Magnetic Sensing, Adjustable for 1-1/2 to 40″ (38.1 to 1016 mm) Pipe, Pulse or 4-20 mA

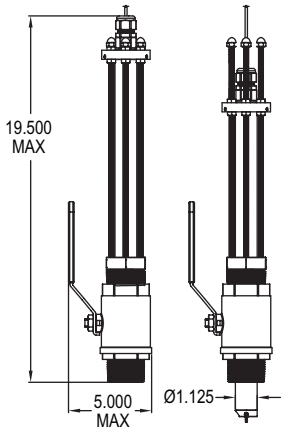
PFT-IAN-B111-S

PFT-HDN-S611-S shown with A-PFT-HKIT-SS



PFT-HDN-B611-S shown with A-PFT-HKIT





The **Series PFT Paddlewheel Flow Sensor** is used to monitor liquid flow rates in pipes from 1-1/2 to 40″ (40-1016 mm). The unit has one size-adjustable sensor and is available in brass or 316 SS body. The unit outputs a frequency proportional pulsed or 4-20 mA output. The pulse models are a square wave output signal with frequency proportional to the flow velocity and the 4-20 mA models have a linear output of the velocity with 4 mA equal to 0 ft/s and 20 mA equal to 25 ft/s.

FEATURES/BENEFITS

- Bearings and shaft offer excellent wear protection even in applications with particulate for long life
- Weatherproof and submersible rated for irrigation applications
- One unit adjustable over a large pipe size range
- Multiple wetted material choices offer application versatility
- Integral 4-20 mA output with no need for additional external components
- Sensor technology uses inductive sensing to sense the blades of the impeller therefore does not use magnets allowing low flow rate monitoring with no concerns regarding magnetic material in the flow

APPLICATIONS

- Irrigation
- Ground water remediation
- Cooling systems
- Pump protection
- Leak detection
- Filtration systems

SPECIFICATIONS

Service: Water-based fluids.
Range: 1.2 to 25 ft/s (0.37 to 7.62 m/s).
Wetted Materials: Body and fitting: Brass or 316 SS; fitting O-ring: FKM standard, silicone or Buna-N optional; impeller: 316 SS; shaft: Tungsten carbide standard or 316 SS optional; bearing: PTFE standard.
Linearity: ±1.0% of FS.
Repeatability: ±0.5% of FS.
Temperature Limits: -40 to 212°F (-40 to 100°C).
Pressure Limits: 400 psig (27.6 bar) @ 100°F (37.8°C), 325 psig (22.4 bar) @ 212°F (100°C).
Process Connection: 1-1/2″ NPT male or 1-1/2″ BSPT male standard, 2″ NPT male or 2″ BSPT male optional.
Output: Pulse: NPN open collector with square wave output, rated 60 V @ 50 mA max; Frequency: 3.2 to 200 Hz. Pulse width: 2.5 msec ±25%; 4-20 mA: 4 mA is 0 ft/s, 20 mA is 25 ft/s.
Power Requirement: 10-35 VDC.
Power Consumption: 40 mA (max.).
Electrical Connection: 22 AWG shielded UL type PTLC rated 105°C, 20´ (6.1 m) long with cable gland. Can be extended up to 2000´ (609 m) with similar cable. Optional UL listed burial rated cable.
Enclosure Rating: NEMA 6P (IP67)*.
Housing Materials: Brass or 316 SS.
Weight: 3 lb (1.36 kg).
Agency Approvals: CE.

*Brass units IP67 only.

MODEL CHART

Example	PFT	-I	D	N	-B	1	1	1	-S	-ST	PFT-IDN-B111-S-ST
Series	PFT										Paddlewheel flow sensor
Style		I H									Insertion Hot-tap insertion
Output			D A								600UA/40 MA 2.5 MS pulse Analog 4-20 mA transmitter
Approvals				N							None
Body Material					B S						Brass body 316 SST body
Mounting						1 2 3 4 5 6 7 8					1-1/2″ NPTM mounting 2″ NPTM mounting 1-1/2″ male BSPT mounting 2″ male BSPT mounting 1-1/2″ NPTM hot tap with valve 1-1/2″ NPTM hot tap without valve 1-1/2″ male BSPT hot tap with valve 1-1/2″ male BSPT hot tap without valve
O-Ring Material							1 2 3				FKM fluoroelastomer Silicone (FDA approved) Buna-N
Wetted Materials								1 2			Tungsten-carbide shaft, 316 SS impeller, PTFE bearing 316 SS shaft, 316 SS impeller, PTFE bearing
Electrical Connection									S B		22 GA shielded wire, 20 ft (6.1 m) 18 GA UL listed burial rated, 4 ft (1.2 m)
Options										ST	Stainless steel tag

MODEL CHART

Model	Description
PFT-IAN-B111-S	Standard brass 1-1/2″ NPTM analog output
PFT-IAN-S111-S	Standard 316 SST 1-1/2″ NPTM analog output
PFT-IDN-B111-S	Standard brass 1-1/2″ NPTM pulse output
PFT-IDN-S111-S	Standard 316 SST 1-1/2″ NPTM pulse output
PFT-HAN-B611-S	Hot tap without valve brass 1-1/2″ NPTM analog output
PFT-HAN-S611-S	Hot tap without valve 316 SST 1-1/2″ NPTM analog output
PFT-HDN-B611-S	Hot tap without valve brass 1-1/2″ NPTM pulse output
PFT-HDN-S611-S	Hot tap without valve 316 SST 1-1/2″ NPTM pulse output

ACCESSORIES

Model	Description
A-PFT-HKIT	1-1/2″ Brass valve NPT with nipple
A-PFT-HKIT-BSPT	1-1/2″ Brass valve BSPT with nipple
A-PFT-HKIT-SS	1-1/2″ SS valve NPT with nipple
A-PFT-HKIT-SS-BSPT	1-1/2″ SS valve BSPT with nipple

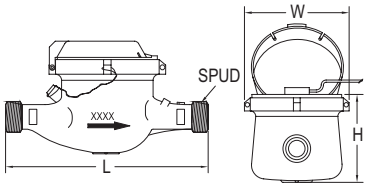
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES WNT

MULTI-JET BRASS BODY WATER METER

NSF Certified, Lead Free, Economical



Size in (mm)	Spud NPSM (BSPP)	Length 'L' in (mm)	Width 'W' in (mm)	Height 'H' in (mm)	Weight lb (kg)
5/8 x 1/2 [15]	3/4˝[3/4˝]	7-31/64 [190]	3-45/64 [94]	4-15/64 [107.5]	3.58 [1.63]
5/8 x 3/4 [15]	1˝[1˝]	7-31/64 [190]	3-45/64 [94]	4-15/64 [107.5]	3.81 [1.73]
3/4 [20]	1˝[1˝]	10-1/4 [260]	3-55/64 [98]	4-5/8 [117.5]	6.02 [2.73]
1 [25]	1-1/4˝[1-1/4˝]	10-1/4 [260]	3-55/64 [98]	4-5/8 [117.5]	6.02 [2.73]
1-1/2 [40]	2˝ [2˝]	11-13/16 [300]	4-51/64 [122]	4-5/8 [117.5]	12.02 [5.45]
2 [50]	2-1/2˝ [2-1/2˝]	11-13/16 [300]	5-45/64 [145]	5-9/16 [141.5]	13.23 [6]

VIDEO ONLINE

The **Series WNT Multi-Jet Brass Body Water Meter** is a series of mechanical, water totalizing meters that display the total water usage in gallons or cubic meter. They are available in a range of body sizes and include NPT or BSPT couplings. Its lead free, NSF certified body is ideal for potable water applications.

FEATURES/BENEFITS

- NSF/ANSI makes it ideal for no lead portable water requirements
- Multi-jet design allows for simplicity and accuracy with wide flow ranges, even in low flow applications
- Magnetically driven, hermetically sealed register does not leak or fog and is completely separated from the water
- Designed for long service life and maintenance-free operation
- Integral strainer that protects meter from particulate damage
- Easy installation with included coupling adapters
- Pulsed output proportional to flow allows for remote flow totalization

APPLICATIONS

- Potable water applications
- Residential water measurement
- Remote water monitoring

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: ECO BRASS®; Couplings: ECO BRASS®; Measuring chamber: ABS plastic.
Flow Range: See model chart.
Accuracy: Transitional flow: ±3%; Nominal flow: ±1.5%.
Temperature Limit: 122°F (50° C).
Pressure Limit: 150 psi (10 bar).
Totalizing Display Maximum: See model chart.
Output Signal: Pulse output with frequency proportional to flow rate.
Pulse Options: 0.1 gal, 1 gal, 10 gal, 100 gal per pulse.
Electrical Rating: 0.01 A @ 24 VAC/DC.
Electrical Connections: Color-coded lead wires, 4.5´ (1.5 m) long.
Mounting Orientation: Horizontal with register facing up.
Weight: See dimension chart.
Agency Approvals: NSF.

MODEL CHART

Model	Size	Coupling Size	GPM (Gallons Per Minute) Max Flow	Nominal Flow Range	Transitional Flow	Display Max (Gallons)	Pulse Rate (Gal/Pulse)
WNT-A-C-01	5/8˝ x 1/2˝	1/2˝ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WNT-A-C-02	5/8˝ x 3/4˝	3/4˝ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WNT-A-C-05	3/4˝ x 1˝	1˝ NPT	30	2 to 30	0.5	9,999,999.99	0.1
WNT-A-C-06	1˝	1˝ NPT	50	3 to 50	0.75	9,999,999.99	0.1
WNT-A-C-07-1	1-1/2˝	1-1/2˝ NPT	100	5 to 100	1.25	9,999,999.9	1
WNT-A-C-08-1	2˝	2˝ NPT	160	8 to 160	2	9,999,999.9	1

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

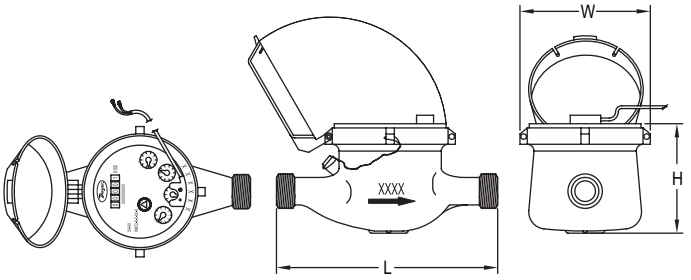
ECO BRASS® is a registered trademark patent by Mitsubishi Shindoh

Dwyer

SERIES WPT

MULTI-JET PLASTIC WATER METER

Lead Free, Economical Plastic Body, Pulse Output



Size in (mm)	Spud NPSM (BSPP)	Length 'L' in (mm)	Width 'W' in (mm)	Height 'H' in (mm)	Weight lb (kg)
5/8 x 1/2 [15]	3/4″ [3/4″]	6-1/2 [165]	3-23/32 [94]	4-15/64 [107.5]	1.55 [0.7]
5/8 x 3/4	1″ [1″]	7-1/2 [190]	3-23/32 [94]	4-15/64 [107.5]	1.77 [0.8]
3/4 x 1 [20]	1-1/4″ [1-1/4″]	10-1/4 [260]	3-23/32 [94]	4-15/64 [107.5]	2.43 [1.1]
1 [25]	1-1/4″ [1-1/4″]	10-1/4 [260]	3-23/32 [94]	4-15/64 [107.5]	2.43 [1.1]
1-1/2 [40]	2″ [2″]	9-5/8 [245]	4-13/16 [122]	5-45/64 [141.5]	4.41 [2]

VIDEO ONLINE

The **Series WPT Multi-Jet Plastic Water Meter** is a series of mechanical, water totalizing meters that display the total water usage in gallons with m^3 options. They are available in a range of body sizes and include NPT or BSPT optional couplings. The plastic body water meters can be used in potable water applications, some corrosive environments, or where an economical water totalizer is desired.

FEATURES/BENEFITS

- Plastic body ideal for lead free requirements
- Multi-jet design allows for simplicity and accuracy with wide flow ranges, even in low flow applications
- Magnetically driven, hermetically sealed register does not leak or fog and is completely separated from the water
- Designed for long service life and maintenance-free operation
- Integral strainer that protects meter from particulate damage
- Easy installation with included coupling adapters
- Pulsed output proportional to flow allows for remote flow totalization

APPLICATIONS

- Low cost residential water measurement
- Agriculture (fertilizers, pesticides, and herbicides)
- Irrigation
- Remote water monitoring

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Nylon 66; Couplings: Nylon 66, 1-1/2″ (40 mm) sizes lead free ECO BRASS® alloy; Measuring Chamber: ABS Plastic.
Flow Range: See model chart.
Accuracy: WPT-A-X-XX: Transitional Flow: ±3%; Nominal Flow: ±1.5%.
Temperature Limit: 122°F (50°C).
Pressure Limit: 150 psi (10 bar).
Totalizing Display Maximum: See model chart.
Output Signal: Pulse output with frequency proportional to flow rate.
Pulse Options: 0.1 gal, 1 gal, 10 gal, 100 gal per pulse (1 L, 10 L, 100 L, 1000 per pulse) See model chart.*
Electrical Rating: 0.01 A @ 24 VAC/DC.
Electrical Connections: Color-coded lead wires, 4.5′ (1.5 m) long.
Mounting Orientation: Horizontal with register facing up.
Weight: See dimension chart.

*Consult factory for m^3, BSPT units or additional pulse output options

MODEL CHART

Model	Size	Coupling Size	GPM (Gallons Per Minute) Max Flow	Nominal Flow Range	Transitional Flow	Display Max (Gallons)	Pulse Rate (Gal/Pulse)
WPT-A-C-01	5/8″ x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WPT-A-C-02	5/8″ x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WPT-A-C-03	3/4″ x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	0.1
WPT-A-C-04	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	0.1
WPT-A-C-01-1	1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	1
WPT-A-C-02-1	5/8″ x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	1
WPT-A-C-03-1	3/4″ x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	1
WPT-A-C-04-1	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	1
WPT-A-C-05-1	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	9,999,999.9	1
WPT-A-C-01-10	1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	10
WPT-A-C-02-10	5/8″ x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	10
WPT-A-C-03-10	3/4″ x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	10
WPT-A-C-04-10	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	10
WPT-A-C-05-10	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	9,999,999.9	10

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

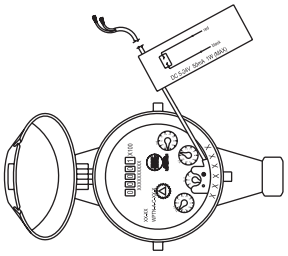
ECO BRASS® is a registered mark patented by Mitsubishi Shindoh

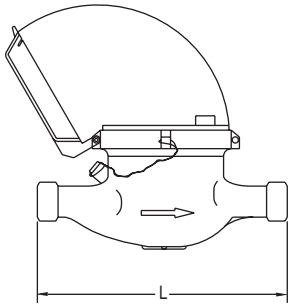
Dwyer

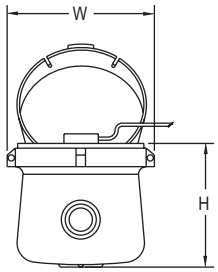
SERIES WPTN

MULTI-JET NSF CERTIFIED PLASTIC WATER METER

Lead Free, Economical Plastic Body, Pulse Output







Spud Size (BSPP)	Coupling Size (NPT)	L	W	H	Weight
5/8″	1/2″	6-1/2″ [165 mm]	3-23/32″ [94 mm]	4-15/64″ [107.5 mm]	1.55 lb [0.7 kg]
5/8″	3/4″	7-1/2″ [190 mm]	3-23/32″ [94 mm]	4-15/64″ [107.5 mm]	1.77 lb [0.8 kg]
3/4″	1″	10-1/4″ [260 mm]	3-55/64″ [98 mm]	4-5/8″ [117.5 mm]	2.43 lb [1.1 kg]
1″	1″	10-1/4″ [260 mm]	3-55/64″ [98 mm]	4-5/8″ [117.5 mm]	2.43 lb [1.1 kg]
1-1/2″	1-1/2″	11-13/16″ [300 mm]	4-13/16″ [122 mm]	5-45/64″ [141.5 mm]	4.41 lb [2 kg]

The **Series WPTN Multi-Jet NSF Certified Plastic Water Meter** is a series of plastic mechanical water totalizing meters with NSF certification. The meters display the total water usage in gallons. They are available in a range of body sizes and include NPT optional couplings. The plastic body water meters can be used where standard brass is not compatible, in potable water applications, some corrosive environments, or where an economical water totalizer is desired.

FEATURES/BENEFITS

- Plastic, NSF certified body is ideal for potable water applications
- Multi-jet design allows for accuracy in various flow ranges, even in low flow applications
- Magnetically driven, hermetically sealed register does not leak or fog and is completely separated from the water
- Designed for long service life and maintenance-free operation
- Integral strainer protects meter from particulate damage
- Included coupling adapters simplify installation
- Pulsed output proportional to flow allows for remote flow totalization

APPLICATIONS

- Potable water
- Commercial water usage
- Chiller water usage
- Low cost residential water measurement
- Agriculture (fertilizers, pesticides, and herbicides)
- Irrigation
- Remote water monitoring

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: PA; Couplings: PA; Measuring chamber: ABS plastic.
Flow Range: See model chart.
Accuracy: WPTN-A-X-XX: Minimum flow: ±3%; Nominal flow: ±1.5%.
Temperature Limit: 112°F (50°C).
Pressure Limit: 150 psi (10 bar).
Pressure Drop: See pressure drop curve.
Totalizing Display Maximum: See model chart.
Output Signal: Pulse output with frequency proportional to flow rate.
Pulse Options: 0.1 gal, 1 gal, 10 gal, 100 gal per pulse (1 L, 10 L, 100 L, 1000 L per pulse*). See model chart.
Electrical Rating: 0.01 A @ 24 VAC/DC.
Electrical Connections: 3.5 mm^2 stranded lead wires, 4.5′ (1.5 m) long.
Mounting Orientation: Horizontal with meter face facing up.
Weight: See dimension chart.
Approvals: NSF/ANSI 61.

*Consult factory.

MODEL CHART

Model	Size	Coupling Size	GPM (Gallons Per Minute) Maximum Flow	Nominal Flow Range	Minimum Flow	Display Max (Gallons)	Pulse Rate (Gal/Pulse)
WPTN-A-C-01	5/8″ x 1/2″	5/8″ x 1/2″	20	1 to 20	0.25	9,999,999.99	0.1
WPTN-A-C-02	5/8″ x 3/4″	5/8″ x 3/4″	20	1 to 20	0.25	9,999,999.99	0.1
WPTN-A-C-03	3/4″ x 1″	3/4″ x 1″	30	2 to 30	0.5	9,999,999.99	0.1
WPTN-A-C-04	1″	1″	50	3 to 50	0.75	9,999,999.99	0.1
WPTN-A-C-01-1	5/8″ x 1/2″	5/8″ x 1/2″	20	1 to 20	0.25	9,999,999.99	1
WPTN-A-C-02-1	5/8″ x 3/4″	5/8″ x 3/4″	20	1 to 20	0.25	9,999,999.99	1
WPTN-A-C-03-1	3/4″ x 1″	3/4″ x 1″	30	2 to 30	0.5	9,999,999.99	1
WPTN-A-C-04-1	1″	1″	50	3 to 50	0.75	9,999,999.99	1
WPTN-A-C-05-1	1-1/2″	1-1/2″	100	5 to 100	1.5	99,999,999.9	1
WPTN-A-C-01-10	5/8″ x 1/2″	5/8″ x 1/2″	20	1 to 20	0.25	9,999,999.99	10
WPTN-A-C-02-10	5/8″ x 3/4″	5/8″ x 3/4″	20	1 to 20	0.25	9,999,999.99	10
WPTN-A-C-03-10	3/4″ x 1″	3/4″ x 1″	30	2 to 30	0.5	9,999,999.99	10
WPTN-A-C-04-10	1″	1″	50	3 to 50	0.75	9,999,999.99	10
WPTN-A-C-05-10	1-1/2″	1-1/2″	100	5 to 100	1.5	99,999,999.9	10
WPTN-A-C-01-100	5/8″ x 1/2″	5/8″ x 1/2″	20	1 to 20	0.25	9,999,999.99	100
WPTN-A-C-02-100	5/8″ x 3/4″	5/8″ x 3/4″	20	1 to 20	0.25	9,999,999.99	100
WPTN-A-C-03-100	3/4″ x 1″	3/4″ x 1″	30	2 to 30	0.5	9,999,999.99	100
WPTN-A-C-04-100	1″	1″	50	3 to 50	0.75	9,999,999.99	100
WPTN-A-C-05-100	1-1/2″	1-1/2″	100	5 to 100	1.5	99,999,999.9	100

Dwyer

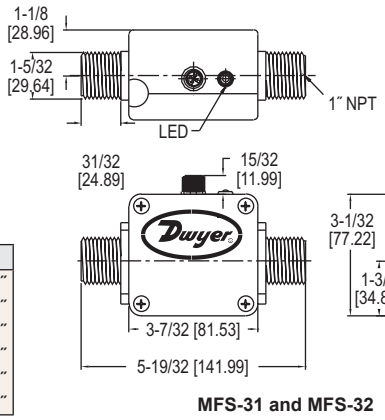
SERIES MFS & MFS2

MAGNETIC INDUCTIVE FLOW SENSORS

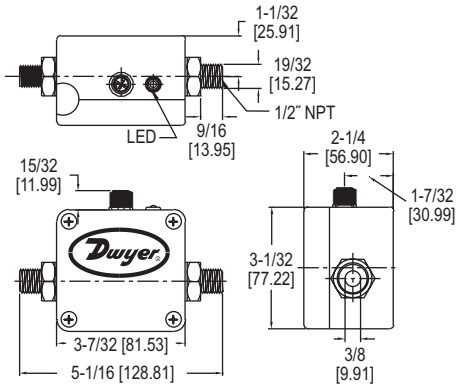
No Moving Parts, Frequency and 4-20 mA Output, Maintenance-Free

MFS

Model	L1	L2	D1	D2
MFS2-1	4″	0.86″	1/2-14″ NPT	0.31″
MFS2-2	4″	0.86″	1/2-14″ NPT	0.31″
MFS2-3	4.02″	0.86″	3/4-14″ NPT	0.55″
MFS2-4	4.41″	1.04″	1-11.5″ NPT	0.71″
MFS2-5	4.41″	1.04″	1-11.5″ NPT	0.71″
MFS2-6	4.81″	1.13″	1-1/4-11.5″ NPT	0.98″

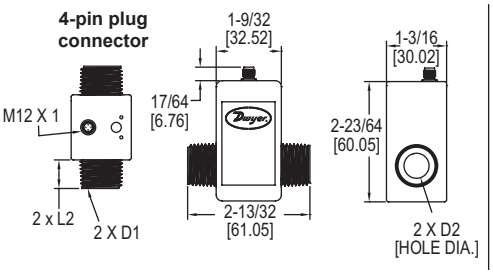


MFS-31 and MFS-32

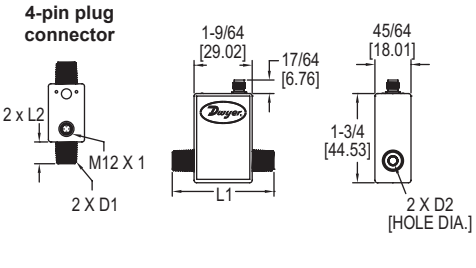


MFS-11 and MFS-12
MFS-21 and MFS-22

MFS2



MFS2-6



MFS2-1/5

The **Series MFS & MFS2 Magnetic Inductive Flow Sensors** are compact, 316 SS body, in line flowmeters with pulse and optional analog 4-20 mA output. It is available in a variety of flow ranges from 0.25 to 52.8 GPM (1 to 200 LPM) and process connection sizes of 1/2″ and 1″ NPT.

FEATURES/BENEFITS

- Long life cycle with no moving parts to wear or break
- Can be applied in applications dealing with contaminated media with no mechanical component in the flow
- Obstruction free pipe cross-section yields low pressure drop
- Unaffected by change in temperature, density, viscosity or concentration

APPLICATIONS

- Contaminated liquid flow monitoring
- Flow of conductive liquids
- Water and wastewater treatment
- Industrial systems
- Irrigation applications

SPECIFICATIONS

Service: Compatible, non-coating, conductive liquids.
Range: See model chart.
Wetted Materials: Electrodes: 316 SS; Process connections: MFS: 316 SS; MFS2: PVDF; Measuring pipe: MFS: PEEK-GF30; Gasket: EPDM.
Accuracy: MFS: ±2% of reading; MFS2: ±1% or reading.
Repeatability: 1%.
Temperature Limits: MFS: Process: 32 to 194°F (0 to 90°C); Ambient: 41 to 158°F (5 to 70°C); MFS2: Process: 14 to 140°F (-10 to 60°C); Ambient: 41 to 140°F (5 to 60°C).
Pressure Limits: MFS: 232 psi (16 bar); MFS2: 145 psi (10 bar) @ 68°F (20°C); 116 psi (8 bar) @ 104°F (40°C); 87 psi (6 bar) @ 140°F (60°C).
Response Time: MFS: < 500 ms; MFS2:< 100 ms.
Power Requirements: 24 VDC ±10%.
Power Consumption: 0.6 W.
Output: Frequency: Square-wave, NPN or PNP; Analog: 4-20 mA.
Loop Resistance: 250 Ω.
Current Consumption: Max 80 mA.
Minimum Conductivity of Medium: 50 µS/cm.
Flow Indication: LED green, flow proportional blinking.
Enclosure Rating: NEMA 4 (IP65).
Process Connection: See model chart.
Electrical Connection: Plug connector M12x1.
Weight: MFS-1X: 1.5 lb (0.68 kg); MFS-2X: 1.7 lb (0.77 kg); MFS-3X: 1.9 lb (0.87 kg); MFS2-1, -2, -3, -4, -5: 8 oz (226.8 g); MFS2-6: 1 lb (0.45 kg).

MODEL CHART

Model	Range GPM (LPM)	Minimum Output Signal GPM (LPM)	Process Connection	Output
MFS-11	0.25 to 5.3 (1 to 20)	0.13 (0.5)	1/2″ NPT	Frequency
MFS-21	0.5 to 10.5 (2 to 40)	0.25 (1)	1/2″ NPT	Frequency
MFS-31	2.5 to 52.8 (10 to 200)	1.3 (5)	1″ NPT	Frequency
MFS-12	0.25 to 5.3 (1 to 20)	0.13 (0.5)	1/2″ NPT	Frequency and analog

MODEL CHART

Model	Range GPM (LPM)	Process Connection	Output
MFS2-1	0.07 to 1.3 (0.25 to 5)	1/2″ male NPT	Frequency
MFS2-2	0.26 to 5.3 (1.0 to 20)	1/2″ male NPT	Frequency
MFS2-3	0.66 to 13.2 (2.5 to 50)	3/4″ male NPT	Frequency
MFS2-4	1.3 to 26.4 (5.0 to 100)	1″ male NPT	Frequency
MFS2-5	2.6 to 52.8 (10 to 200)	1″ male NPT	Frequency
MFS2-6	3.3 to 66.0 (12.5 to 250)	1-1/4″ male NPT	Frequency

ACCESSORIES

Model	Description
MFS-C3	4 pin cable socket M12x1 connect, 9.8 ft (3 m)
MFS-C5	4 pin cable socket M12x1 connect, 16.4 ft (5 m)
MFS-C10	4 pin cable socket M12x1 connect, 32.8 ft (10 m)

MFS-X 4 pin cable

Dwyer
SERIES IEF

INSERTION ELECTROMAGNETIC FLOW TRANSMITTER

Field Configurable, High Accuracy, BACnet or Modbus® Protocol

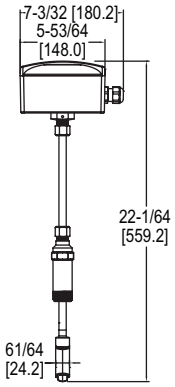
2 YEAR LIMITED WARRANTY

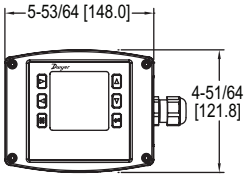
DEALER DESIGN AWARDS

Shown with A-IEF-VLV-BR** accessory valve kit

-LCD option shown

A-IEF-KIT





VIDEO ONLINE

The **Series IEF Insertion Electromagnetic Flow Transmitter** is an adjustable insertion flowmeter featuring electromagnetic technology that accurately and reliably measures fluid velocity in addition to providing several continuous signal outputs. This series is specifically designed to offer superior performance paired with simple installation and use. One unit is adjustable to fit pipe sizes from 4 to 36″ (102 to 914 mm), and offers several output options including selectable BACnet MS/TP or Modbus® RTU communications protocol over 2-wire RS-485 in addition to the standard analog, frequency and alarm outputs.

FEATURES/BENEFITS

- Field configurable setup displays (-LCD integral option or remote accessory A-IEF-DSP) allow for ultimate flexibility by accommodating a variety of application configurations with one model through multiple display configurations i.e. pipe size, pipe material, liquid type, analog output, pulse/frequency output, alarm outputs, communication outputs, damping, and calibration factor.
- High performance accuracy is maintained through changes in temperature, density or viscosity.
- Setup Wizard and installation tool are simple to use allowing for quick and precise installation.
- Accessory setup kit A-IEF-KIT ensures exact installation application depth with included thickness gage and measuring tape.
- Long Life Cycle and minimal maintenance requirements with no moving parts to wear or break and electrodes that discourage fouling.
- Isolation valve accessory options allow for installation in operational systems via hot-tap kit or easy removal without system downtime.
- NIST traceable pass/fail verification certificate included standard for Carbon Steel Schedule 40 pipes sized 4″ (102 mm), 6″ (150 mm), 8″ (200 mm), and 10″ (250 mm) with high accuracy option; 10″ (250 mm) with standard option.

APPLICATIONS

- Boiler feed water
- Chilled water
- Open and closed loop condenser water
- Irrigation system
- Municipal water distribution
- Process and coolant flow
- Ground water remediation
- Chemical processing
- Pump protection
- Wastewater
- Mining

SPECIFICATIONS

Service: Compatible clean or dirty non coating, conductive liquids.
Range: 0 to 20 ft/s (0 to 6 m/s).*
Wetted Materials: Body shaft/fitting: 316 SS; Electrodes: 316 SS; Electrode cap: Polymer/Polystyrene; O-ring: Silicon.
Accuracy: High accuracy units: ±0.5% of reading at calibrated velocity; ±1% of reading from 2 to 20 ft/s (0.6 to 6 m/s); ±0.02 ft/s (±0.006 m/s) at < 2 ft/s (0.6 m/s); Standard accuracy units: ±1% FS.
Temperature Limits: Ambient: -20 to 160°F (-29 to 71°C); Process: 15 to 250°F (-9 to 121°C); Storage: -40 to 185°F (-40 to 85°C).
Process Connection: 1″ NPT or BSPT with accessory full port ball valve options.
Pressure Limits: 400 psi (27.6 bar) @ 100° F (37.8°C).
Pressure Drop: < 0.1 psi at 12 ft/s in 4″ (101.6 mm) and larger pipe.
Outputs:
(1) Analog: 4-20 mA, 0-5 V, 0-10 V or 2-10 V (display selectable);
(1) Pulse/Frequency: 0-15 V peak pulse, 0 to 500 Hz or scalable pulse output (display selectable);
(2) Alarm: (1) Empty pipe detection or minimum/maximum velocity, (display selectable); (1) Reverse flow output indication.
Power Requirements: 12-42.4 VDC, .25 A @ 24 VDC; 12-36 VAC.

Electrical Connection: Removable terminal blocks, model selectable 1/2″ female NPT conduit connection, PG 16 gland or PG 16 gland with (2) 10 ft (3 m) 9 conductor 22 AWG plenum rated cables, accessory cable lengths up to 200 ft (61 m) optional.
Display (-LCD option): 2″ (5.08 cm) x 2″ (5.08 cm) graphic LCD with backlight.
Conductivity: >20 microsiemens.
Enclosure Material: Powder coated die cast aluminum.
Enclosure Ratings: NEMA 6P (IP68) (Non display models); NEMA 4X (IP66) (-LCD option).
Agency Approvals: BTL, CE, NSF/ANSI 61 and 372.

COMMUNICATIONS (-COM OPTION)
Type: BACnet MS/TP or Modbus® RTU communication protocol (default disabled, display selectable).
Supported Baud Rates: 9600, 19200, 38400, 57600, 76800, or 115200 bps (display selectable).
Device Load: 1/8 unit load.

ADDITIONAL SPECIFICATIONS
Applicable Pipe Material: Most popular plastic and metal pipes; i.e. Carbon steel, SS, copper, UPVC/PVDF, galvanized steel, mild steel, and brass.†
Applicable Pipe Size: 4-36″ (101 to 914 mm), model dependent. See model chart.
Diameter Length Requirements: >10 upstream; >5 downstream.
Glycol: 0 to 100% display selectable.

*For max flowrates >10 ft/s (3 m/s) order option -CC.
†Brass fittings and pipe are not to be used with NSF Certified models.

MODEL CHART

Example	IEF	-H	N	-CND	-LCD	IEF-HN-CND-LCD
Series	IEF					Insertion electromagnetic flow transmitter
Accuracy		L G S F I E T H				Standard accuracy <10″ (250 mm) pipe; 1% FS Standard accuracy >10″ (250 mm) pipe; 1% FS Standard accuracy 4 to 36″ (100 to 900 mm) pipe; 1% FS High accuracy 4″ (100 mm) pipe; 1% of reading High accuracy 6″ (150 mm) pipe; 1% of reading High accuracy 8″ (200 mm) pipe; 1% of reading High accuracy 10″ (250 mm) pipe; 1% of reading High accuracy 4 to 10″ (100 to 250 mm) pipe; 1% of reading
Process Connection			N B			1″ male NPT 1″ male BSPT
Housing Electrical Connection				CND PG 10		1/2″ female NPT conduit connection without cable PG gland without cable PG gland with 10´ (3 m) cable
Options					LCD COM NIST FC CC NW	Integral LCD display BACnet or Modbus® communication protocol (display selectable) Six point NIST traceable calibration certificate Factory calibration certificate for 0.5% of reading at single point Custom configured for specific installation NSF certified

Note: For CC option, must provide completed configuration paperwork.
Note: For maximum performance select -LCD option or setup display accessory.

ACCESSORIES

Model	Description
A-IEF-KIT	Setup kit (includes setup display, thickness gage and measuring tape), and universal power adapter
A-IEF-DSP	Setup display
A-IEF-CBL-50	Plenum rated cable 50 ft (15.2 m)
A-IEF-VLV-BR	1-1/4″ full port isolation valve brass kit**
A-IEF-VLV-SS	1-1/4″ full port isolation valve 316 SS kit
A-IEF-PA	AC wall adapter

**Brass fittings and pipe are not to be used with NSF Certified models. Brass valves are non-RoHS compliant.

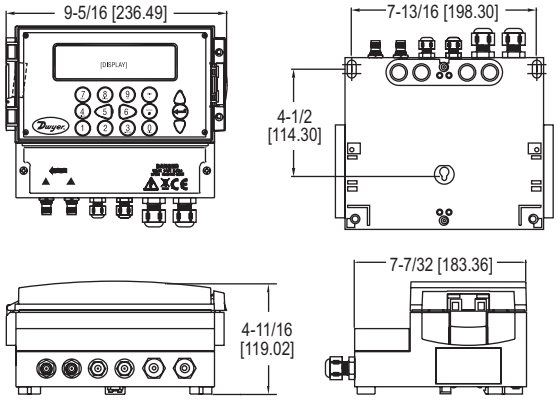
Modbus® is a registered trademark of Schneider Automation, Inc.

Dwyer

SERIES UFB

ULTRASONIC FLOWMETER SETS

Non-Invasive Pipe Flow Measurement, Easy Operation



The **Series UFB Ultrasonic Flowmeter Sets** utilize the transit-time difference for measuring flow rates in pipes. These units are permanent mount, where the converters can be mounted on a surface or pipe with a 4-20 mA and pulse output capabilities for pipe sizes from 1/2 to 79″ (13 to 2000 mm).

FEATURES/BENEFITS

- Non-invasive pipe measurement
- Easy-to-use compact and lightweight design, intended for homogeneous liquids that contain no air
- Simple installation with all necessary components included such as converter, sensor, cables and mounting accessories
- Sturdy IP65 rating, protecting it from dust and direct water contact

APPLICATIONS

- Water treatment
- Industrial systems
- Irrigation applications
- Treated water flow
- River water
- Sea water
- Potable water
- Demineralized water
- Glycol/water mix
- Hydraulic system
- Diesel oil
- Water use data logging

KIT INCLUDES

- Converter
- Set of transducers
- Ruled guide rail
- Steel banding
- Banding clips
- Set of transducer cables
- Set of high temperature interface cables
- Ultrasonic coupling grease

MODEL CHART - STANDARD VERSION		
Model	**Pipe Size Range in (mm)**	**Power Supply**
UFB-122	0.5 to 4.5 (13 to 115)	86-264 VAC
UFB-123	2 to 79 (50 to 2000)	86-264 VAC
UFB-222	0.5 to 4.5 (13 to 115)	24 VAC/VDC
UFB-223	2 to 79 (50 to 2000)	24 VAC/VDC

OPTIONS	
Use order code:	**Description**
NISTCAL-FU	NIST traceable calibration certificate

SPECIFICATIONS

Service: Homogeneous liquids that do not contain more than 3% of air bubbles or particulate and capable of ultrasonic wave propagation.
Inputs: TNC cable from sensors.
Range: 0.33 to 33 ft/s (0.1 to 10 m/s).
Display: 240 x 64 pixel graphic display, high contrast black on white with backlight; Languages: English, French, German, Swedish, Italian, Spanish, Portuguese, Russian, Norwegian, and Dutch; 5″ W x 1.3″ H (5 x 33.02 mm).
Accuracy: ±0.5 to ±2% of flow reading of flow rate > 0.03 ft/s (0.01 m/s) and pipe OD > 3.0 in (75 mm); ±3% of flow reading for flow rate > 0.03 ft/s (0.01 m/s) and pipe OD 0.5 to 3 in (13 to 75 mm); ±6% of flow reading for flow rate < 0.03 ft/s (0.01 m/s).
Power Requirements: 86-264 VAC (50 to 60 Hz) or 24 VAC/VDC (1 A max).
Power Consumption: 10.5 W.
Temperature Limits: Transducer: -4 to 275°F (-20 to 135°C); Controller: -4 to 122°F (-20 to 50°C).
Outputs: Analog 1 opto-isolated output: 4-20 mA, 0-16 mA or 0-20 mA (selectable); Error current: 0-26 mA (selectable); Load resistance: 620 Ω max; Alarm: 2 opto-isolated MOSFET NO relays, 48 V at 500 mA, maximum 200 Hz; Pulsed: 1 opto-isolated MOSFET relay, 48 V at 500 mA, 1 to 250 pps; Pulse width: 2 to 500 ms (selectable).
Enclosure Rating: IP65 when using TNC connector; Transducers IP54.
Materials: Plastic ABS and aluminum.
Repeatability: ±0.5 % of measured value or 0.03 ft/s (0.01 m/s).
Electrical Connections: Removable screw-in type terminal block.
Mounting: Wall mounted using 3 type M4 screws.
Turbidity: < 3 % by volume of particulate content.
Permissible Air Content: < 3% by volume.
Response Time: < 500 ms.
Weight: Unit not including accessories: 2.80 lb (1.26 kg); Unit including accessories: 9.92 lb (4.5 kg).
Agency Approvals: CE.

ADDITIONAL SPECIFICATIONS

Applicable Pipe Material: Carbon steel, SS, copper, UPVC/PVDF, concrete, mild steel, glass, brass.
Applicable Pipe Lining: Rubber, glass, concrete, epoxy, steel, other*.
Pipe Wall Thickness: 0.04 to 3″ (1 to 75 mm).
Pipe Lining Thickness: < 1″ (< 25 mm).

*Selectable option for special material with known propagation rate of lining material.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

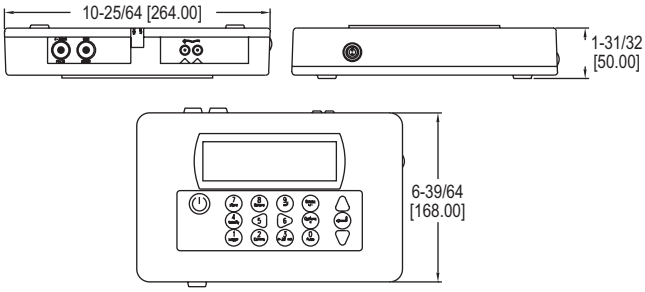
SERIES PUB & PUF

PORTABLE ULTRASONIC FLOWMETER KITS

Portable, Non-Invasive and Data Logging Option

PUB

PUF



The **Series PUB & PUF Portable Ultrasonic Flowmeter Kits** utilize the transit-time difference for measuring flow rates in pipes non-invasively. Units offer flow rate local display with analog and pulsed outputs. The Series PUF offers the same features plus data logging capability.

FEATURES/BENEFITS

- Non-invasive pipe measurement
- Compact and lightweight
- Incorporate the latest electronics and signal processing technologies realizing high performance and easy operation
- Ideal for on-the-go flow monitoring, capable of 20 hours continuous operation with built-in, rechargeable battery
- Easy to read graphic display with convenient backlight for visual comfort
- Efficient layout of the function keys for easy to use programming
- PUB features rugged carrying case with molded foam inserts
- PUF boasts an IP67 rated case to hold and protect all equipment conveniently

APPLICATIONS

- Water treatment
- Industrial systems
- Irrigation applications
- Treated water flow
- River water
- Sea water
- Potable water
- Demineralized water
- Glycol/water mix
- Hydraulic system
- Diesel oil
- Water use data logging

KIT INCLUDES

- Converter
- Set of transducers
- Transducer holders
- Set of transducer cables (6.56´ (2 m))
- 4-20 mA communication cables
- 12 VDC power supply
- Ultrasonic coupling grease
- Set of chains
- Ruled guide rail
- Test block
- Carrying case

MODEL CHART - STANDARD VERSION	
Model	**Pipe Size Range in (mm)**
PUB-10	0.5 to 4.5 (13 to 115)
PUB-20	2 to 40 (50.7 to 1016)

MODEL CHART - DATA LOGGING VERSION	
Model	**Pipe Size Range in (mm)**
PUF-1001	0.5 to 78 (13 to 2000)
PUF-1002	0.5 to 4.5 (13 to 115)
PUF-1003	2 to 78 (50 to 2000)

SPECIFICATIONS
Service: Homogeneous liquids that do not contain air bubbles capable of ultrasonic wave propagation. **Inputs:** Lemo connector cable from sensors. **Range:** 0.33 to 65.62 ft/s (0.1 to 20 m/s). **Display:** 240 x 64 pixel graphic display, high contrast black on white with backlight; Languages: English, French, German, Swedish, Italian, Spanish, Portuguese, Russian, Norwegian, and Dutch; 5.2″ W x 1.5″ H. **Accuracy:** ±0.5 to 2% of flow reading for flow rate > 0.66 ft/s (0.2 m/s) and pipe ID > 2.95 in (75 mm); ±3% of flow reading for flow rate > 0.66 ft/s (0.2 m/s) and pipe ID in range 0.512 to 2.95″ (13 to 75 mm); ±6% of flow reading for flow rate < 0.66 ft/s (0.2 m/s). **Power Requirements:** 9-24 VDC, (1) 5-Cell NiMH battery, internal, factory replaceable (continuous operation time: 20 hours with back-light and output off) (recharging time: 6.5 hours, power adapter used). **Power Consumption:** 10.5 W. **Power Adapter:** 110/240 VAC adapter. UK,US, European adapters included. **Temperature Limits:** -4 to 275°F (-20 to 135°C). **Outputs:** Analog: 1 opto-isolated output: 4-20 mA, 0-16 mA or 0-20 mA (selectable); Error current: 0-26 mA (selectable); Load resistance: 620 Ω max; Pulse: 1 opto-isolated MOSFET relay, 150 mA max, 500 pps max, 200 Hz max. **Serial Communications:** USB; RS-232 (PUF only). **Enclosure Rating:** Converter: IP54; Transducers: IP51. **Materials:** Flame retardant injection molded ABS plastic. **Repeatability:** ±0.5 % of measured value or ±0.066 ft/s (0.02 m/s). **Electrical Connections:** Multi-pin Lemo plugs. **Turbidity:** < 3% by volume of particulate content. **Permissible Air Content:** < 3% by volume. **Response Time:** < 500 ms. **Weight:** Unit without accessories: 2.3 lb (1.06 kg); Unit with accessories in carrying case: 13.23 lb (6.0 kg). **Agency Approvals:** CE. **ADDITIONAL SPECIFICATIONS** **Applicable Pipe Material:** Carbon steel, SS, copper, UPVC/PVDF, concrete, galvanized steel, mild steel, glass, brass. **Applicable Pipe Lining:** Rubber, glass, concrete, epoxy, steel, other*. **Pipe Wall Thickness:** 0.04 to 3″ (1 to 75 mm). **Pipe Lining Thickness:** < 1″ (< 25 mm).
*Selectable option for special material with known propagation rate of lining material.

OPTIONS	
Use order code:	**Description**
NISTCAL-FU	NIST traceable calibration certificate

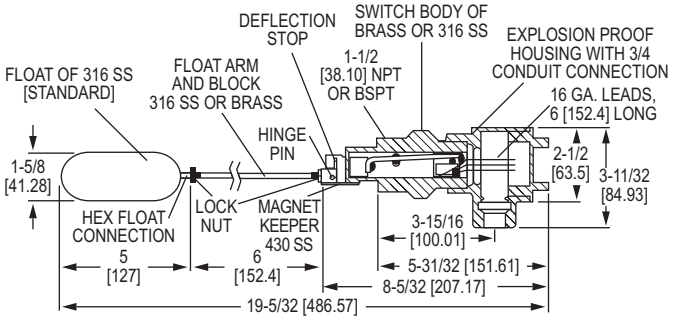
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

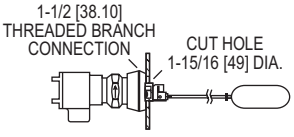
Dwyer

SERIES L4 | W.E. ANDERSON™ BY DWYER

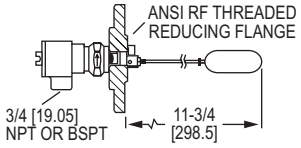
FLOTECT® FLOAT SWITCH

Magnetically Operated Switch, Leak Proof Body, Explosion-Proof

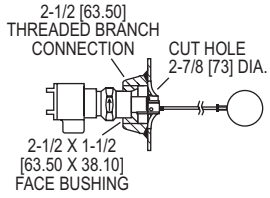




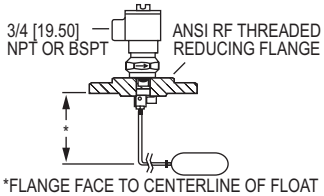
Standard installation



Horizontal, flange installation



Horizontal, 2-1/2 threaded branch connection installation with optional 2-1/2 [64] spherical float



*FLANGE FACE TO CENTERLINE OF FLOAT SPECIFIED BY CUSTOMER. NORMALLY SHOULD NOT EXCEED 20″ [508 mm].

Vertical, flange installation

The **Series L4 Flotect® Float Switch** is a rugged and reliable float switch which operates automatically to indicate tank level.

FEATURES/BENEFITS
- Unique magnetically actuated switching design gives superior performance
- No bellows, springs, or seals to fail
- Free-swinging float attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm
- Float arm hinge design limits the arm angle to prevent vertical hang up

APPLICATIONS
- Direct pump control for maintaining level
- Automatic tank dump operations
- Level control
- Valve control
- Level alarm in sumps, scrubber systems, hydro-pneumatic tanks, boilers, and water/wastewater treatment processes

OPTIONS	
To order add suffix:	**Description**
-D	DPDT contacts
-NH	No housing
-MV	Gold plated contacts for dry circuits (see electrical rating in specifications, no listings or approvals)
-MT	High temperature rated 400°F (204°C) (see electrical rating in specifications, no listings or approvals)
-TRI	Time delay relay with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes (increasing flow)
-TRD	Time delay relay with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes (decreasing flow) (no listings or approvals)
-316	*316 SS magnet keeper option to replace standard 430 SS
-AT	ATEX compliant construction
-IEC	IECEx certified construction
-TOP	Top mounted for vertical flange installation [distance from flange face to centerline of float to be specified, 20″ (508 mm) max]
-50	Optional float (2-1/2″ spherical) 304 SS rated 50 psig (3.5 bar) and 0.5 min. s.g.
-150	Optional float (2-1/2″ spherical) 316 SS rated 150 psig (10.3 bar) and 0.7 min. s.g.
-300	Optional float (2-1/2″ spherical) 304 SS rated 300 psig (20.7 bar) and 0.7 min. s.g.
-BSPT	1-1/2″ female BSPT process connection
*316 SS body and float with 430 SS magnet keeper (wetted part).	
Note: Consult factory for price and availability of fittings for L4 installation. Threaded branch connection, bushings, and flanges are available in a variety of sizes and materials.	

SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials: Float and Rod: 316 SS; Body: Brass or 316 SS standard; Magnet Keeper: 430 SS standard, 316 SS or nickel optional.
Temperature Limits: 4 to 275°F (-20 to 135°C) standard, MT high temperature option 400°F (205°C) [MT option not UL, CSA, ATEX or IECEx]. ATEX and IECEx options: Ambient temperature -4 to 163°F (-20 to 73°C); Process temperature -4 to 163°F (-20 to 73°C).
Pressure Limit: Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar). Standard float rated 100 psig (6.9 bar). For other floats, see options.
Enclosure Rating: Weatherproof and Explosion-proof. **Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G.
ATEX CE 2813 Ex II 2 G Ex db IIB T6 Gb -20°C≤Tamb≤73°C. -20°C≤Process Temp≤73°C.
EU-Type Certificate No.: KEMA 03 ATEX 2383.
ATEX Standards: EN 60079-0:2012+A11:2013.
IECEx Certified: For Ex db IIB T6 Gb -20°C≤Tamb≤73°C. -20°C≤Process Temp≤73°C.
IECEx Certificate of Conformity: IECEx DEK 11.0071.
IECEx Standards: IEC 60079-0:2011; IEC 60079-1:2014.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL, FM, ATEX and IECEx models: 10 A @ 125/250 VAC (V~). CSA models: 5 A @ 125/250 VAC (V~); 5 A res., 3 A ind. @ 30 VDC (V⎓). MV option: 1 A @ 125 VAC (V~); 1 A res., .5 A ind. @ 30 VDC (V⎓). MT option: 5 A @ 125/250 VAC (V~). [MT and MV option not UL, CSA, FM, ATEX or IECEx].
Electrical Connections: UL and CSA models: 16 AWG, 6″ (152 mm) long. ATEX and IECEx unit: terminal block.
Conduit Connection: 3/4″ (19.05 mm) female NPT standard or M25 with -BSPT option.
Process Connection: 1-1/2″ (38.10 mm) male NPT or 1-1/2″ (38.10 mm) male BSPT standard, 2-1/2″ (63.50 mm) male NPT or 2-1/2″ (63.50 mm) male BSPT standard optional floats.
Mounting Orientation: Horizontal installation standard, optional vertical top mount.
Dead Band: 3/4″ (19 mm) for standard float.
Specific Gravity: 0.7 minimum with standard float. For other floats see model chart.
Weight: 4 lb 9 oz (2.07 kg).
Agency Approvals: ATEX, CE, CSA, FM, IECEx, UL**.

**No housing option (-NH) has no approvals.

MODEL CHART		
Model	**Description**	**Process Connection**
L4	Brass body, side wall mounting	NPT
L4-NH**	Brass body, side wall mounting, no housing	NPT
L4-SS	316 SS* body, sidewall mounting	NPT
L4-SS-NH**	316 SS* body, sidewall mounting, no housing	NPT
L4-BSPT	Brass body, side wall mounting	BSPT
L4-SS-BSPT	316 SS* body, sidewall mounting	BSPT
*316 SS body and float with 430 SS magnet keeper (wetted part). **No housing option (-NH) has no approvals.		

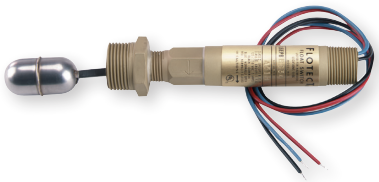
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

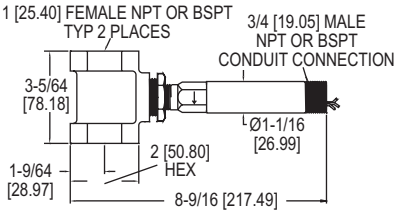
Dwyer

SERIES L6 | W.E. ANDERSON™ BY DWYER

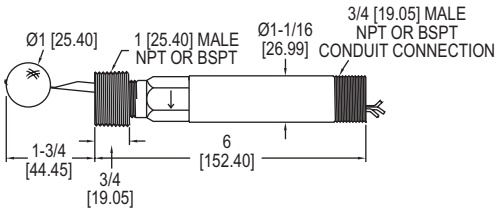
FLOTECT® LIQUID LEVEL SWITCHES

Easy In-wall or External Installation, Up to 2000 psig (138 bar), Compact Size

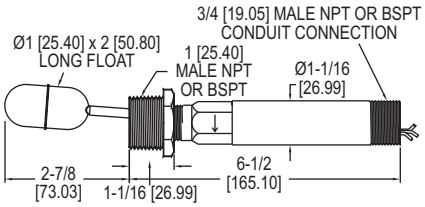




Model L6 with external float chamber



Model L6 with spherical float



Model L6 with cylindrical float

The **Series L6 Flotect® Liquid Level Switches** are rugged and reliable float switches which operates automatically to indicate tank level. It is offered with a 303 SS or brass body with spherical or cylindrical float options.

FEATURES/BENEFITS

- Compact design is built for years of trouble-free service
- Simple and dependable operation with no mechanical linkage
- Float lever pivoted within the body moves when the process liquid displaces the float and magnet on the opposite end of the float lever controls a second magnet on the switch actuating lever located in the switch housing
- Leak proof lower body machined from bar stock
- Side wall or direct tee mounting options available to act as an external float chamber
- Weatherproof and explosion-proof body for demanding outdoor applications
- Electrical assembly can be easily replaced without removing the unit from the installation so that the process does not have to be shut down
- Sensitive to level changes of less than 1/2″ (12 mm)

APPLICATIONS

- Direct pump control for maintaining level
- Automatic tank dump operations
- Level control
- Valve control
- Level alarm in sumps, scrubber systems, hydro-pneumatic tanks, boilers, and water/wastewater treatment processes

OPTIONS

To order add suffix:	Description
-MV	Gold plated contacts for dry circuits (see electrical rating in specifications)
-MT	High temperature rated 400°F (204°C) (see electrical rating in specifications, no listings or approvals, only available on models with stainless steel floats)
-CSA	CSA and UL approved construction, includes weatherproof and explosion-proof junction box
-AT	ATEX compliant construction includes, weatherproof and explosion-proof, junction box
-IEC	IECEx certified construction, weatherproof and explosion-proof, junction box

Note: M25 is not available with the CSA housing.

DPDT Contacts

Note: To order, change seventh character in model number to “D”.
Example: L6EPB-B-D-3-O

Options Not Shown: 1-1/2″ and 2″ (38.10 and 50.80 mm) male NPT or 1-1/2″ and 2″ (38.10 and 50.80 mm) male BSPT process connection, 2″ female NPT or 2″ female BSPT.

SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials: Float: Solid polypropylene or 304 SS; Lower body: Brass or 303 SS; Magnet: Ceramic; External float chamber (tee): Matches lower body choice of brass or 303 SS; Other: Lever arm, spring, pin, etc.: 301 SS.
Temperature Limit: -4 to 220°F (-20 to 105°C) Standard, MT high temperature option 400°F (205°C)(MT not UL, CSA, ATEX, IECEx and KC). ATEX compliant AT, IECEx IEC and KC option ambient temperature -4 to 167°F (-20 to 75°C) process temperature: -4 to 220°F (-20 to 105°C).
Pressure Limits: See model chart.
Enclosure Rating: Weatherproof and explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on SS body models only).
ATEX CE 2813 Ex II 2 G Ex db IIC T6 Gb Process Temp≤75°C.
EU-Type Certificate No.: KEMA 04ATEX2128.
ATEX Standards: EN 60079-0:2012+A11:2013; EN 60079-1:2014.
IECEx Certified: For Ex d IIC T6 Gb Process Temps≤ 75°C.
IECEx Certificate of Conformity: IECEx DEK II.0039.
IECEx Standards: IEC 60079-0:2011; IEC 60079-1:2014.
Korean Certified (KC) for Ex db IIC T6 Gb Process Temp≤75°C.
KTL Certificate Number: 12-KB4BO-0091.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL models: 5 A @ 125/250 VAC (V~). CSA, ATEX and IECEx models: 5 A @ 125/250 VAC (V~); 5 A res., 3 A ind. @ 30 VDC (V⎓). MV option: .1 A @ 125 VAC (V~). MT option: 5 A @125/250 VAC (V~). [MT option not UL, CSA, ATEX or IECEx].
Electrical Connections: UL models: 12-KB4BO-0091 18 AWG, 18″ (457.20 mm) long. ATEX/CSA/IECEx models: Terminal block.
Upper Body: Brass or 303 SS.
Conduit Connection: 3/4″ (19.05 mm) male NPT standard, 3/4″ (19.05) female NPT or M25 with BSPT option on junction box models.
Process Connection: 1″ (25.40 mm) male NPT or 1″ (25.40 mm) male BSPT on models without external float chamber, 1″ (25.40 mm) female NPT or 1″ (25.40 mm) female BSPT on models with external float chamber.
Mounting Orientation: Horizontal with index arrow pointing down.
Specific Gravity: See chart.
Weight: Approximately 1 lb (.5 kg) without external float chamber, 1.75 lb (.8 kg) with external float chamber.
Agency Approvals: ATEX, CE, CSA, IECEx, KTL, UL.

MODEL CHART

Model	Body	Installation	Float Material	Process Connection	Max. Pressure psig (bar)	Min. S.G.
L6EPB-B-S-3-O	Brass	Side wall mounting	Polypropylene spherical	NPT	1000 (69)	0.9
L6EPB-B-S-3-A	Brass	Side wall mounting	304 SS cylindrical	NPT	200 (13.8)	0.5
L6EPB-B-S-3-C	Brass	Side wall mounting	304 SS spherical	NPT	350 (24.1)	0.7
L6EPB-B-S-3-B	Brass	Brass external float chamber (tee)	Polypropylene spherical	NPT	250 (17.2)	0.9
L6EPB-B-S-3-H	Brass	Brass external float chamber (tee)	304 SS spherical	NPT	250 (17.2)	0.7
L6EPS-S-S-3-O	303 SS	Side wall mounting	Polypropylene spherical	NPT	2000 (138)	0.9
L6EPS-S-S-3-A	303 SS	Side wall mounting	304 SS cylindrical	NPT	200 (13.8)	0.5
L6EPS-S-S-3-C	303 SS	Side wall mounting	304 SS spherical	NPT	350 (24.1)	0.7
L6EPS-S-S-3-S	303 SS	304 SS external float chamber (tee)	Polypropylene spherical	NPT	2000 (138)	0.9
L6EPS-S-S-3-L	303 SS	304 SS external float chamber (tee)	304 SS spherical	NPT	350 (24.1)	0.7

BSPT process connection and M25 conduit connection. **Note:** To order, change eighth character in model to “4”. **Example:** L6EPB-B-S-4-A

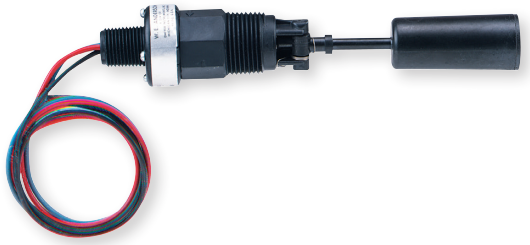
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

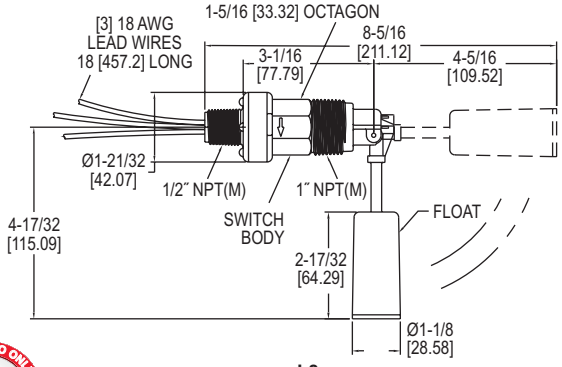
Dwyer

MODEL L8 | W.E. ANDERSON™ BY DWYER

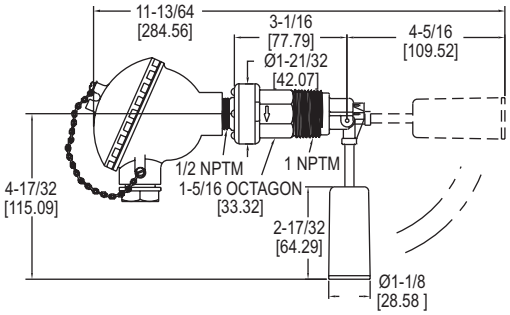
FLOTECT® LIQUID LEVEL SWITCHES

Low Cost, Leak Proof Body, Excellent Chemical Resistance





L8



L8-WP2

The **Model L8 Flotect® Liquid Level Switches** are float switches constructed of polyphenylene sulfide, Ceramic 8 and 316 SS. This liquid level switch provides accurate set point control of liquids with specific gravities as low as 0.6.

FEATURES/BENEFITS

- Features a leak proof body and float constructed from tough, durable polyphenylene sulfide which has excellent chemical resistance
- Liquid level snap switch is magnetically actuated with no direct mechanical linkage to leak or fail, assuring longer life and decreased maintenance costs
- Quick and easy installation with simple placement of the unit in a horizontal position with the index arrow pointing down
- UL recognized as an industrial motor controller per UL standard 508, suitable for mounting in a protected environment

APPLICATIONS

- Environmental control
- Waste water
- Scrubber systems
- Holding tanks
- Cooling towers
- Chemical/petroleum processing
- Plating and washing tanks
- Sewage treatment
- Car washes
- Remediation systems
- Thermal storage systems
- HVAC and building automation systems

SPECIFICATIONS
Service: Compatible liquids.
Wetted Materials: Float and body: Polyphenylene sulfide (PPS); Pin and spring: 316 SS or Inconel®; Magnet: Ceramic 8.
Temperature Limit: 212°F (100°C).
Pressure Limit: 150 psig (10.34 bar).
Enclosure Rating: General purpose. WP/WP2 option is weatherproof.
Switch Type: SPDT snap switch. MV option is a SPDT gold contact snap switch.
Electrical Rating: 5 A @ 125/250 VAC, 5 A resistive, 3 A inductive @ 30 VDC. MV option: 1 A @ 125 VAC, 1 A resistive, 0.5 A inductive @ 30 VDC.
Electrical Connections: 18 AWG, 18″ (460 mm) long.
Conduit Connection: 1/2″ male NPT, 1/2″ female NPT on WP and WP2.
Process Connection: 1″ male NPT.
Mounting Orientation: Horizontal with index arrow pointing down.
Weight: 5 oz (0.142 kg).
Specific Gravity: 0.6 minimum.
Agency Approvals: CE, cURus.

MODEL CHART	
Model	**Description**
L8	Level switch

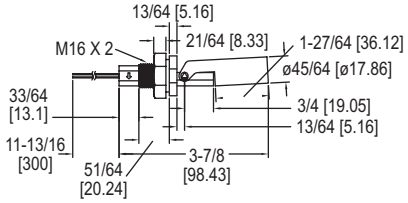
OPTIONS	
To order add suffix:	**Description**
-MV	Gold plated contacts for dry circuits. Rated 1 A @ 125 VAC; 1 A resistive, 0.5 A inductive @ 30 VDC
Example: L8-MV	
-INC	Inconel® alloy. Inconel® alloy replaces standard 316 SS wetted parts. Wetted parts are Inconel® Alloy, Ceramic 8, and Polyphenylene Sulfide.
Example: L8-INC	
-WP	Weatherproof enclosure. Optional housing is phenylpolioxide and provides weatherproof protection for electrical wiring. (Not UL approved)
Example: L8-WP	
-WP2	Weatherproof enclosure. Optional housing is aluminum and provides weatherproof protection for electrical wiring. (Not UL approved)
Example: L8-WP2	

LEVEL SWITCHES - HORIZONTAL/SPECIALTY

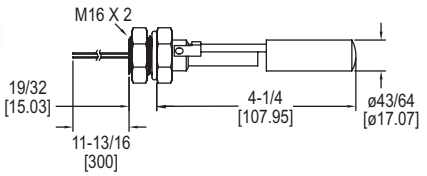
Low Cost, Hermetically Sealed Contacts

HORIZONTAL

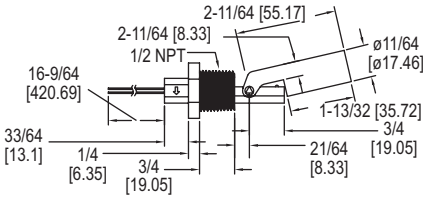
F6-HPS-11



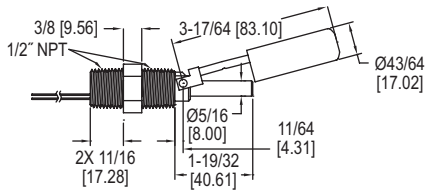
F6-MHS



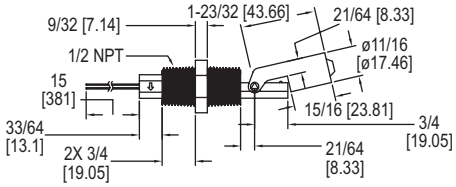
F6-HPS-21



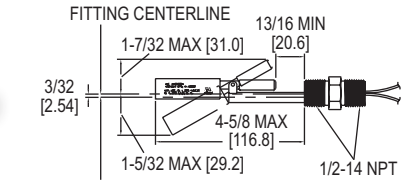
F6-MHS2



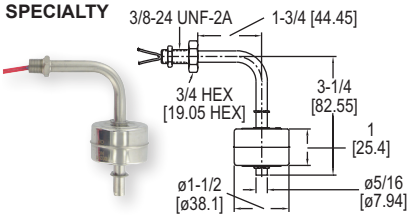
F6-HPS-31



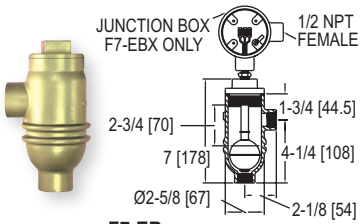
F7-HSS



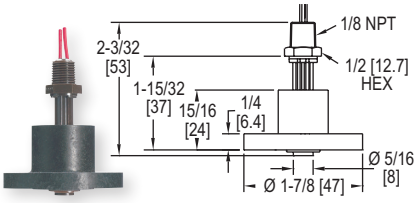
SPECIALTY



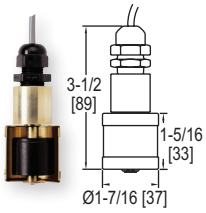
F7-SS6



F7-EB



F7-LL



F7-WBB

The **Series F6 & F7 Horizontal and Specialty Level Switches** are designed to mount through the walls of tanks or other vessels and unique applications to provide point level indication.

FEATURES/BENEFITS

- Hermetically sealed reed switches are actuated by magnets permanently bonded inside the float arm and can be easily adapted to open or close a circuit on rising or falling levels

APPLICATIONS

- Water level monitoring
- Oil level control
- Chemical level indication
- Sumps
- Stand pipes
- Tank level control

MODEL CHART

Model	Applications	Material Float/Stem	Temperature Limits	Pressure Limits	Min. S.G.	Electrical Rating	Wire Leads	Mtg	Weight oz (g)
F6-HPS-11	Water, oils, chemicals	Polypropylene/ polypropylene	176°F (80°C)	116 psig (8 bar)	0.60	20 VA: 0.08 A @ 240 VAC	20 AWG, 11.8″ (30 cm)	M16 x 2	1.23 (38)
F6-HPS-21	Water, oils, chemicals	Polypropylene/ polypropylene	176°F (80°C)	116 psig (8 bar)	0.60	20 VA: 0.08 A @ 240 VAC	20 AWG, 11.8″ (30 cm)	1/2″ NPT	1.23 (38)
F6-HPS-31	Water, oils, chemicals	Polypropylene/ polypropylene	176°F (80°C)	116 psig (8 bar)	0.60	20 VA: 0.08 A @ 240 VAC	20 AWG, 11.8″ (30 cm)	1/2″ NPT	1.41 (40)
F6-MHS	Corrosives	304 SS/304 SS	257°F (125°C)	218 psig (15 bar)	0.85	20 VA: 0.08 A @ 240 VAC	22 AWG, 11.8″ (30 cm)	M16 x 2	3.35 (95)
F6-MHS2	Water, oils, chemicals	304 SS/304 SS	257°F (125°C)	363 psig (25 bar)	0.85	70 VA: 0.7 A @ 250 VAC	22 AWG, 11.8″ (30 cm)	1/2″ NPT	4.8 (136)
F7-HSS†	High temp/pressure, corrosive, expl.	316 SS/316 SS	392°F (200°C)	300 psig (20.7 bar)	0.60	30 VA: 0.14 A @ 220 VAC	22 AWG, 24″ (61 cm)	1/2″ NPT (int/ext)	3 (94)
Model	**Style/Applications**	**Material Float/Stem**	**Temperature Limits**	**Pressure Limits**	**Min. S.G.**	**Electrical Rating**	**Wire Leads**	**Mtg**	**Weight oz (g)**
F7-SS6	Bent stem/liquids with metal particles	316 SS/316 SS	300°F (149°C)	100 psig (7 bar)	0.70	20 VA: 0.08 A @ 220 VAC N.O. operation	22 AWG, 24″ (61 cm)	3/8″-24″ UNF-2A	2 (58)
F7-SS6B	Bent stem/liquids with metal particles	316 SS/316 SS	300°F (149°C)	100 psig (7 bar)	0.70	20 VA: 0.08 A @ 220 VAC N.C. operation	22 AWG, 24″ (61 cm)	3/8″-24″ UNF-2A	2 (58)
F7-EB‡**	Non-intrusive bottle type/ Outside tank mounting	Brass/316 SS (Brass housing)	300°F (149°C)	500 psig (34 bar)	0.75	20 VA: 0.08 A @ 240 VAC	18 AWG, 24″ (61 cm)	3/4″ NPT female	5 lb 5 oz (2.4 kg)
F7-LL	Vertical/detect levels as low as 5/8″	Polysulfone/ Buna-N	180°F (82°C)	50 psig (3 bar)	-	20 VA: 0.08 A @ 240 VAC	22 AWG, 72″ (182 cm)	1/8″ NPT male	2 (58)
F7-WBB	25′ cable, slosh shield/ Sumps, stand pipes	Brass/Buna-N	180°F (82°C)	150 psig (10 bar)	0.45	20 VA: 0.08 A @ 240 VAC	22 AWG, 25′ (7.6 m)	-	10.8 (310)

† F7-HSS is rated explosion-proof for Class I, Groups A, B, C, D; Class II, Groups E, F, G; Class III.
‡ Explosion proof model available with DPDT switch. **Example:** F7-EBX
** Model available with normally closed switch. **Example:** F7-EBNC

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES F6 & F7 | W.E. ANDERSON™ BY DWYER

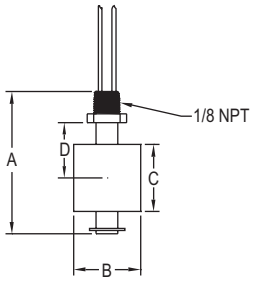
UL LISTED

LEVEL SWITCHES - VERTICAL

Low Cost, Reliable and Compact, Hermetically Sealed Contacts

F7-SB

F7-ST713



DIMENSIONS - IN (MM)				
Model	(A) Stem Length	(B) Float Diameter	(C) Float Height	(D) Actuation from Hex①
F7-SB	2.75 (70)	1.38 (35)	1.13 (29)	1.2 (31)
F7-SS2	2.06 (52)	1.0 (25)	1.0 (25)	0.73 (19)
F6-SS	2.17 (55)	1.11 (28)	1.11 (28)	–
F7-MPP	1.63 (41)	0.63 (16)	0.63 (16)	0.47 (12)
F7-PP	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-BT	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-C11	2.06 (52)	1.0 (25)	1.0 (25)	0.56 (14)
F7-PVC	3.44 (87)	1.5 (38)	1.81 (46)	0.75 (19)
F7-T1	3.47 (88)	2.13 (54)	1.94 (49)	0.92 (22)
F7-ST713	3.38 (86)	2.06 (52)	2.06 (52)	1.09 (28)
F7-ST714	3.38 (86)	2.06 (52)	2.06 (52)	1.09 (28)

①Distance between hex and liquid (S.G. = 1.0) level at actuation point will vary with specific gravity changes.

The **Series F6 & F7 Vertical Level Switches** are designed to be mounted at the maximum or minimum level point to provide level indication and control. Models are shipped with normally open switch contacts which close as the float rises toward the mounting threads.

FEATURES/BENEFITS

- Combine low cost and reliability with fast, simple installation
- Hermetically sealed reed switches are actuated by magnets permanently bonded inside the float and can be easily adapted to open or close a circuit on rising or falling levels
- Easily reverse switch action by removing the float, rotating it end-for-end and replacing it on the stem
- Vertical models mount internally, oriented within 30° of vertical, or select optional fittings for external mounting
- Switch ratings are suitable for many solid state control systems and monitors or alarms
- Simple relay interfaces can be used for higher current applications

APPLICATIONS

- Water level monitoring
- Oil level control
- Chemical level indication
- Sumps
- Stand pipes
- Tank level control
- High viscosity liquids

MODEL CHART

Model	Applications	Material Float/Stem	Temperature Limits	Pressure Limits	Min. S.G.	Electrical Rating	Wire Leads	Mtg NPT (M)	Weight oz (g)
F7-SB*	General purpose	Buna-N & epoxy/316 SS	220°F (105°C)	150 psig (10 bar)	0.60	25 VA: 1 A @ 220 VAC	22 AWG 18″ (45 cm)	1/8″	2 (58)
F7-SS2*	High temp/pressure, corrosives	316 SS (CYC)/316 SS	300°F (149°C)	450 psig (31 bar)	0.75	25 VA: 1 A @ 200 VAC	22 AWG 18″ (45 cm)	1/8″	1.2 (34)
F6-SS	Corrosives	316 SS/316 SS	257°F (125°C)	218 psig (15 bar)	0.65	20 VA: 0.08 A @ 240 VAC	20 AWG 11.8″ (30 cm)	1/8″	1.59 (45)
F7-MPP**	Broad chemical compatibility	Polypropylene/ polypropylene	180°F (82°C)	100 psig (6.89 bar)	0.90	10 VA: 0.1 A @ 100 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-MPP-NO**	Broad chemical compatibility	Polypropylene/ polypropylene	176°F (80°C)	100 psig (6.89 bar)	0.90	50 VA: 0.2 A @ 240 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-PP*	Broad chemical compatibility	Polypropylene and epoxy/ polypropylene	220°F (105°C)	100 psig (6.89 bar)	0.60	30 VA: 0.14 A @ 220 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-BT*	Oils and fuels	Buna-N and epoxy/PBT***	220°F (105°C)	150 psig (10 bar)	0.45	30 VA: 0.14 A @ 220 VAC	22 AWG 24″ (61 cm)	1/8″	0.7 (20)
F7-C11	General purpose	Buna-N/brass	180°F (82°C)	150 psig (10 bar)	0.45	20 VA: 0.08 A @ 240 VAC	22 AWG 24″ (61 cm)	1/8″	1.5 (43)
F7-PVC	Chemical and plating	CPVC/CPVC	180°F (82°C)	15 psig (1 bar)	0.85	20 VA: 0.08 A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	5 (140)
F7-T1	Viscous, sticky or corrosive liquids	PTFE/TFE	300°F (149°C)	30 psig (2 bar)	0.80	20 VA: 0.08 A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	6 (170)
F7-ST713	Oils, water and chemicals	316 SS/316 SS	300°F (149°C)	750 psig (52 bar)	0.80	20 VA: 0.08 A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	6 (170)

*UL listed **F7-MPP is normally closed/F7-MPP-NO is normally open ***PBT-Polybutylene terephthalate

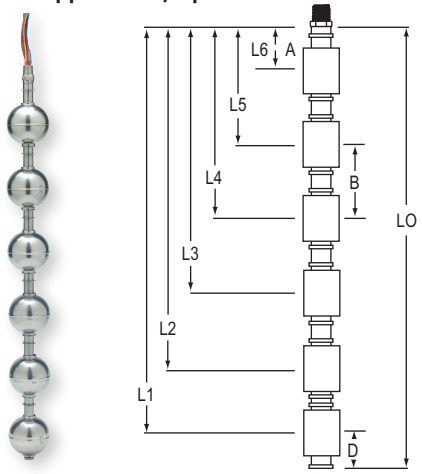
ACCESSORIES - FOR EXTERNAL MOUNTING OF VERTICAL MODELS	
Model	Description
A-347	1/8″ x 1-1/4″ NPT carbon steel adapter
A-347-SS	1/8″ x 1-1/4″ NPT 316 SS adapter
A-348	1/8″ x 1-1/2″ NPT carbon steel adapter

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

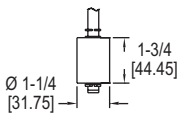
SERIES F7-MS | W.E. ANDERSON™ BY DWYER

MULTI-STATION LEVEL SWITCH

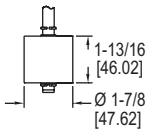
Customize To Fit Application, Up to Six 316 SS or Buna-N Floats



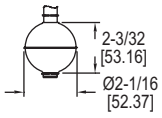
ACTUATION LEVELS		
A	**B**	**D**
1-1/2″ (38.10 mm)	3″ (76.20 mm)	2″ (50.80 mm)
Each switching point requires one float. A=Minimum distance from actuation point to bottom of mounting B=Minimum distance between actuation levels D=Minimum distance from end of unit to lowest actuation point		



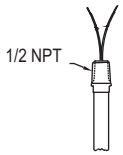
F1 float dimensions



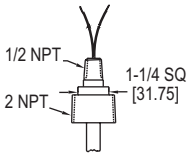
F2 float dimensions



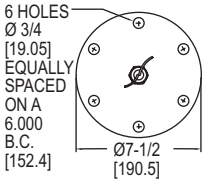
F3 float dimensions

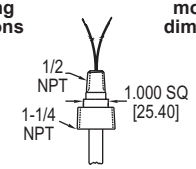


Type 1 mounting dimensions

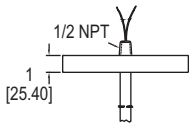


Type 3 mounting dimensions





Type 2 mounting dimensions



Type 4, 5 mounting dimensions

The **Series F7-MS Multi-Station Level Switch** provides a customized level switch to meet application requirements. Switches can be configured with up to six different control points and stem lengths up to 140″ (3.56 m). Stems and floats are available in 316 SS or brass, SPST or SPDT switches, and choice of mountings.

FEATURES/BENEFITS

- Customized level indication quickly and affordably
- Rugged construction with multiple options yielding exceptional versatility
- Capable of supporting larger, more buoyant floats
- Durable construction asserts long reliability in contaminated or turbulent media

APPLICATIONS

- Water level monitoring
- Oil level control
- Tank level control
- Diesel level monitoring

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Stem, connection, and float.
Temperature Limits: Buna-N floats: 180°F (82.2°C) in water, -40 to 230°F (-40 to 110°C) in oil; SS floats: -40 to 300°F (-40 to 148.9°C).
Wire Leads: 24″ (61 cm) free leads; #22 AWG, TFE jacketed, and #18 AWG polymeric.
Mounting Orientation: Vertical ±30°.

MODEL CHART

Example	F7-MS	B	1	-5	F3	1	-04.00	-07.00	-11.00	-15.00	-20.00		-24.00	J	F7-MSB1-5F31-04.00-07.00-11.00-15.00-20.00-24.00-J
Construction	F7-MS														Multi-station level, 1 to 6 switch points
Stem and Connection Material		B S													Brass with beryllium copper stops 316 SS with SS ARMCO PH-15-7MO stops
Connection Type			1 2 3 4 5												1/2″ NPT (float F2, F3 only) 1-1/4″ NPT (float F1 only) 2″ NPT 3″ 150# flange carbon steel (conn. material S only, float F2, F3 only) Max. pressure: 150 psi (10.3 bar) 3″ 150# flange 316 SS (conn. material S only, float F2, F3 only) Max. pressure: 150 psi (10.3 bar)
Switch Points				#											Put 1 to 6 for the number of switch points desired
Float Type					F1 F2 F3										**Material** / **Min. s.g.** / **Max. Pressure** Buna-N / 0.75 / 150 psi (10.3 bar) Buna-N / 0.55 / 150 psi (10.3 bar) 316 SS / 0.75 / 750 psi (51.7 bar); Units >72″: 300 psi (20.7 bar)
Switch Type*						1 2 3									SPST, .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC SPST, .8 A @ 120 VAC, .4 A @ 240 VAC SPDT, .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC
Set Point Distance, L6†							00.00								In inches referenced from bottom of process connection
Set Point Distance, L5†								00.00							In inches referenced from bottom of process connection
Set Point Distance, L4†									00.00						In inches referenced from bottom of process connection
Set Point Distance, L3†										00.00					In inches referenced from bottom of process connection
Set Point Distance, L2†											00.00				In inches referenced from bottom of process connection
Set Point Distance, L1†												00.00			In inches referenced from bottom of process connection
Overall Length, L0													00.00		Min. length is L1+D; Max. length with connection type 1: 36″ (91.4 cm), type 2: 60″ (152.4 cm) and types 3, 4, 5: 140″ (355.6 cm)
Options														J	Junction box for wire leads, NEMA 4 (not available with connection type 1)

NO switch is standard. For NC place an "" after the corresponding set point distance in the model number.
†No numbers needed beyond the number of switches specified.
Note: Models are built to your specifications

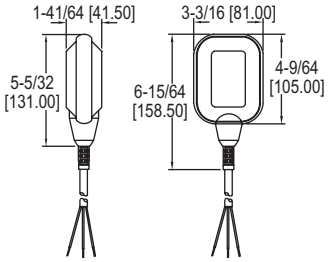
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES CFS2 | MERCOID® BY DWYER

CABLE FLOAT SWITCH

Mercury-Free, UL/CSA Approved Options



The **Series CFS2 Cable Float Switch** is a mechanically actuated floating switch intended to activate electrical components, such as pumps, to start and stop automatically. Optional cables are available. Contact factory for cable length options ranging from 10 to 70´ (3 to 21 m).

FEATURES/BENEFITS

- High reliability with mercury-free, magnetic, mechanical internal design
- Economical pricing with multiple option available for increased versatility
- Easy installation with counterweights and cable hangers to suit a variety of mounting applications

APPLICATIONS

- Water level monitoring
- Tank level control
- High or low level alarm
- Municipal water control
- Industrial water control
- Filling or draining reservoirs and tanks
- Pump automation

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Enclosure: Polypropylene; Cable: See model chart.
Temperature Limits: 32 to 122°F (0 to 50°C).
Pressure Limits: 14.5 psi (1 bar).
Enclosure Rating: IP68.
Switch Type: See model chart.
Electrical Rating: CFS2-XXBXX-XX: 10 (8) A @ 250 VAC; CFS2-XXDXX-XX: 1 HP @ 125 VAC 16 FLA; 2 HP @ 250 VAC 12 FLA.
Shipping Weight: Enclosure: 5.43 oz (154 g); Cable: 0.77 oz (21.27 g) per ft.
Agency Approvals: See model chart.

MODEL CHART

Model	Cable Type	Approvals	Switch Type	Cable Length	Model	Cable Type	Approvals	Switch Type	Cable Length
CFS2-ONBPN-20	PVC	CE	SPST NO	20´ (6.10 m)	**CFS2-DNBPN-40**	PVC	CE	SPDT	40´ (12.19 m)
CFS2-ONBPN-30	PVC	CE	SPST NO	30´ (9.14 m)	**CFS2-DNBPN-50**	PVC	CE	SPDT	50´ (15.24 m)
CFS2-ONBPN-40	PVC	CE	SPST NO	40´ (12.19 m)	**CFS2-DNBPN-60**	PVC	CE	SPDT	60´ (19.29 m)
CFS2-ONBPN-50	PVC	CE	SPST NO	50´ (15.24 m)	**CFS2-DNBPN-80**	PVC	CE	SPDT	80´ (24.38 m)
CFS2-CNBPN-20	PVC	CE	SPST NC	20´ (6.10 m)	**CFS2-DNBPN-100**	PVC	CE	SPDT	100´ (30.48 m)
CFS2-CNBPN-30	PVC	CE	SPST NC	30´ (9.14 m)	**CFS2-OGDSN-20**	SJOW	UL/CSA	SPST NO	20´ (6.10 m)
CFS2-CNBPN-40	PVC	CE	SPST NC	40´ (12.19 m)	**CFS2-OGDSN-30**	SJOW	UL/CSA	SPST NO	30´ (9.14 m)
CFS2-CNBPN-50	PVC	CE	SPST NC	50´ (15.24 m)	**CFS2-OGDSN-40**	SJOW	UL/CSA	SPST NO	40´ (12.19 m)
CFS2-DNBPN-7	PVC	CE	SPDT	7´ (2.13 m)	**CFS2-OGDSN-50**	SJOW	UL/CSA	SPST NO	50´ (15.24 m)
CFS2-DNBPN-10	PVC	CE	SPDT	10´ (3.05 m)	**CFS2-CGDSN-20**	SJOW	UL/CSA	SPST NC	20´ (6.10 m)
CFS2-DNBPN-15	PVC	CE	SPDT	15´ (4.57 m)	**CFS2-CGDSN-30**	SJOW	UL/CSA	SPST NC	30´ (9.14 m)
CFS2-DNBPN-20	PVC	CE	SPDT	20´ (6.10 m)	**CFS2-CGDSN-40**	SJOW	UL/CSA	SPST NC	40´ (12.19 m)
CFS2-DNBPN-30	PVC	CE	SPDT	30´ (9.14 m)	**CFS2-CGDSN-50**	SJOW	UL/CSA	SPST NC	50´ (15.24 m)

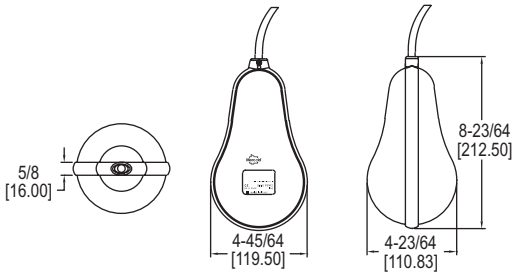
ACCESSORIES

Model	Description
A-457	7.76 oz (220 g) counterweight
A-459	Cable hanger

SERIES FSW2 | MERCOID® BY DWYER

FREE-FLOATING LEVEL SWITCH

Designed for Industrial Applications, Mercury-Free, Self Counter-Weighted



The **Series FSW2 Free-Floating Level Switch** is a self-counterweighted, mechanically actuated floating switch intended to activate electrical components, such as pumps, to start and stop automatically. Optional cables are available. Contact factory for cable length options ranging from 10 to 70´ (3 to 21 m).

FEATURES/BENEFITS

- Body is free of any irregularities allowing substances to effortlessly glide off and consists of a double airtight chamber with high-pressure melted polypropylene re-injection sealing to ensure a perfect seal reducing maintenance events
- High reliability with mercury-free, magnetic, mechanical internal design
- Economical pricing with multiple option available for increased versatility
- Seamless installation with self-counterweighted body and cable hangers to suit a variety of mounting applications

APPLICATIONS

- Wastewater level monitoring
- Tank level control
- High or low level alarm
- Municipal wastewater control
- Industrial wastewater control

SPECIFICATIONS

Service: Compatible liquids, slurries.
Wetted Materials: Enclosure: Polypropylene; Cable: PVC.
Operating Temperature: 32 to 122°F (0 to 50°C).
Pressure Limits: 29 psi (2 bar).
Enclosure Rating: IP68.
Switch Type: See model chart.
Electrical Rating: 10 (3) A @ 250 VAC.
Mounting Orientation: Vertical.
Shipping Weight: Enclosure: 2.4 lb (1100 g); Cable: 0.77 oz (21.27 g) per ft.
Agency Approvals: CE.

MODEL CHART

Model	Switch Type	Cable Length ft (m)	Model	Switch Type	Cable Length ft (m)
FSW2-ONPN-20	SPST NO	20 (6.10)	**FSW2-DNPN-10**	SPDT	10 (3.05)
FSW2-ONPN-30	SPST NO	30 (9.14)	**FSW2-DNPN-15**	SPDT	15 (4.57)
FSW2-ONPN-40	SPST NO	40 (12.19)	**FSW2-DNPN-20**	SPDT	20 (6.10)
FSW2-ONPN-50	SPST NO	50 (15.24)	**FSW2-DNPN-30**	SPDT	30 (9.14)
FSW2-CNPN-20	SPST NC	20 (6.10)	**FSW2-DNPN-40**	SPDT	40 (12.19)
FSW2-CNPN-30	SPST NC	30 (9.14)	**FSW2-DNPN-50**	SPDT	50 (15.24)
FSW2-CNPN-40	SPST NC	40 (12.19)	**FSW2-DNPN-60**	SPDT	60 (18.29)
FSW2-CNPN-50	SPST NC	50 (15.24)	**FSW2-DNPN-80**	SPDT	80 (24.38)
			FSW2-DNPN-100	SPDT	100 (30.48)

ACCESSORIES

Model	Description
A-459	Cable hanger

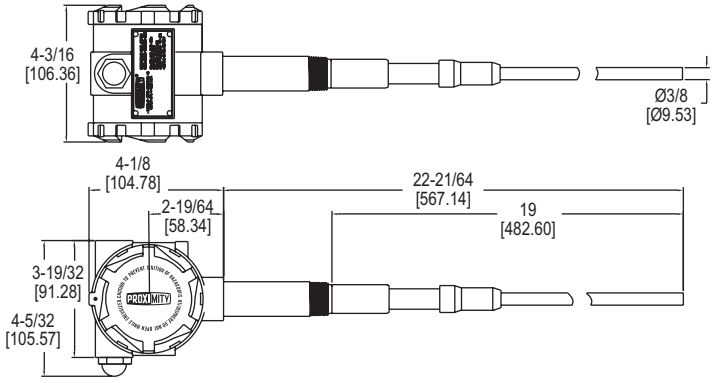
Dwyer

SERIES CLS2 | PROXIMITY® BY DWYER

c UL us LISTED

CAPACITIVE LEVEL SWITCH

Powder, Bulk, or Liquids, Auto-Calibration



The **Series CLS2 Capacitive Level Switch** is a capacitive technology level switch which can be used for liquids, powders and bulk materials. It is offered with PVDF and 316 SS wetted material, weatherproof enclosure, DPDT output and a variety of process connections.

FEATURES/BENEFITS

- No moving parts permitting for no jams, no wear, nothing to break, and no maintenance
- Impulse RF admittance measurement combined with an active guard, provides excellent level measurement and stability while being insensitive to material buildup
- Immune to external RF sources like walkie-talkies and cell phones as well as minimal interference with radio communication or other electronic systems
- Automatic calibration with no need to turn calibration pots, just push the calibration button and an external magnet to activate the calibration without having to open the enclosure saving time
- Coat guard probe is not affected by sticky, dusty, or clingy materials that coat or build preventing false alarms
- Status indication via an ultra-high brightness external red LED switch status indicator, and internal indicators for power, sensor, and switch status that can be seen externally with window cap option (external LED on weatherproof model only)
- Can be used for liquid interface applications to detect the level of two immiscible liquids that have different dielectric constants such as oil and water
- Failsafe setting with output switches that can be set for NO or NC condition on loss of power
- Time delay prevents false alarms from material splashing, agitation, etc.
- Removable terminal block snaps in and out enabling easy wiring outside of the enclosure
- Universal power supply with one model that works from 12-240 VAC/DC without any jumpers or change of setting
- Wetted materials of PVDF and 316 SS assure great chemical compatibility and meet food grade requirements

APPLICATIONS

- Sewage and wastewater
- Food and beverage
- Pharmaceuticals
- Sumps
- Boilers and steam generators
- Caustics and acids
- Reservoirs

SPECIFICATIONS

Service: Liquids, powder, and bulk materials compatible with wetted materials.
Wetted Materials: 316 SS and polyvinylidene fluoride (PVDF).
Temperature Limits: Ambient: -40 to 185°F (-40 to 85°C), -4 to 185°F (-20 to 85°C) with under 24 VAC/DC power supply; Process: -40 to 250°F (-40 to 121°C).
Pressure Limit: 365 psi (25 bar).
Enclosure Rating: Weatherproof, NEMA 4X (IP66).
Switch Type: DPDT (two form C).
Electrical Rating: 8 A @ 120/240 VAC res., 30 VDC. 1/2 hp @ 120 VAC and 1/4 hp @ 240 VAC ind.
Power Requirements: 12-240 VAC/DC.
Power Consumption: 2.8 watts max.
Electrical Connection: 1/2″ NPT conduit opening, screw termination with removable terminal block.
Process Connection: See model chart.
Mounting Orientation: Vertical or horizontal.
Set Point Adjustment: Trips when product touches probe. Cut or extend probe to length of desired trip point. Can be cut as short as 1″ and can be extended by welding on to probe. (Minimum length will be effected by material being sensed.)
Response Time: 0.2 s.
Time Delay: Adjustable, 0 to 60 s.
Spark/Static Protection: 10 M Ω dissipation resistance with spark gap. Surge current to 100A max.
Sensitivity: 8 selectable settings, 1, 2, 4, 6, 8, 10, 14, 20 pF (at 30 pF nominal free capacitance).
Agency Approvals: cULus.

MODEL CHART

Example	CLS2	-W	1	1	R	K	1	-019	-M20	CLS2-W11RK1-019-M20
Series	CLS2									Capacitive level switch
Enclosure		W								Weatherproof
Switch			1							DPDT rated 8 A @ 12/240 VAC, 30 VDC res.
Power Supply				1						12-240 VAC/DC
Probe Type					R T C					Standard rod: 316 SS, .375″ diameter Threaded rod: 316 SS (can attach 47″ (1.2 m) field extensions.*) Cable: 316 SS with weight
Insulator Material						K				PVDF
Process Connection							1 2 3 4 5 6 8 9			3/4″ male NPT 1″ male NPT 1-1/2″ male NPT 3/4″ BSPT 1″ BSPT 1-1/2″ BSPT 1-1/2″ sanitary clamp 2″ sanitary clamp
Probe Length								XXX		Insertion length in inches. Example 019 is 19″ length. (Minimum length is 6″, with 3/4″ sensing tip)
Options									M20 WC	M20 conduit connection with cable gland Window cap

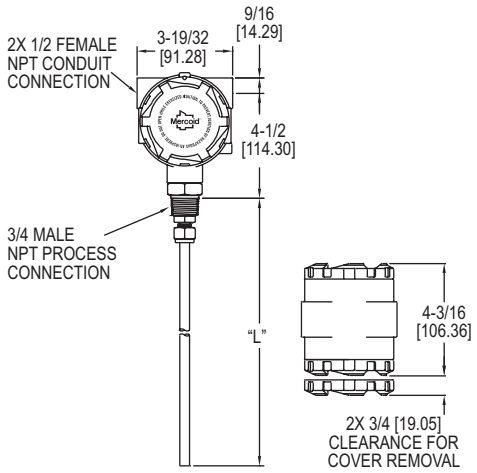
Example: CLS2-W11RK1-019.

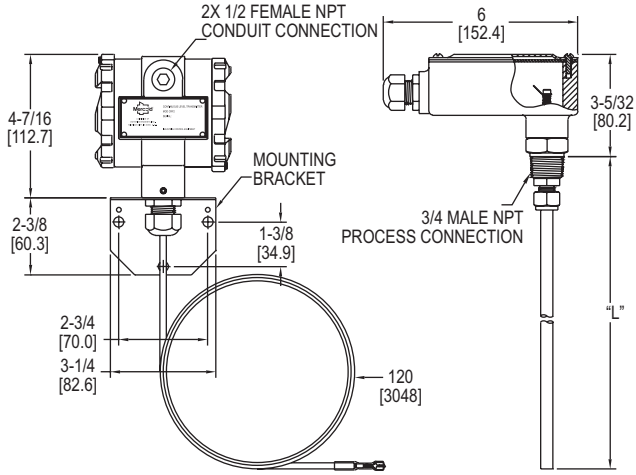
*Extension rods sold separately. Contact factory for part number.

SERIES CRF2 | MERCOID® BY DWYER

CAPACITIVE LEVEL TRANSMITTER

Powder, Bulk or Liquids, No-Moving Parts, Excellent Chemical Resistance





Remote mount housing

The **Series CRF2 Capacitive Level Transmitter** provides a two-wire 4-20 mA output to indicate level of liquids, powders and bulk materials. The CRF2 senses capacitance changes resulting from the height of the material in the tank between the probe and the tank wall. In non-metallic tanks or tanks that do not have the wall parallel to the probe a ground reference must be used.

FEATURES/BENEFITS

- State of the art sensing technology, uses impulse RF admittance measurement which provides excellent accuracy and stability
- Comes with either a rigid or flexible probe depending on application installation need and probe length required
- Easy push-button calibration of zero and span
- Any length probe can be customer ordered for any specific application
- FEP covered probe is ideal for use with corrosive media
- Immune to external RF sources like walkie-talkies and cell phones as well as minimal interference with radio communication or other electronic systems

APPLICATIONS

- Pulp and paper processing
- Food and beverage
- Plastics

SPECIFICATIONS

Service: Liquids, powders, and bulk materials compatible with wetted materials.
Wetted Materials: Standard: Rod/cable: FEP, Connection: 316 SS; Ground option: Rod/cable and connection: 316 SS; Cable spacers: PVC; Flange option: Material of flange.
Capacitance Range: 0 to 2000 pF.
Sensitivity: 0.15 pF.
Minimum Span: 8 pF.
Accuracy: ±0.5 pF or ±0.25% of span, whichever is greater.
Repeatability: ±0.25 pF or ±0.1% of span, whichever is greater.
Temperature Limits: Ambient: -40 to 185°F (-40 to 85°C); Process: -40 to 250°F (-40 to 121°C).
Pressure Limit: 100 psi (6.9 bar).
Power Requirements: 12-35 VDC.
Output Signal: 4-20 mA or 20-4 mA, 2 wire.
Response Time: 0.5 s.
Electrical Connection: Screw terminal.
Conduit Connection: 1/2″ NPT female.
Process Connection: Standard: 3/4″ NPT male; Optional: See model chart.
Enclosure Rating: NEMA 4X (IP66) weather tight/corrosion resistant.
Spark/Static Protection: 10^6 Ω dissipation resistance with spark gap. Surge current to 100 A max.
Calibration: Zero, span, 4 mA, 20 mA.
Mounting Orientation: Vertical.
Weight: 6′ rod type: 3.6 lb (1.63 kg).

MODEL CHART

Example	CRF2	-W	R	0	1T	-048	-M20	CRF2-WR01T-048-M20
Series	CRF2							Capacitive level transmitter
Enclosure		W						Weatherproof
		R						Remote mount weatherproof housing
Probe Type			R					Rod
			C					Cable
Ground				0				None included
				A				Attached ground rod (3″ or 4″ flange process connection types only)
				U				Unattached ground rod
Process Connection					1T			3/4″ NPT male
					2T			1″ NPT male
					3T			1-1/2″ NPT male
					1B			3/4″ BSPT
					2B			1″ BSPT
					3B			1-1/2″ BSPT
					1S			1″ sanitary clamp
					2S			1-1/2″ sanitary clamp
					3S			2″ sanitary clamp
					1F			2″ 150# flange, 316 SS
					2F			2″ 150# flange, PVC
					3F			3″ 150# flange, 316 SS
					4F			3″ 150# flange, PVC
					5F			4″ 150# flange, 316 SS
					6F			4″ 150# flange, PVC
Probe Length						XXX		Insertion length in inches. Example 048 is 48″ length. Rod type min: 24″, max: 144″; Cable type min: 24″, max: 360″
Options							M20	M20 conduit connection with cable gland

Examples: CRF2-WR01T-072; CRF2-WR01T-096

Dwyer

SERIES SBLT2 & SBLTX | MERCOID® BY DWYER

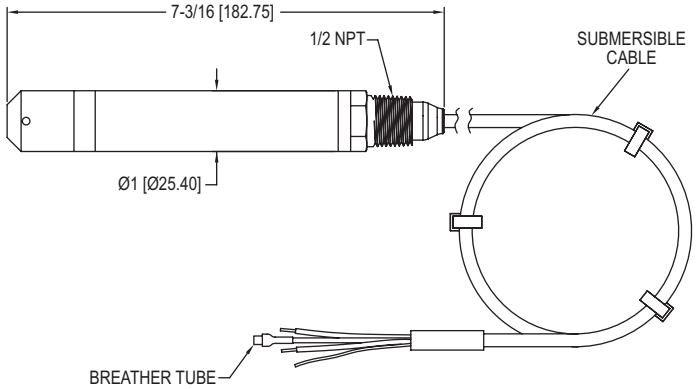
SUBMERSIBLE LEVEL TRANSMITTERS

Perfect for Ground Water and Wells, Lightning Protected, Standard 72 Hour Lead Time

SBLT2

SBLTX
(ATEX option available)

NOW WITH 72 HOUR
OUT OF STOCK LEAD TIME!



The **Series SBLT2 & SBLTX Submersible Level Transmitters** are manufactured for years of trouble free service. These series measure the height of liquid above the position in the tank referenced to atmospheric pressure. The transmitter consists of a piezoresistive sensing element, encased in a 316 SS housing.

FEATURES/BENEFITS

- Slim design for tight applications with bullet nose design which protects the diaphragm from damage
- Incorporates lightning and surge protection utilizing dual arrestor technology, grounded to case, eliminating both power supply surges and lightning ground strike transients (surge protection is not guaranteed and is not covered by warranty) on SBLT2 models
- Maintenance free filter eliminates particulate or water droplets from entering the transducer
- UL approved intrinsically safe on SBLTX models for use in hazardous locations when used with proper barrier
- 270 lb tensile strength shielded and vented cable
- Excellent chemical compatibility
- NPT connection allows the unit to be rigidly installed in a pipe/conduit, or the addition of a A-625 hanging loop for attaching a chain for pulling out of the installation
- Standard 72 hour lead time ensures minimal downtime

APPLICATIONS

- Well monitoring
- Ground water monitoring
- Environmental remediation
- Surface water monitoring
- Down hole
- Water tanks

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Body: 316 SS, 316 L SS; Bullet nose: PVC; Cable: Polyether polyurethane or ETFE; Seals: Fluoroelastomer.
Accuracy: ±0.25% FS.
Temperature Limit: SBLT2: Polyurethane: 0 to 150°F (-18 to 66°C); ETFE: 0 to 200°F (-18 to 93°C); SBLTX -4 to 176°F (-20 to 80°C); Polyurethane: -4 to 149°F (-20 to 65°C).
Compensated Temperature Range: SBLT2: 0 to 140°F (-18 to 60°C); SBLTX: 0 to 176°F (-18 to 80°C).
Thermal Effect: ±0.02% FS/°F.
Pressure Limit: 2X FS.
Power Requirement: SBLT2: 10-30 VDC (≤ 1000 ft (305 m) of cable); SBLTX: 10-28 VDC.
Output Signal: 4-20 mA DC, 2-wire.
Response Time: 50 ms.
Max. Loop Resistance: 900 Ω at 30 VDC.
Electrical Connections: Wire pigtail.
Mounting Orientation: Suspended in tank below level being measured.
Electrical Protection: SBLT2: Lightning and surge protection; SBLTX: None.
Weight: 2.2 lb (1.0 kg).
Agency Approvals: SBLT2: CE; SBLTX: CE, cULus intrinsically safe for Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III Div. 1; ATEX: II 1 G Ex ia IIC T4 Ga and II 1 D Ex ia IIIC T135C Da (according to control drawing 001833-43)**.

**Up to 275´ (83.8 m) for ETFE cable; Up to 470´ (143.3 m) for polyurethane cable.

MODEL CHART

Model	Range psi* (ft w.c.) [m w.c.]	Cable Length ft (m)	Cable Type
SBLT2-5-40-ETFE	5 (11.54) [3.52]	40 (12.2)	ETFE
SBLT2-10-40-ETFE	10 (23.09) [7.04]	40 (12.2)	ETFE
SBLT2-15-60-ETFE	15 (34.63) [10.56]	60 (18.3)	ETFE
SBLT2-20-60-ETFE	20 (46.18) [14.08]	60 (18.3)	ETFE
SBLT2-5-40	5 (11.54) [3.52]	40 (12.2)	Polyurethane
SBLT2-10-40	10 (23.09) [7.04]	40 (12.2)	Polyurethane
SBLT2-15-60	15 (34.63) [10.56]	60 (18.3)	Polyurethane
SBLT2-20-60	20 (46.18) [14.08]	60 (18.3)	Polyurethane
SBLT2-3.5M-5M	4.97 (11.48) [3.5]	16.40 (5)	Polyurethane
SBLT2-5M-10M	14.21 (32.81) [10]	32.81 (10)	Polyurethane
SBLT2-10M-18M	25.58 (59.06) [18]	59.06 (18)	Polyurethane

*Configured ranges below 5 psi (11.54´ w.c.) (3.52 m w.c.) ±1% FS accuracy.

Note: For intrinsically safe approval, change model number from SBLT2 to SBLTX. For custom ranges or cable lengths, contact factory.

OPTIONS

Model	Description
-ATEX	ATEX intrinsically safe
-P1	1/4″ NPT male
-P2	1/4″ NPT female
-P3	1/4″ BSPT male ISO 228 R
-P4	1/4″ BSPT female ISO 228 RC
-P11	3/4″ clean-out type

-P11 option

ACCESSORIES

Model	Description
A-297	Desiccant filter for vent tube. Removes humidity for protection of the sensor. Changes color to show saturation
A-625	316 SS cable hanger use with NPT option for attaching chain for easy pulling out of application
MTL5541	Galvanic barrier
MTL7706	Intrinsically safe zener barrier

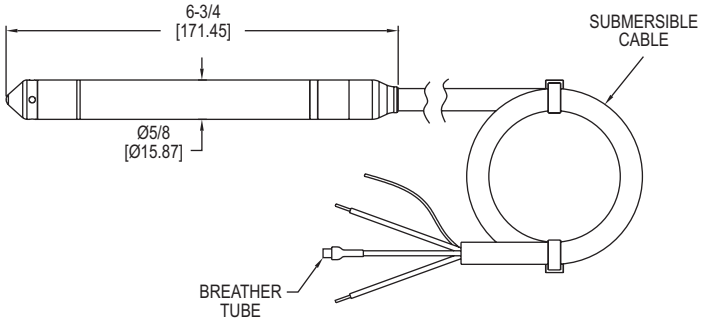
A-297 **A-625**

Dwyer

SERIES MBLT | MERCOID® BY DWYER

MINIATURE SUBMERSIBLE LEVEL TRANSMITTER

Only 0.63″ (16 mm) in Diameter, Perfect for Wells and Boreholes, Low Power Models for Telemetry Systems



The **Series MBLT Miniature Submersible Level Transmitter** measures the height of liquid above the position in the tank referenced to atmospheric pressure. The transmitter consists of a piezoresistive sensing element, encased in a 0.63″ (16 mm) diameter 316 SS housing.

FEATURES/BENEFITS

- Slender 0.63″ (16 mm) diameter design fits in narrow openings
- Constructed for years of trouble free service with welded 316 SS body and 316 SS nose cap
- Body top is 316 SS and tapered to prevent damage or snares when pulling the unit out of the installation
- ±0.10% or ±0.25% FS accuracy output is more precise than BFSL or BSL rated outputs used by most competitors
- Maintenance free filter eliminates particulate or water droplets from entering the transducer
- Comes with a choice of polyether polyurethane or ETFE cable materials for excellent chemical compatibility
- Incorporates lightning and surge protection, eliminating both power supply surges and lightning ground strike transients (surge protection is not guaranteed and is not covered by warranty)

APPLICATIONS

- Ballast tanks
- Ground water monitoring
- Surface water monitoring
- Dewatering
- Down hole
- Remote telemetry
- Remote flood monitoring
- Narrow conduit or pipe installations
- Remediation and environmental monitoring

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Body and nose: 316 SS; Cable: Polyether polyurethane or ETFE; Seals: Fluoroelastomer; Label: Polyolefin.
Accuracy: ±0.25% or ±0.10% FS**.
Temperature Limits: -4 to 176°F (-20 to 80°C).
Compensated Temperature Limits: 0.25%: (0 to 70°C); 0.10%: (0 to 60°C).
Thermal Effect: 0.25%: ±0.45% FS TEB; 0.10%: ±0.30% FS TEB.
Pressure Limit: 2x FS.
Power Requirements: Current output: 10-33 VDC; Voltage output: 8-33 VDC; 5 mA max (no load).
Output Signal: 4-20 mA DC 2-wire or 0-5 V* (model depending).
Response Time: < 50 ms.
Max Loop Resistance: 1000 Ω @ 30 VDC (current output).
Voltage Output Impedence: 10 Ω + 4.4 Ω / 100´ cable (voltage output).
Electrical Connections: Wire pigtail.
Mounting Connection: Suspended below point being monitored.
Electrical Protection: Surge/lightning protected per EN61000-4-5, Class 5.
Weight: Body: 0.235 lb (0.107 kg); Cable: 0.037 lb (0.017 kg) per foot.
Agency Approvals: CE.

*Consult factory for additional outputs.
**4.3 to 4.9 psi (10 to 11.54 in w.c.) configured ranges ±0.30% FS accuracy

OPTIONS

For custom ranges, cable lengths, or ETFE cable, contact the website.

ACCESSORIES

Model	Description
A-297	Dessicant filter for vent tube. Removes humidity for protection of the sensor. Changes color to show saturation

A-297

MODEL CHART

4-20 mA output Model ±0.10%	4-20 mA output Model ±0.25%**	0-5 V output Model ±0.25%**	Range psi (´ w.c.) [m w.c.]	Cable Length	Cable Type
-	MBLT-2SC-IVPP-5-40	MBLT-2SC-VVPP-5-40	5 (11.54) [3.52]	40´	Polyether polyurethane
-	MBLT-2SC-IVPF-15-40	MBLT-2SC-VVPF-15-40	6.50 (15) [4.57]	40´	Polyether polyurethane
-	MBLT-2SC-IVPM-5-12.2	MBLT-2SC-VVPM-5-12.2	7.10 (16.40) [5]	12.2 m	Polyether polyurethane
-	MBLT-2SC-IVPM-10-30**	MBLT-2SC-VVPM-10-30**	14.22 (32.84) [10]	9.14 m	Polyether polyurethane
MBLT-2SB-IVPF-20-40	MBLT-2SC-IVPF-20-40	MBLT-2SC-VVPF-20-40	8.66 (20) [6.10]	40´	Polyether polyurethane
MBLT-2SB-IVPF-30-50	MBLT-2SC-IVPF-30-50	MBLT-2SC-VVPF-30-50	12.99 (30) [9.14]	50´	Polyether polyurethane
MBLT-2SB-IVPM-10-15.2	MBLT-2SC-IVPM-10-15.2	MBLT-2SC-VVPM-10-15.2	14.21 (32.81) [10]	15.2 m	Polyether polyurethane
MBLT-2SB-IVPF-50-70	MBLT-2SC-IVPF-50-70	MBLT-2SC-VVPF-50-70	21.65 (50) [15.24]	70´	Polyether polyurethane
MBLT-2SB-IVPM-20-26	MBLT-2SC-IVPM-20-26	MBLT-2SC-VVPM-20-26	28.42 (65.62) [20]	26 m	Polyether polyurethane
MBLT-2SB-IVPM-30-36	MBLT-2SC-IVPM-30-36	MBLT-2SC-VVPM-30-36	42.63 (98.43) [30]	36 m	Polyether polyurethane
MBLT-2SB-IVPF-100-120	MBLT-2SC-IVPF-100-120	MBLT-2SC-VVPF-100-120	43.31 (100) [30.48]	120´	Polyether polyurethane
MBLT-2SB-IVPM-40-46	MBLT-2SC-IVPM-40-46	MBLT-2SC-VVPM-40-46	56.83 (131.23) [40]	46 m	Polyether polyurethane
MBLT-2SB-IVPF-150-170	MBLT-2SC-IVPF-150-170	MBLT-2SC-VVPF-150-170	64.96 (150) [45.72]	170´	Polyether polyurethane
MBLT-2SB-IVPM-60-66	MBLT-2SC-IVPM-60-66	MBLT-2SC-VVPM-60-66	85.25 (196.85) [60]	66 m	Polyether polyurethane
MBLT-2SB-IVPF-200-220	MBLT-2SC-IVPF-200-220	MBLT-2SC-VVPF-200-220	86.62 (200) [60.96]	220´	Polyether polyurethane
MBLT-2SB-IVPF-350-370	MBLT-2SC-IVPF-350-370	MBLT-2SC-VVPF-350-370	151.58 (350) [106.68]	370´	Polyether polyurethane
MBLT-2SB-IVPM-100-106	MBLT-2SC-IVPM-100-106	MBLT-2SC-VVPM-100-106	142.09 (328.08) [100]	106 m	Polyether polyurethane
MBLT-2SB-IVPM-200-206	MBLT-2SC-IVPM-200-206	MBLT-2SC-VVPM-200-206	284.18 (656.17) [200]	206 m	Polyether polyurethane
MBLT-2SB-IVPF-690-710	MBLT-2SC-IVPF-690-710	MBLT-2SC-VVPF-690-710	298.83 (690) [210.31]	710´	Polyether polyurethane

**4.3 to 4.9 psi (10 to 11.54 in w.c.) configured ranges ±0.30% FS accuracy

Dwyer

SERIES PBLT2 & PBLTX | MERCOID® BY DWYER

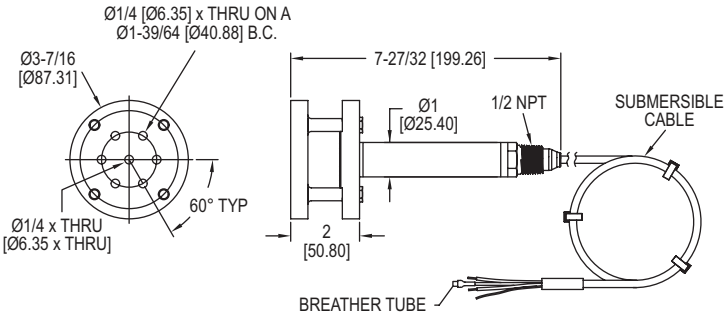
SUBMERSIBLE LEVEL TRANSMITTERS

Perfect for Sludge and Slurries, Lightning Protected, Standard 72 Hour Lead Time

PBLT2

PBLTX
(ATEX option available)

NOW WITH 72 HOUR OUT OF STOCK LEAD TIME!



The **Series PBLT2 & PBLTX Submersible Level Transmitters** are manufactured for years of trouble free service in the harshest applications. These Series measure the height of liquid above the position in the tank referenced to atmospheric pressure. The transmitter consists of a piezoresistive sensing element, encased in a 316 SS housing with cage and large diameter 316 SS diaphragm seal.

FEATURES/BENEFITS

- Durable cage design with large diameter 316 SS diaphragm seal that is non-clogging and damage resistant to floating solids
- Incorporates lightning and surge protection utilizing dual arrestor technology, grounded to case, eliminating both power supply surges and lightning ground strike transients (surge protection is not guaranteed and is not covered by warranty) on PBLT2 models
- Maintenance free filter eliminates particulate or water droplets from entering the transducer
- UL approved intrinsically safe on PBLTX models for use in hazardous locations when used with proper barrier
- 270 lb tensile strength shielded and vented cable
- Excellent chemical compatibility
- NPT connection allows the unit to be rigidly installed in a pipe/conduit, or the addition of a A-625 hanging loop for attaching a chain for pulling out of the installation
- Standard 72 hour lead time ensures minimal downtime

APPLICATIONS

- Wastewater
- Sludge pits, clarifiers, digesters
- Alum tanks
- Chemical storage tanks
- Oil tanks
- Lime slurry
- Sumps
- Reservoirs

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Body: 316 SS, 316 L SS; Cable: Polyether polyurethane or ETFE; Seals: Fluoroelastomer.
Accuracy: ±0.25% FS (includes linearity, hysteresis, and repeatability).
Temperature Limit: PBLT2: 0 to 200°F (-18 to 93°C); PBLTX: ETFE -4 to 176°F (-20 to 80°C); Polyurethane: -4 to 149°F (-20 to 65°C).
Compensated Temperature Range: PBLT2: 0 to 180°F (-18 to 82°C); PBLTX: 0 to 176°F (-18 to 80°C).
Thermal Effect: ±0.02% FS/°F.
Pressure Limit: 2X FS.
Power Requirement: PBLT2: 13-30 VDC; PBLTX: 10-28 VDC.
Output Signal: 4-20 mA DC, 2-wire.
Response Time: 50 ms.
Loop Resistance: 900 Ω.
Electrical Connection: Wire pigtail.
Mounting Orientation: Suspended in tank below level being measured.
Electrical Protection: PBLT2: Lightning and surge protection; PBLTX: None.
Weight: 4.3 lb (2.0 kg).
Agency Approvals: PBLT2: CE; PBLTX: CE, cULus intrinsically safe for Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div. 1; ATEX: II 1 G Ex ia IIC T4 Ga and II 1 D Ex ia IIIC T135C Da (According to control drawing 001833-44)**.

**Up to 275´ (83.8 m) for ETFE cable; Up to 470´ (143.3 m) for polyurethane cable.

MODEL CHART

Model	Range psi* (ft w.c.) [m w.c.]	Cable Length ft (m)	Cable Type
PBLT2-5-40	5 (11.54) [3.52]	40 (12.2)	ETFE
PBLT2-10-40	10 (23.09) [7.04]	40 (12.2)	ETFE
PBLT2-15-60	15 (34.63) [10.56]	60 (18.3)	ETFE
PBLT2-20-60	20 (46.18) [14.08]	60 (18.3)	ETFE
PBLT2-5-40-PU	5 (11.54) [3.52]	40 (12.2)	Polyurethane
PBLT2-10-40-PU	10 (23.09) [7.04]	40 (12.2)	Polyurethane
PBLT2-15-60-PU	15 (34.63) [10.56]	60 (18.3)	Polyurethane
PBLT2-20-60-PU	20 (46.18) [14.08]	60 (18.3)	Polyurethane
PBLT2-3.5M-5M-PU	4.97 (11.48) [3.5]	16.40 (5)	Polyurethane
PBLT2-5M-10M-PU	7.10 (16.38) [5]	32.81 (10)	Polyurethane
PBLT2-10M-18M-PU	14.21 (32.78) [10]	59.06 (18)	Polyurethane

*Configured ranges below 5 psi (11.54´ w.c.) (3.52 m w.c.) ±1% FS accuracy.

Note: For intrinsically safe approval, change model number from PBLT2 to PBLTX. For custom ranges or cable lengths, contact factory.

OPTIONS

Model	Description
-ATEX	ATEX intrinsically safe

ACCESSORIES

Model	Description
A-297	Dessicant filter for vent tube. Removes humidity for protection of the sensor. Changes color to show saturation
A-625	316 SS cable hanger use with NPT option for attaching chain for easy pulling out of application
MTL5541	Galvanic barrier
MTL7706	Intrinsically safe zener barrier

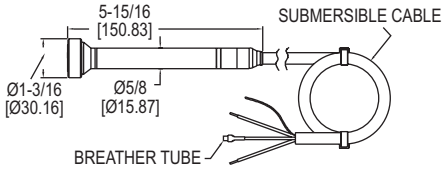
A-297 A-625

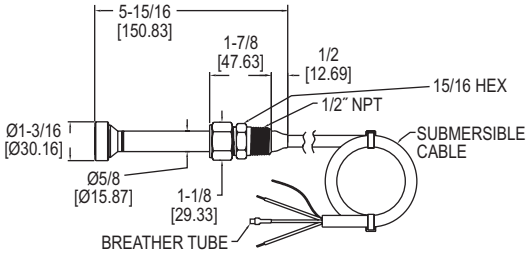
FLUSH TIP SUBMERSIBLE LEVEL TRANSMITTERS

Perfect for Sludge and Slurries, Lightning Protected, ±0.25% Accuracy, Slim Body

FBLT

FBLT with NPT option





NPT option

The **Series FBLT Flush Tip Submersible Level Transmitters** measure the height of liquid above the position in the tank referenced to atmospheric pressure. The transmitter consists of a piezoresistive sensing element, encased in a narrow 316 SS housing with PTFE coated flush diaphragm tip.

FEATURES/BENEFITS

- Flush diaphragm tip will not clog in harsh applications
- Maintenance free filter eliminates particulate or water droplets from entering the transducer
- Comes with a choice of polyether polyurethane or ETFE cable materials for excellent chemical compatibility
- Incorporates lightning and surge protection, eliminating both power supply surges and lightning ground strike transients (surge protection is not guaranteed and is not covered by warranty)
- Narrow body design allows the FBLT to fit into stilling wells and narrow installations
- Robust FKM fluoroelastomer diaphragm that is PTFE coated for a stick resistant surface holds up in aggressive fluids
- Diaphragm cavity is filled with a gel that will not leak out versus oil or grease
- Optional NPT connection allows the unit to be rigidly installed in a pipe/conduit, or the addition of the A-625 hanging loop for attaching a chain for pulling out of the installation

APPLICATIONS

- Sewage lift stations
- Industrial slurries
- Industrial sumps
- Landfill leachate
- Reservoirs
- Sludge pits
- Oil tanks

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Body: 316 SS; Cable: Polyether polyurethane or ETFE; Diaphragm: PTFE coated FKM fluoroelastomer; Label: Polyethylene polyamid.
Accuracy: ±0.25% FS (10´ w.c. range is ±0.30% FS).
Temperature Limits: -4 to 176°F (-20 to 80°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effect: ±0.0075%/°F (±0.0135%/°C).
Pressure Limit: 2x range.
Power Requirements: 10-33 VDC.
Output Signal: 4-20 mA DC 2-wire.
Response Time: < 50 ms.
Max Loop Resistance: 1000 Ω @ 30 VDC.
Electrical Connections: Wire pigtail.
Mounting Connection: Suspended below point being monitored.
Electrical Protection: Surge/lightning protected per EN61000-4-5, Class 5.
Weight: Body: 0.3 lb (0.136 kg); Cable: 0.037 lb (0.017 kg) per foot.
Agency Approvals: CE.

MODEL CHART

Model	Range psi (´ w.c.) [m w.c.]	Cable Length	Cable Type
FBLT-2SC-IVPF-10-20*	4.33 (10) [3.05]	20´	Polyurethane
FBLT-2SC-IVPF-10-30*	4.33 (10) [3.05]	30´	Polyurethane
FBLT-2SC-IVPP-5-40	5 (11.54) [3.52]	40´	Polyurethane
FBLT-2SC-IVPF-10-40*	4.33 (10) [3.05]	40´	Polyurethane
FBLT-2SC-IVPF-15-40	6.50 (15) [4.57]	40´	Polyurethane
FBLT-2SC-IVPF-20-40	8.66 (20) [6.10]	40´	Polyurethane
FBLT-2SC-IVPF-30-50	12.99 (30) [9.14]	50´	Polyurethane
FBLT-2SC-IVEP-5-40	5 (11.54) [3.52]	40´	ETFE
FBLT-2SC-IVEF-15-40	2.82 (15) [4.57]	40´	ETFE
FBLT-2SC-IVEF-20-40	8.66 (20) [6.10]	40´	ETFE
FBLT-2SC-IVEF-30-50	12.99 (30) [9.14]	50´	ETFE
FBLT-2SC-IVEP-10-40	10 (32.09) [7.04]	40´	ETFE
FBLT-2SC-IVEP-15-60	15 (34.63) [10.56]	60´	ETFE
FBLT-2SC-IVPP-10-40	10 (32.09) [7.04]	40´	Polyurethane
FBLT-2SC-IVPP-10-60	10 (32.09) [7.04]	60´	Polyurethane
FBLT-2SC-IVPP-15-60	15 (34.63) [10.56]	60´	Polyurethane
FBLT-2SC-IVPF-35-60	15.16 (35) [10.67]	60´	Polyurethane
FBLT-2SC-IVPP-20-60	20 (196.85) [60]	60´	Polyurethane

*4.3 to 4.9 psi (10 to 11.54 in w.c.) configured ranges ±0.30% FS accuracy

Note: Cables can be ordered shorter or longer in polyurethane or ETFE. Other ranges are available and can be ordered in psi, ft w.c., or m w.c. Please see website.

OPTIONS

To order add suffix:	Description
-NPT	1/2" NPT connection to connect conduit, piping, or cable hanger. All 316 SS
-FC	Factory calibration certificate

Example: FBLT-2SC-IVPF-20-40-FC

ACCESSORIES

Model	Description
A-297	Dessicant filter for vent tube. Removes humidity for protection of the sensor. Changes color to show saturation
A-625	316 SS cable hanger use with NPT option for attaching chain for easy pulling out of application

A-297

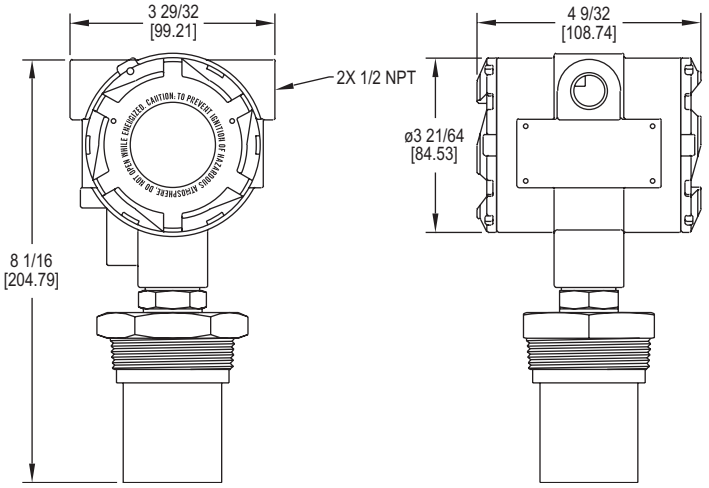
A-625

Dwyer

SERIES ULT | MERCOID® BY DWYER

ULTRASONIC LEVEL TRANSMITTER

Explosion-Proof, Mapping Software, 3″ (76.2 mm) Measuring Column



The **Series ULT Ultrasonic Level Transmitter** provides non-contact measurement of liquid levels in an explosion-proof body. It is capable of measuring up to 32.8′ (10 m) with a PVDF sensor and 4-20 mA output.

FEATURES/BENEFITS

- Provides reliable, accurate, and non-contact level measurement of compatible liquids
- Non-contact technology offers no moving parts to wear, jam, corrode, or get coated like contact technologies
- Mapping software makes effective measuring surface only a 3″ (76.2 mm) diameter column with no concerns of ladders, pipes, or other tank intrusions in the remaining sound cone
- FM approved explosion-proof making it ideal for use in hazardous locations
- Easy programming with 6 digit LCD display and simple menu structure
- Output range is adjustable with choices of inputting tank dimensions or by filling and emptying the tank while calibrating and it automatically and scaling to levels it senses
- Window cover allows easy viewing of display
- Fail-safe output options and diagnostic capabilities

APPLICATIONS

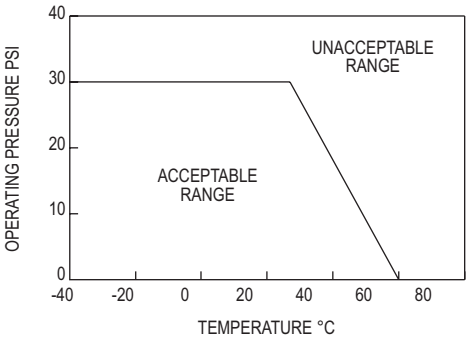
- Water and wastewater
- Pulp and paper processing
- Chemical processing
- Food and beverage

MODEL CHART	
Model	**Range**
ULT-11	24.6′ (7.5 m)
ULT-21	32.8′ (10 m)

SPECIFICATIONS

Service: Compatible fluids. Not for use with powder and bulk solids.
Wetted Materials: Sensor: PVDF; Process connection: 303 SS; O-ring: Fluoroelastomer.
Ranges: 24.6′ (7.5 m), 32.8′ (10 m).
Accuracy: ±0.2% FS.
Resolution: 0.079″ (2 mm).
Blind Zone: Under 8″ (20 cm).
Beam Width: 3″ (7.6 cm) diameter.
Temperature Limits: Ambient: -40 to 140°F (-40 to 60°C); Process: -4 to 140°F (-20 to 60°C).
Temperature Compensation: -40 to 140°F (-40 to 60°C).
Pressure Limits: 30 psi (2 bar) up to 25°C (77°C). Above 25°C (77°F), rating decreases 1.667 psi per 1°C increase. See chart.
Power Requirement: 18-28 VDC (two-wire).
Output Signal: 4-20 mA or 20-4 mA (two-wire).
Max. Loop Resistance: 250 Ω at 24 VDC.
Electrical Connections: Screw terminal.
Conduit Connection: 1/2″ NPT female (two) or optional M20.
Process Connection: 2″ NPT male or optional BSPT.
Enclosure Rating: Weather-proof meets NEMA 4X (IP66), explosion-proof rated Class I, Div. 1, Groups B, C, D; Class II/III, Div. 1, Groups E, F, G.
Mounting Orientation: Vertical.
Failsafe: On lost echo after 30 seconds, user selectable to 4, 20, 21, 22 mA or last signal.
Memory: Non-volatile.
Display: 6 character LCD.
Units: In, cm, ft, m, percent.
Programming: 4 button.
Weight: 4.0 lb (1.8 kg).
Agency Approvals: CE, FM.

TEMPERATURE/PRESSURE DERATING

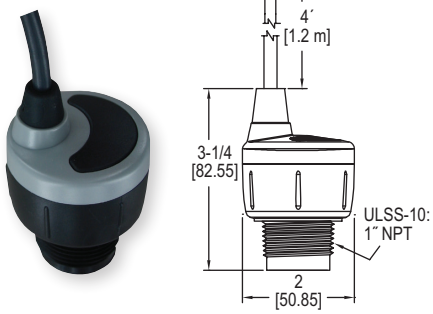


Dwyer

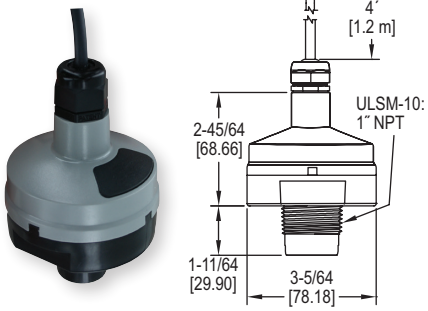
SERIES ULSS, ULSM & ULSL

ULTRASONIC LEVEL SENSORS

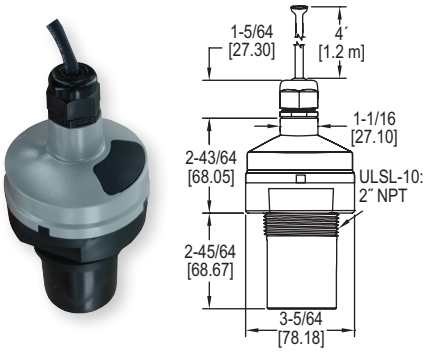
Non-Contact Transmitter, SPST Programmable Relays



ULSS



ULSM



ULSL

The **Series ULSS Ultrasonic Level Sensor** provides non-contact, continuous ultrasonic level measurement of fluids for short range applications. It has a 4.1´ (1.2 m) measuring range with a 0.125˝ (3 mm) accuracy.

The **Series ULSM Ultrasonic Level Sensor** provides non-contact, continuous ultrasonic level measurement of fluids for medium range applications. It has a 9.8´ (3 m) measuring range with a ±0.2% of range accuracy.

The **Series ULSL Ultrasonic Level Sensor** provides non-contact, continuous ultrasonic level measurement of fluids for tall range applications. It has a 18´ (5.5 m) measuring range with a ±0.2% of range accuracy.

FEATURES/BENEFITS

- Via free software, units can be programmed to transmit an output signal and operate four relays for control applications
- Provides reliable, accurate, and non-contact level measurement of compatible liquids
- Non-contact technology offers no moving parts to wear, jam, corrode, or get coated like contact technologies
- Mapping software makes effective measuring surface only a 3˝ (76.2 mm) diameter column with no concerns of ladders, pipes, or other tank intrusions in the remaining sound cone
- Ultrasonic technology paired with automatic temperature compensation provides accurate and reliable measurements in almost all conditions
- Fail-safe logic is easily configured to custom applications via free software removing the need for target calibration
- Full NEMA 6P submersible enclosure rating to ensure excellent product durability

APPLICATIONS

- Water and wastewater
- Pulp and paper processing
- Sump and process tanks
- Chemical processing
- Food and beverage

SPECIFICATIONS

Service: Compatible fluids.
Wetted Materials: Sensor: PVDF; O-ring: FKM.
Ranges: See chart.
Accuracy: ULSS: 0.125˝ (3 mm); ULSM & ULSL: ±0.2% of range.
Resolution: ULSS: 0.019˝ (0.5 mm); ULSM: 0.039˝ (1 mm); ULSL: 0.079˝ (2 mm).
Blind Zone: ULSS: 2˝ (5 cm); ULSM: 4˝ (10 cm); ULSL: 8˝ (20 cm).
Beam Width: ULSS & ULSM: 2˝ (5 cm); ULSL: 3˝ (7.62 cm).
Temperature Limits: Process: 20 to 140°F (-7 to 60°C); Ambient: -31 to 140°F (-35 to 60°C).
Temperature Compensation: Automatic.
Pressure Limit: 30 psi (2 bar).
Power Requirement: 12 to 28 VDC.
Output Signal: 4-20 mA, 2-wire; Invert: 4-20 mA or 20-4 mA; Fail-safe: 4 mA, 20 mA, 21 mA, 22 mA, or hold last.
Loop Resistance: 400 Ω max.
Electrical Connections: 4´ (1.2 m) 9 conductor shielded cable.
Contact Type: 4 SPST relays.
Contact Rating: 1 A max @ 28 VDC max.
Deadband: Selectable (no hysteresis, 1/4˝, 1/2˝, 1˝, 1/2 cm, 1 cm, 2 cm, 5 cm or not available).
Process Connection: 1˝ NPT, 1˝ BSPP (optional).
Enclosure Rating: NEMA 6P (IP68).
Enclosure Material: Polycarbonate; Gland: TPE.
Mounting Orientation: Vertical.
Memory: Non-volatile.
Failsafe: Contact: Power loss: Holds last contact; Power on: Open, close, or last contact.
Programming: Free PC software download (USB adapter required).
Weight: 1 lb (0.45 kg).
Agency Approvals: CE.

MODEL CHART	
Model	**Range**
ULSS-10	4.1´ (1.25 m)
ULSM-10	9.8´ (3 m)
ULSL-10	18´ (5.5 m)
Note: USB adapter necessary for calibration. One adapter can program multiple units.	

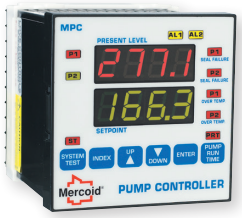
ACCESSORIES	
Model	**Description**
ULS-ACC-USB	USB adapter for calibration, PVC
ULS-ACC-121	2˝ x 1˝ NPT reducer bushing fitting (sch. 40), PVC
ULS-ACC-122	2˝ x 1˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-131	3˝ x 2˝ NPT reducer bushing fitting (sch. 40), PVC
ULS-ACC-132	3˝ x 2˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-142	4˝ x 2˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-221	2˝ socket x 1˝ NPT reducer bushing fitting (sch. 40), PVC
ULS-ACC-222	2˝ socket x 1˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-231	3˝ socket x 2˝ NPT reducer bushing fitting (sch. 40), PVC
ULS-ACC-232	3˝ socket x 2˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-241	4˝ socket x 2˝ NPT reducer bushing fitting (sch. 40), PVC
ULS-ACC-242	4˝ socket x 2˝ NPT reducer bushing fitting (sch. 80), PVC
ULS-ACC-510	1˝ NPT polypropylene side mount bracket
ULS-ACC-520	2˝ NPT polypropylene side mount bracket

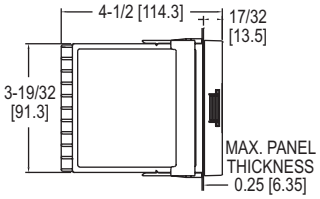
Dwyer

SERIES MPC | MERCOID® BY DWYER

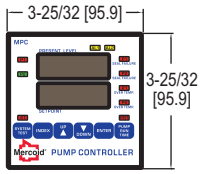
PUMP CONTROLLER

One or Two Pump Control with Built-In Alternation, Over Temperature Protection and Seal Failure Monitoring





PANEL CUT-OUT: 3.620 X 3.620 IN, +0.032/-0.000 [92 X 92 MM, +0.8/-0.0]
ALLOW FOR 0.5 IN [13 MM] CLEARANCE AT THE REAR OF THE INSTRUMENT



MEETS IP66 [UL TYPE 4X]

The **Series MPC Pump Controller** provides versatile level control in a standard 1/4 DIN package. Designed for use with almost any style level transmitter the unit displays the present level and main set point value. Incorporated in the MPC is programmable level differential for on/off control of one or two pumps, valves, or other devices through two SPDT relays.

FEATURES/BENEFITS

- Selectable pump alternation when used with two pumps to minimize pump wear, with alternation "on" a seal failure or over temperature condition will force the non-failed pump to lead status and stop alternation
- Alarms can be programmed for output indication of pump seal failure or over temperature
- Selectable time delay, for pump two, on power up to prevent both pumps from starting at the same time
- In the event of power loss, upon regaining power a time delay of up to 60 seconds can be selected to prevent excessively large current draw
- Test system function simulates the process input to ensure the pumps are operating or to test programming
- User-friendly programming menu

APPLICATIONS

- Water and wastewater
- Sump and sludge pits, clarifiers, digesters
- Chemical storage tanks
- Oil tanks
- Reservoirs

SPECIFICATIONS

Inputs: 4 (or 0) -20 mA DC or 2 (or 0) -10 VDC selectable.
Input Impedance: Current = 10 Ω; Voltage = 100 K Ω.
Output Ratings: Control relays: SPDT, rated 10 A @ 240 VAC res., 1/4 hp @ 120 VAC, 1/3 hp @ 240 VAC; Alarm relays: SPST, 3 A @ 240 VAC res., 1/10 hp @ 120 VAC.
Control Type: On/off, reverse (pump out) or direct (pump in) acting.
Output Signal: 4-20 mA current process input retransmission.
Power Requirements: 100-240 VAC nominal, +10%-15%, 50 to 400 Hz, single phase; 132-240 VDC nominal, +10%-15%.
Enclosure Rating: NEMA 4X (IP66) front panel face.
Power Consumption: 7.5 VA max.
Accuracy: ±0.25% of span, ±1 least significant digit.
Display: Two 4 digit, 7 segment 0.56˝ high LED's.
Display Resolution: 1 count.
Memory Backup: Nonvolatile memory (no batteries required).
Serial Communications: Optional RS-232 or RS-485 with Modbus® protocol.
Ambient Operating Temperature/RH: 14 to 131°F (-10 to 55°C)/0 to 90% up to 104°F (40°C) non-condensing, 10 to 50% at 131°F (55°C) non-condensing.
Front Panel Rating: Meets UL Type 4X (IP66).
Loop Power Supply (Isolated): 24 VDC @ 50 mA, regulated.
Seal Failure (Moisture Sensor): Power: 2.5 VDC; Search current: 3 micro amps; Resolution: 10K to 500K Ω in 10K Ω steps.
Weight: 16 oz (454 g).
Agency Approvals: cULus.

A-901

MODEL CHART	
Model	**Description**
MPC	Pump controller

ACCESSORIES
Weatherproof Enclosures, NEMA 4X (IP66)

OPTIONS	
To order add suffix:	**Description**
-232	RS-232 Modbus® RTU serial communications
-485	RS-485 Modbus® RTU serial communications
-RV	2-20 VDC voltage retransmission

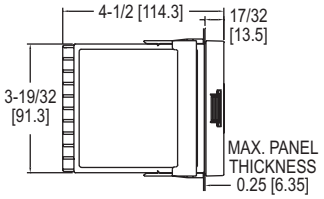
Modbus® is a registered trademark of Schneider Automation, Inc.

Compatible Level Transmitters: See page 45 (Series SBLT2)
See page 47 (Series PBLT2)
Additional Digital Control Panel Meters: See page 52 (Series APM/MPM/PPM)

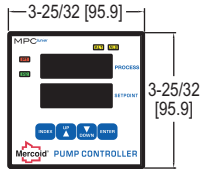
SERIES MPC JR | MERCOID® BY DWYER

PUMP CONTROLLER

One or Two Pump Control with Built-In Alternation



PANEL CUT-OUT: 3.620 X 3.620 IN, +0.032/-0.000 [92 X 92 MM, +0.8/-0.0].
ALLOW FOR 0.5 IN [13 MM] CLEARANCE AT THE REAR OF THE INSTRUMENT.



MEETS IP66 [UL TYPE 4X]

The **Series MPC JR Pump Controller** provides versatile level control in a standard 1/4 DIN package. Designed for use with almost any style level transmitter the unit displays the present level and main set point value. Incorporated in the MPC JR is programmable level differential for on/off control of one or two pumps, valves, or other devices through two SPDT relays.

FEATURES/BENEFITS

- Selectable pump alternation when used with two pumps to minimize pump wear
- Integral 24 VDC power supply for transmitter
- User selectable security lock-out of programming and/or set points
- Optional process input retransmission as a current (4-20 mA) or voltage (2-10 VDC) analog signal
- Analog output on pump "on" condition for activation of separate pump run time meters

APPLICATIONS

- Water and wastewater
- Sump and sludge pits, clarifiers, digesters
- Chemical storage tanks
- Oil tanks
- Reservoirs

SPECIFICATIONS

Inputs: 4 (or 0) -20 mA DC or 2 (or 0) -10 VDC selectable.
Input Impedance: Current = 10 Ω; Voltage = 5 K Ω.
Output Ratings: Control relays: SPDT, rated 10 A @ 240 VAC res.,1/4 hp @ 120 VAC, 1/3 hp @ 240 VAC; Alarm relays: SPST, 3 A @ 240 VAC res., 1/10 hp @ 120 VAC; Others: 15 VDC @ 20 mA for output one and output two.
Control Type: On/off, reverse (pump out) or direct (pump in) acting.
Power Requirements: 100-240 VAC nominal, +10%-15%, 50 to 400 Hz, single phase; 132-240 VDC nominal, +10%-15%.
Power Consumption: 7.5 VA max.
Accuracy: ±0.25% of span, ±1 least significant digit.
Display: Two 4-digit, 7 segment 0.56˝ high LED's.
Display Resolution: 1 count.
Memory Backup: Nonvolatile memory (no batteries required).
Serial Communications: Optional RS-232 or RS-485 with Modbus® protocol.
Ambient Operating Temperature/RH: 14 to 131°F (-10 to 55°C)/0 to 90% up to 104°F (40°C) non-condensing, 10 to 50% at 131°F (55°C) non-condensing.
Front Panel Rating: Meets UL Type 4X (IP66).
Loop Power Supply (Isolated): 24 VDC @ 50 mA, regulated.
Weight: 16 oz (454 g).
Agency Approvals: cULus.

A-901

MODEL CHART	
Model	**Description**
MPCJR	Pump controller

ACCESSORIES
Weatherproof Enclosures, NEMA 4X (IP66)

OPTIONS	
To order add suffix:	**Description**
-RC	Retransmission of input, 4-20 mA
-RV	Retransmission of input, 0-10 VDC
-232	RS-232 Modbus® RTU serial communications
-485	RS-485 Modbus® RTU serial communications

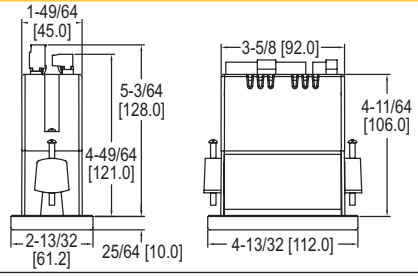
Modbus® is a registered trademark of Schneider Automation, Inc.

Compatible Level Transmitters: See page 45 (Series SBLT2)
See page 47 (Series PBLT2)

SERIES APM, MPM & PPM

DUAL LINE CONFIGURABLE PANEL METERS

1/8 DIN Process and Flow / Rate Totalizers



These 1/8 DIN digital panel meters accept signals from various transmitters and flowmeters and displays them on a six-digit, dual line display in engineering units. These meters will also provide power to the field device and include a NEMA 4X front panel. Free, USB based programmnig sofware is resident on the meter. Options include up to four relays and a 4-20 mA output.

The **Series MPM Dual Line Configurable Panel Meter** is a general purpose process meter that is field selectable for a 4-20 mA or 0-10 V input signal. It provides 24 VDC to power the transmitter. The dual line display can display the process variable on the upper line and engineering units on the lower line. Or, in dual scale mode, the process variable can be displayed in one units (like height) on the upper display and another (like volume) on the lower display. The meter also has an automatic Round Horizontal Tank function a well as 32 point linearization.

The **Series APM Dual Line Configurable Panel Meter** and **Series PPM Dual Line Configurable Panel Meter** are flow / rate totalizers for analog or pulse inputs. The most useful feature of these products is their dual line display which allows rate and total to be displayed at the same time. A non-resetable grand total can also be programmed. Total can be reset either from the front panel or by connecting a remote switch to the F4 terminal at the rear of the meter.

The **Series APM** accepts either a 4-20 mA or 0-10 V input signal and provides the 24 VDC to power the flowmeter. Other features of the APM include square root extraction for DP flow, and programmable exponents for open channel flow.

The **Series PPM** accepts a pulse input signal and provides either 5, 10 or 24 VDC to power the flowmeter. Adding the 4-20 mA output option converts the pulse into a signal that can be run long distances to a PLC or other device.

FEATURES/BENEFITS

- NEMA 4X / IP65 front panel
- Powers the transmitter / flowmeter
- Dual line 6 digit display
- Free USB based programming software
- Display rate and total at the same time
- Two or four relays and isolated 4-20 mA output options

APPLICATIONS

- Level monitoring
- Pump control
- Flow rate indication
- Flow totalization
- Open channel flow monitoring
- Process control

SPECIFICATIONS

Input: APM and MPM: 0-20 mA, 4-20 mA, 0-5 V, or ±10 V inputs; PPM: Field selectable: Pulse or square wave 0-5 V, 0-12 V, or 0-24 V @ 30 kHz; TTL; open collector 4.7 k Ω pull-up to 5 V @ 30 kHz; NPN or PNP transistor, switch contract 4.7 k Ω pull-up to 5 V @ 40 Hz. Input impedance: 50 to 100 Ω.
Accuracy: ±0.03% of calibrated span ±1 count.
Display: Red LED, Dual-line 6-digit display, 0.60 in and 0.46 in.
Transmitter / Flowmeter Power: 85-265 VAC models: 200 mA @ 24 VDC; 12-24 VDC models: 100 mA @ 24 VDC; Second supply with 4-20 mA output models: 40 mA @ 24 VDC.
Power Requirements: 85-265 VAC 50/60 Hz, 90-265 VDC, 20 W max or 12-24 VDC ±10%, 15 W max.
Temperature Limits: Operating: -40 to 149°F (-40 to 65°C); Storage: -40 to 185°F (-40 to 85°C).
Front Panel: NEMA 4X, IP65 front.
Output Signal (option): Isolated 4-20 mA.
Switch Rating (option): 2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A @ 30 VDC and 125/250 VAC resistive load; 1/14 HP @ 125/250 VAC for inductive loads.
Time Delay: 0 to 999.9 s, on and off relay time delays; programmable and independent for each relay.
Shipping Weight: 9.5 oz (269 g).
Agency Approvals: CE, UL.
Programming Software: Free, USB based. Resident on meter, nothing to download.

FREE USB PROGRAMMING SOFTWARE AND CABLE

The PM Series meters come preloaded with free programming software that connects and installs directly to your PC with a standard USB cable, also provided free with each instrument. This eliminates the need to insert CDs, install drivers, or download software from the internet. The software will allow you to configure, monitor, and datalog a PM Series meter using your PC. Just simply connect the meter to your PC with the USB cable and within seconds you will be programming it.

UNIQUE LEVEL MONITORING CAPABILITIES

The MPM meter is particularly well suited for level monitoring, controlling and alarming applications. For instance, the meter can be programmed to display any two of these parameters on its dual line display: height, volume or percent full. Its six digit display allows it to display volumes up to 999,999 gallons, liters, or any other volume. The meter also has a Round Horizontal Tank function which requires the user to enter only the height and length of a round horizontal tank and the meter will display in volume. Up to four relays are available for alarm and control applications, and the relays can even be programmed to alternate for pump control applications.

MODEL CHART

Model	Model	Model	Power	Output 1	Output 2
APM-100	**MPM-100**	**PPM-100**	85-265 VAC	None	None
APM-101	**MPM-101**	**PPM-101**	85-265 VAC	None	4-20 mA
APM-120	**MPM-120**	**PPM-120**	85-265 VAC	2 relays	None
APM-121	**MPM-121**	**PPM-121**	85-265 VAC	2 relays	4-20 mA
APM-140	**MPM-140**	**PPM-140**	85-265 VAC	4 relays	None
APM-141	**MPM-141**	**PPM-141**	85-265 VAC	4 relays	4-20 mA
APM-200	**MPM-200**	**PPM-200**	12-24 VDC	None	None
APM-201	**MPM-201**	**PPM-201**	12-24 VDC	None	4-20 mA
APM-220	**MPM-220**	**PPM-220**	12-24 VDC	2 relays	None
APM-221	**MPM-221**	**PPM-221**	12-24 VDC	2 relays	4-20 mA
APM-240	**MPM-240**	**PPM-240**	12-24 VDC	4 relays	None
APM-241	**MPM-241**	**PPM-241**	12-24 VDC	4 relays	4-20 mA

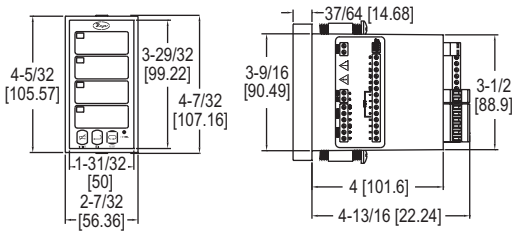
ACCESSORIES

Model	Description
PMA-01	RS-232 serial adapter
PMA-03	RS-422/485 serial adapter
PMA-04	RS-232 to RS-422/485 isolated converter
PMA-05	RS-232 to RS-422/485 non-isolated converter
PMA-06	USB to RS-232 non-isolated converter
PMA-07	USB to RS-422/485 isolated converter
PMA-08	USB to RS-422/485 non-isolated converter
PMA-09	Snubber
PMA-10	DIN rail mounting kit for two modules
PMA-11	4 relay expansion module
PMA-12	4 digital inputs and 4 digital outputs module

SERIES AN2

INDICATING ALARM ANNUNCIATOR

Up to 8 Inputs, Integral Power Supply



The **Series AN2 Indicating Alarm Annunciator** provides visible and audible alarms for up to eight inputs. Audible alarm conditions can be acknowledged, reset, or silenced either via the front panel push-buttons or the rear terminal block. The annunciator also has two SPDT relay outputs that can be used to initiate external alarms, buzzers, or paging devices.

FEATURES/BENEFITS

- Includes integral 24 VDC power supply to power most switches
- Can be set to any common ISA sequences

APPLICATIONS

- Water and wastewater panels
- Tank level monitoring
- Temperature monitoring process

SPECIFICATIONS

Inputs: NO or NC switches, open collector transistor (open circuit voltage = 3.3 VDC); Logic levels: LO = 0-0.9 VDC, HI = 2.4-28 VDC (100 KΩ input impedance).
Outputs: Two SPDT relay (3 A @ 250 VAC or 30 VDC, resistive; 1/14 HP @ 125/250 VAC, inductive).
Temperature Limits: -40 to 149°F (-40 to 65°C).
Power Requirements: 85-265 VAC 50/60 Hz, 90-265 VDC; 12-36 VDC, 12-24 VAC (depending on model).
Power Consumption: 20 W (6 W on low voltage models).
Mounting: 1/8 DIN.
Housing Material: UL rated 94V-0 high impact plastic.
Enclosure Rating: NEMA 4X (IP66) front panel.
Weight: 9.6 oz (272 g).
Agency Approvals: CE, UL.

MODEL CHART

Model	# of Outputs	Power Supply	Model	# of Outputs	Power Supply
AN24-1	4	85-265 VAC	**AN28-1**	8	85-265 VAC
AN24-2	4	12-36 VDC	**AN28-2**	8	12-36 VDC

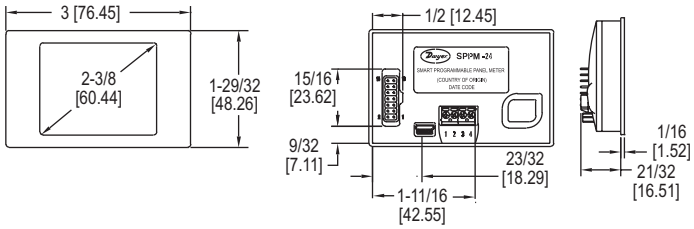
Dwyer

SERIES SPPM

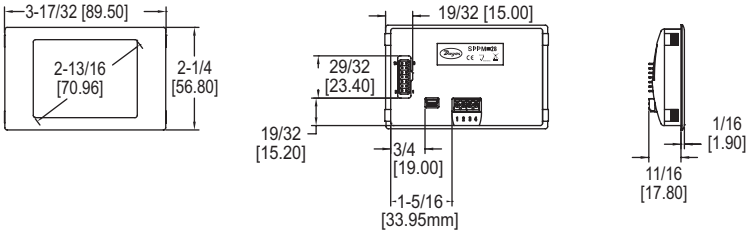
SMART PROGRAMMABLE PANEL METERS

Fully Field Configurable, 16-Bit Color Touch Screen Display

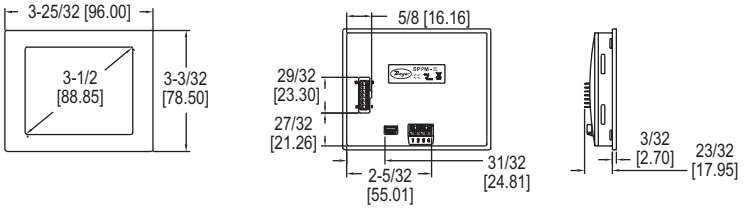
SPPM-HSG



SPPM-24 and SPPM-24-C



SPPM-28 and SPPM-28-C



SPPM-35 and SPPM-35-C

The **Series SPPM Smart Programmable Panel Meters** are configurable full-color touch screen displays that can be used in a variety of applications. By using a USB connection, the panel meter can be configured with downloadable software for any computer running Windows® based software. The display features remarkable graphics that can easily be customized to read and/or graph pressure, temperature, humidity, gas concentration, or many other parameters.

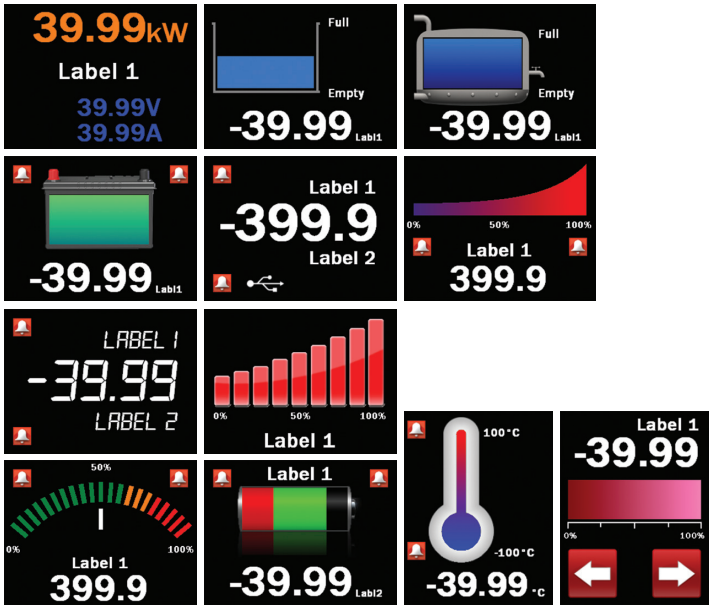
FEATURES/BENEFITS

- Available with 2.4″, 2.8″, or 3.5″ color touch screen display
- Free downloadable Windows® software allows the unit to be customized to specific applications

APPLICATIONS

- Tank level
- Power monitoring
- Room pressurization condition
- Indoor air quality conditions

SAMPLE PROGRAMMABLE DISPLAY CONFIGURATIONS



SPECIFICATIONS

SPPM SPECIFICATIONS

Inputs: Current: 0-50 mA, scalable (factory set from 4-20 mA); Voltage: 0-40 VDC, scalable (factory set from 0-10 V).
Accuracy: 0.1%.
Resolution: 0.3 to 9.8 mV (depending on input range).
Power Supply: 4-30 VDC max or via USB.
Current Consumption: 190 mA max.
Display: 2.4″, 2.8″ or 3.5″ TFT full color touch screen.
Display Resolution: 320 x 240 pixels.
Sampling Rate: 3 samples/s.
Temperature Limits: 32 to 104°F (0 to 40°C).
Warm Up: 30 s.
Mounting: Panel mount.
Electrical Connection: Screw terminals, pin connection, or USB.
Computer Requirements: Compatible with Windows® 7, Windows® 8 and Windows® 10.
Weight: 2.8 oz (79.4 g).
Agency Approvals: CE.

SPPM-HSG SPECIFICATIONS

Service: Indoor or outdoor.
Material: Painted aluminum or glass.
Enclosure Rating: NEMA 4X (IP66).

A-SPPM-TC SPECIFICATIONS

Probe Measurement Range:
K-type: -328 to 2462°F (-200 to 1350°C);
J-type: -328 to 2174°F (-200 to 1190°C);
T-type: -328 to 734°F (-200 to 390°C).
Temperature Limits: 14 to 104°F (-10 to 40°C).
Resolution: 1.0°F (0.5°C).
Power Requirements: Powered by USB port through SPPM panel meter.
Accuracy: ±2.0°F (±1.0°C).
Weight: 0.9 oz (25.5 g).
Agency Approvals: CE.

MODEL CHART

Model	Display	Input
SPPM-24	2.4″	Voltage
SPPM-28	2.8″	Voltage
SPPM-35	3.5″	Voltage
SPPM-24-C	2.4″	Current
SPPM-28-C	2.8″	Current
SPPM-35-C	3.5″	Current

ACCESSORIES

Model	Description
A-SPPM-TC	Thermocouple input board
SPPM-CA	Mini USB to full USB cable
SPPM-HSG24	2.4″ display housing
SPPM-HSG28	2.8″ display housing

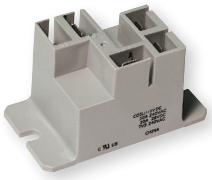
Note: Additional configurations available via online software.

Dwyer

SERIES 9

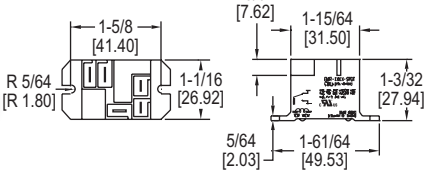
ELECTROMECHANICAL RELAYS

30 Amp, SPDT and DPDT Operation

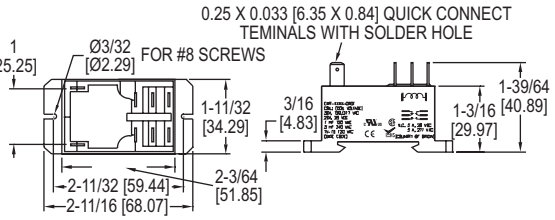


SPDT

DPDT



SPDT



DPDT

The **Series 9 Electromechanical Relays** are small in size, features Class F insulation for a max coil temperature of 155°C, quick-connect terminals for simple connection, and is panel mountable. The relays are compact and impervious to shock and vibration.

FEATURES/BENEFITS
- Compact size for flange mounting
- Quick-connect terminals to allow for easy installation

APPLICATIONS
- Motor control
- Lighting control
- Refrigeration compressor systems

SPECIFICATIONS	
Operating and Load Voltage Range: 12-277 VAC; 5-110 VDC. **Electrical Connection:** Quick-connect tab terminals. SPDT 0.187″ coil terminal/0.25″ contact terminal; DPDT 0.25″ coil terminal/0.25″ contact terminal. **Switching Operation:** SPDT or DPDT. **Electrical Rating:** SPDT: NO 30 A @ 240 VAC / 28 VDC; NC 10 A @ 240 VAC / 28 VDC; DPDT: 30 A @ 240 VAC 20 A @ 28 VDC.	**Temperature Limits:** Storage: -40 to 185°F (-40 to 85°C); Operation: -40 to 131°F (-40 to 55°C). **Voltage Loss:** 2.5 VA (VAC); 1W (VDC). **Cycle Life:** 100,000 cycles (electrical); 10,000,000 cycles (mechanical). **Housing:** Polyester resin. **Weight:** 1.16 oz (45 g) (SPDT); 3 oz (85 g) (DPDT). **Agency Approvals:** CE, cULus, (EMR-XXXX-DPDT), cURus (EMR-XXXX-SPDT).

MODEL CHART

Model	Operation	Input Voltage	Coil Resistance
9AS5A5224	AC	24 VAC 50/60 Hz	500 Ω
9AS5A52120	AC	120 VAC 50/60 Hz	3000 Ω
92S11A22D24	AC	24 VAC 50/60 Hz	250 Ω
92S11A22D120	AC	120 VAC 50/60 Hz	1600 Ω
9AS5D5224	DC	24 VDC	576 Ω
92S11D22D12	DC	12 VDC	86 Ω
92S11D22D24	DC	24 VDC	1600 Ω

ACCESSORIES

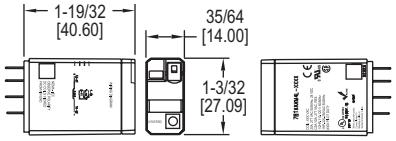
Model	Description
16-9ADIN1	Din adaptor
A-360	Aluminum DIN rail 1 m

SERIES 781 & 782

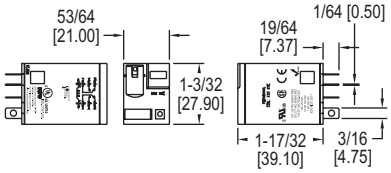
ICE CUBE RELAYS

SPDT or DPDT Operation

781



Pictures shown with socket accessory (sold separately)



782

The **Series 781 & 782 Ice Cube Relays** are full-featured relays that can be used to handle loads up to 15 amps for AC or DC circuits. It features a flag status indicator and a LED status lamp to let the user know when the relay is activated. In order to differentiate between AC and DC actuated models, the push-to-test button is color coded and a removable lock-down lever holds the test button in place.

FEATURES/BENEFITS
- Clear plastic housing to easily view the contacts
- Flag and LED status indicators for visual confirmation of relay state
- Socket mounted for quick installation/replacement

APPLICATIONS
- Refrigeration compressor systems
- HVAC motor controls
- Water/wastewater pump control

SPECIFICATIONS	
Operating and Load Voltage Range: 24-240 VAC; 24 VDC. **Electrical Connection:** Silver alloy plug-in contacts. **Switching Operation:** SPDT or DPDT. **Electrical Rating:** Depends on model, see model chart. **Temperature Limits:** Storage: -40 to 185°F (-40 to 85°C); Operation: -40 to 131°F (-40 to 55°C).	**Power Consumption:** 781: 0.9 VA; 0.7W; 782: 1.2 VA; 0.9W. **Cycle Life:** 100,000 cycles (electrical); 10,000,000 cycles (mechanical). **Housing:** Plastic polycarbonate. **Weight:** 781: 1.02 oz (29 g); 782: 1.3 oz (36 g). **Agency Approvals:** CE, CSA, cULus, cURus.

ACCESSORIES

Model	Description
70-781D5-1A	Socket for 781 series relay
70-782D8-1A	Socket for 782 series relay

MODEL CHART

Model	Operation	Input Voltage	Coil Resistance	Electrical Rating
781XAXRM4L-24A	AC	24 VAC 50/60 Hz	180 Ω	15 A @ 277 VAC (50/60 Hz) or 28 VDC
781XAXRM4L-120A	AC	120 VAC 50/60 Hz	4430 Ω	15 A @ 277 VAC (50/60 Hz) or 28 VDC
781XAXRM4L-240A	AC	240 VAC 50/60 Hz	15720 Ω	15 A @ 277 VAC (50/60 Hz) or 28 VDC
781XAXRM4L-24D	DC	24 VDC	750 Ω	15 A @ 277 VAC (50/60 Hz) or 28 VDC
782XBXM4L-24A	AC	24 VAC 50/60 Hz	180 Ω	15 A @ 120 VAC 50/60 Hz; 12 A @ 277 VAC 50/60 Hz or 28 VDC (UL); 10 A @ 277 VAC 50/60 Hz (CSA)
782XBXM4L-120A	AC	120 VAC 50/60 Hz	4430 Ω	15 A @ 120 VAC 50/60 Hz; 12 A @ 277 VAC 50/60 Hz or 28 VDC (UL); 10 A @ 277 VAC 50/60 Hz (CSA)
782XBXM4L-240A	AC	240 VAC 50/60 Hz	15720 Ω	15 A @ 120 VAC 50/60 Hz; 12 A @ 277 VAC 50/60 Hz or 28 VDC (UL); 10 A @ 277 VAC 50/60 Hz (CSA)
782XBXM4L-24D	DC	24 VDC	650 Ω	15 A @ 120 VAC 50/60 Hz; 12 A @ 277 VAC 50/60 Hz or 28 VDC (UL); 10 A @ 277 VAC 50/60 Hz (CSA)

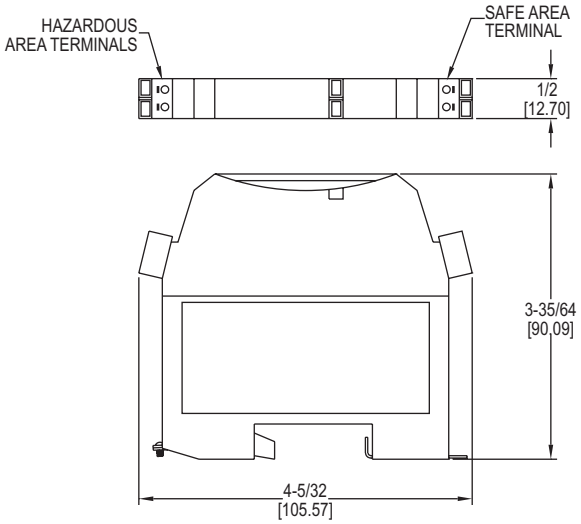
Dwyer

SERIES MTL7706/7787

ZENER BARRIERS

Intrinsically Safe Barriers for Hazardous Locations

MTL7787



The **Series MTL7706/7787 Zener Barriers** are an intrinsically safe shunt-diode barrier that can be used to communicate with and provide isolations for certain Dwyer® transmitters approved for use in hazardous areas. These barriers limit the amount of energy allowed to pass into the hazardous area, which inhibit ignition in flammable atmospheres.

FEATURES/BENEFITS

- Approved for use in hazardous areas

APPLICATIONS

- Electrically isolates pressure and level transmitters from unregulated circuits for intrinsically safe applications

SPECIFICATIONS

Transmitter Voltage: 16.2 V at 20 mA with 250 Ω load (negative w.r.t. earth); 11.0 V at 20 mA with 500 Ω load (negative w.r.t. earth).
Safe Area Output: 4-20 mA.
Load Resistance: 0 to 500 Ω.
Power Requirement: 20-35 VDC w.r.t. earth.
Accuracy: ±2 µA under all conditions.
LED Indicator: Green: Power indication.
Temperature Limits: Operating: -4 to 140°F (-20 to 60°C); Storage: -40 to 176°F (-40 to 80°C).
Humidity: 5 to 95% RH.
Terminals: Accommodate up to 2.5 mm² stranded or single-core.
Safety Description: 28 µV, 300 Ω, 93 mA.
Weight: 4.9 oz (140 g).
Agency Approvals: See table.

COMPATIBLE MODELS: 637, 608, SBLTX, PBLTX, IS626

Model	Approval	Dwyer Series
MTL7706	UL for class I; div. 1 groups A, B, C, D CL II; div. 1 groups E, F, G; CL III div. 1	IS626, SBLTX, PBLTX
MTL7706	FM for class I, II, III; div. 1 groups B, C, D, E, F, G	637
MTL7706	FM for class I, II, III; div. 1 groups A, B, C, D, E, F, G	608

Note: Compatible models: 637, 608, SBLTX, PBLTX, IS626

MODEL CHART

Model	Description
MTL7706	Zener barrier
MTL7787	Zener barrier

ACCESSORIES

Model	Description
A-360	Aluminum DIN rail 1 m

MODEL CHART

	FM			BASEEFA (ATEX)		
Model	Group	µF	mH	Group	µF	mH
MTL7706	A & B	0.083	4.2	IIC	0.083	4.2
MTL7787	A & B	0.083	3.05	IIC	0.083	3.05

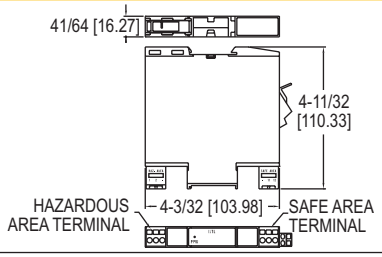
Region (Authority)	Standard	Approved For	Certificate/File no.
USA (FM) (UL)	3600, 3610 entity 3611, 3810 UL698, UL913 UL1604	AIS/I,II,III/1/Entity ABCDEFG-SCI-942; NI/I/@/ABCD/T4 [I/0] AEx[ia]IIC-SCI-942 Entity; NI/1/2/IIC/T4; Ta=140°F (60°C)	3010737
Canada (CSA)	CAN/CSA E60070, IEC60079, C22.2	Class I, Div.2, Gps A, B, C, D; Ex nA [iA] IIC T4 Class I, Xone 2, Aex nA IIC T4	1345550
UK (BASEEFA)	EN 50014, EN 50020	EEx ia IIC	BAS01ATEX7217
UK (BASEEFA) Systems	EN 50039	EEx ia IIC	Ex01E2219

Dwyer

SERIES MTL5541

GALVANIC BARRIER

Intrinsically Safe Isolators for Hazardous Locations



The **Series MTL5541 Galvanic Barrier** provides intrinsically safe isolation for communication with Dwyer® transmitters approved for use in hazardous areas. This galvanic barrier eliminates the need for a high integrity earth ground required when using shunt type diode type safety barriers. DIN rail mounting and plug-in signal and power connectors simplify installation and maintenance.

FEATURES/BENEFITS
- Designed to mount on most standard DIN rails
- Approved for use in hazardous areas

APPLICATIONS
- Electrically isolates pressure and level transmitters from unregulated circuits for intrinsically safe applications

MODEL CHART	
Model	**Description**
MTL5541	Galvanic barrier

ACCESSORIES	
Model	**Description**
A-360	Aluminum DIN rail 1 m

COMPATIBLE MODELS: 608, SBLTX, PBLTX, IS626		
Model	**Approval**	**Dwyer Series**
MTL 5541	UL for class I; div. 1 groups A, B, C, D class II div. 1 groups E, F, G class III div. 1	IS626, SBLTX, PBLTX
MTL 5541	FM for class I, II, III; div. 1 groups A, B, C, D, E, F, G	608

SPECIFICATIONS

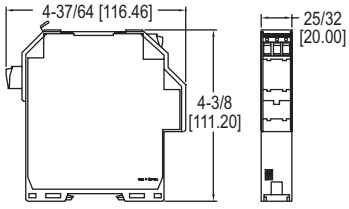
Hazardous Area Input: Signal range: 0-24 mA (including over-range); Transmitter voltage: 16.5 V at 20 mA.
Safe Area Output: Signal range: 4-20 mA; Under/over-range: 0-24 mA; Load resistance: 0 to 360Ω @ 24 mA, or 0 to 450Ω @ 20 mA; Current sink: 600Ω max.; Maximum voltage source: 24 VDC; Output resistance: > 1 MΩ.
Power Requirement: 20-35 VDC
Response Time: Settles to within 10% of final value within 50 µs.
Current Consumption (20 mA signal): 51 mA @ 24V.
Maximum Power Dissipation (20 mA signal): 0.7 W @ 24 VDC, 1.0 W @ 24 VDC.
Isolation: 250 V RMS, tested at 1500 V RMS minimum, between safe- and hazardous-area terminals; 50 V between safe-area circuits and power supply.
Transfer Accuracy at 68°F (20°C): Better than 15 µA.
LED Indicator: Green: Power indication.
Temperature Limits: Operating: -6 to 140°F (-20 to 60°C); Storage: -40 to 176°F (-40 to 80°C).
Temperature Drift: < 0.8µA/°C.
Humidity: 5 to 95% RH.
Mounting: T-section 35mm DIN rail (7.5 or 15mm) to EN 50022.
Terminals: Accommodate up to 2.5 mm2 stranded or single-core.
Safety Description: Vo= 28 V, Io= 93 mA, Po= 651mW, Um= 253 RMS or DC.
Weight: 150 g.
Agency Approvals: See table.

Certifying Authority	Standard	Approved For	Certificate/File no.
FM (USA)	FM3600, FM3610, FM3810	Associated Apparatus providing intrinsically safe circuits for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G when installed per the control drawing SCI-1028; Non-incendive for Class I, Division 2, Groups A, B, C, and D T4; Intrinsic safety for AEx [ia] IIC when installed per the control drawing SCI-1028; Non sparking for Class I, Zone 2, AExnA IIC T4 Gc hazardous (classified) locations with an ambient temperature rating of -20OC to +60OC	3025815
Canada (CSA)	CSA-C22.2 No. 157-M1992, CSA-C22.2 No. 213-M1987		
UL	UL61010-1 Edition 3 UL913 Edition 8 UL60079-0 Edition 6 UL60079-11 Edition 6	Associated Apparatus for use in Unclassified Locations or Class I, Division 2, Groups A, B, C, D	E120058
CSA	C22.2 No. 142-M1987 C22.2 No. 157-M1992 C22.2 No. 213-M1987 CAN/CSA E60079-0:07 CAN/CSA E60079-11:02 CAN/CSA E60079-15:02	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, Group IIC; Ex nA [ia] IIC; Ex nC [ia] IIC	LR 36637
ATEX	EN 60079-0:2012 EN 60079-15:2010	Ex nA IIC T4 Gc	Baseefa07ATEX0213 MTL08ATEX5541X BAS01ATEX7217
IECEx (Type 'n')	IEC 60079-0:2011 Edition 6 IEC 60079-15:2010 Edition 4	EX nA IIC T4 Gc	IECEx BAS 15.0119X
IECEx (Intrinsic Safety)	IEC 60079-0:2011 Edition 4 IEC 600709-11:2011 Edition 6	[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I	IECEx BAS 07.0069
IECEx ([Ex ia] I/IIB/IIC)	IEC 60079-0:2004 Edition 4 IEC 60079-11:2006 Edition 1 IEC 60079-0:2004 Edition 1 IEC 60079-11:2005 Edition 1	[Ex ia] I/IIB/IIC, IECEx ITA 08.0009X	IECEx ITA 08.0009X

MODEL KFD0

GALVANIC BARRIER

Loop Powered, Intrinsically Safe Isolators



The **Model KFD0 Galvanic Barrier** provides complete isolation for communication with Dwyer® intrinsically safe transmitters approved for use in hazardous areas. This galvanic barrier eliminates the need for a high integrity earth ground required when using shunt type diode type safety barriers. Unlike most other isolators, the Model KFD0-SCSEX1.55 does not require external power and has a low current draw.

FEATURES/BENEFITS
- Designed to mount on most standard DIN rails
- Approved for use in hazardous areas

APPLICATIONS
- Used to isolate voltages for intrinsically safe applications for HHT series

SPECIFICATIONS

Hazardous Area Input: Signal range: 4-20 mA (linear transmission 1-22 mA); Available transmitter voltage: ≥ 16 V for supply voltage > 21 V.
Safe Area Output: Signal range: 4-20 mA; Transmitter voltage: ≤ 30 VDC.
Response Time: ≤ 20 µs at 0, and ≤ 600 µs at 800 load.
Maximum Power Dissipation: 150 mW @ 20 mA and V <24 V.
Temperature Limits: -4 to 140°F (-20 to 60°C).
Temperature Drift: ≤ 0.5 µA/°C.
Weight: 4.2 oz (120 g).
Agency Approvals: CE, FM.

ACCESSORIES	
Model	**Description**
A-360	Aluminum DIN rail 1 m

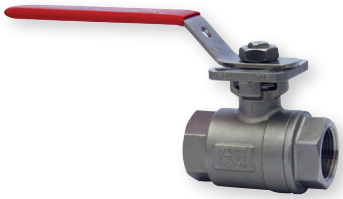
MODEL CHART									
Model	**Description**	**Approval**	**Dwyer Series**	**Vo (V)**	**Io (mA)**	**Group**	**µF**	**mH**
KFD0-SCS-EX1.55	Loop powered galvanic barrier	FM for class I, zone 1, groups IIC, IIB, IIA; class I, II, III, div. 2, groups A, B, C, D, F, G	HHT-IX	23.1	38.2	IIC (A, B), IIB (C), IIA (D, F, G)	0.042, 0.267, 0.267	0.5, 2.5, 2.5

Dwyer

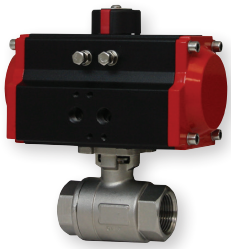
SERIES WE01 | W.E. ANDERSON™ BY DWYER

2-PIECE NPT STAINLESS STEEL BALL VALVES

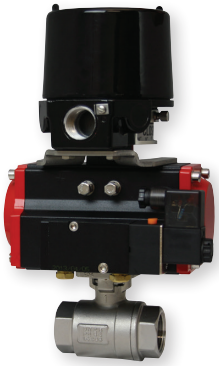
Full Port, Vented Ball, Electric or Pneumatic Actuators



WE01-EHD00



WE01-EDA02



WE01-EDA02-AA01

WE01-ETD01-A

WE01-ETI02-A

The **Series WE01 2-Piece NPT Stainless Steel Ball Valves** incorporate a full port valve for great flow rates with minimal pressure drop. The valve features a blowout proof stem for added safety, reinforced PTFE seats and seals for longer life, and a 316 SS (ASTM CF8M) ball for better performance. Actuators are direct mounted creating a compact assembly for tight spaces. Limit switches are able to be mounted directly to the valves allowing for remote position indication.

The Series WE01 can be configured with either an electric or pneumatic actuator. Electric actuators are available in weatherproof or explosion-proof, a variety of supply voltages and two-position or modulating control. Two-position actuators use the supply voltage to drive the valve open or closed, while the modulating actuator accepts a 4-20 mA input for valve positioning. Actuators feature thermal overload protection and permanently lubricated gear train.

The pneumatic double acting actuator uses an air supply to drive the valve open and closed. The actuator has two supply ports, with one driving the valve open and the other driving the valve closed. Spring return pneumatic actuators use the air supply to open the valve and internally loaded springs return the valve to the closed position. Also available is the SN solenoid valve to electrically switch the air supply pressure between the air supply ports for opening and closing the valve. Actuators are constructed of anodized and epoxy coated aluminum for years of corrosion free service.

FEATURES/BENEFITS

- Capable of being configured to fit any application
- Limit switches can be mounted to manual valves for remote monitoring
- Vented ball to reduce operating torque
- Weatherproof or explosion-proof electric actuators
- Double acting or spring return anodized aluminum pneumatic actuators
- Full port design reduces the pressure drop across the valve

APPLICATIONS

- Gas or liquid flow control
- Ideal for quick bubble tight shut-off

SPECIFICATIONS	
VALVE **Service:** Compatible liquids and gases. **Body:** 2-piece. **Line Sizes:** 1/2 to 3″. **End Connections:** Female NPT. **Pressure Limits:** 28″ Hg to 1000 psi (-0.7 to 69 bar) up to 250°F. **Wetted Materials:** Body and ball: 316 SS (CF8M); Stem: 316 SS; Seat: RTFE/ PTFE; Seal; Washer and packing: PTFE. **Temperature Limits:** -20 to 392°F (-29 to 200°C). **Other Materials:** O-ring: Fluoroelastomer; Handle: 304 SS; Washer: 301 SS; Stem nut, Locking device, Gland ring: 304 SS; Handle sleeve: PVC. **Agency Approvals:** Meets the technical requirements of EU Directive 2011/65/ EU (RoHS II). **ACTUATORS** **Pneumatic “DA” and “SR” Series** **Type:** DA series is double acting and SR series is spring return (rack and pinion). **Normal Supply Pressure:** DA: 40 to 115 psi (2.7 to 7.9 bar); SR: 80 psi (5.5 bar). **Maximum Supply Pressure:** 120 psi (8.6 bar). **Air Connections:** DA01: 1/8″ female NPT; DA02 to DA05: 1/4″ female NPT; SR02 to SR07: 1/4″ female NPT. **Housing Material:** Anodized aluminum body and epoxy coated aluminum end caps. **Temperature Limits:** -40 to 176°F (-40 to 80°C). **Accessory Mounting:** NAMUR standard.	**Electric “TD” and “MD” Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC (MD models not available in 24 VDC). **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** TD01 4 s; MD01: 10 s; TD02 and MD02: 20 s; TD03 and MD03: 30 s. **Duty Rating:** 85%. **Enclosure Rating:** NEMA 4X (IP67). **Housing Material:** Powder coated aluminum. **Temperature Limits:** -22 to 140°F (-30 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Manual override, position indicator, and TD models come with two limit switches. **Electric “TI” and “MI” Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC. **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** See instruction manual. **Duty Rating:** See instruction manual. **Enclosure Rating:** NEMA 7, designed to meet hazardous locations: Class I, Group C & D; Class II, Group E, F & G; Division I & II. **Housing Material:** Powder coated aluminum. **Temperature Limits:** -40 to 140°F (-40 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Position indicator and two limit switches.

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SERIES WE01 | W.E. ANDERSON™ BY DWYER

2-PIECE NPT STAINLESS STEEL BALL VALVES

Full Port, Vented Ball, Electric or Pneumatic Actuators

MODEL CHART

Size	Cv (gal/min)	PopularHand Operated Model	Popular Double Acting Pneumatic Model	Popular Spring Return Pneumatic Model	Popular NEMA 4X Two Position Electric (110 VAC) Model	Popular NEMA 4X Modulating Electric (110 VAC) Model
1/2″	36.64	**WE01-CHD00**	**WE01-CDA01**	**WE01-CSR02**	**WE01-CTD01-A**	**WE01-CMD01-A**
3/4″	67.69	**WE01-DHD00**	**WE01-DDA01**	**WE01-DSR02**	**WE01-DTD01-A**	**WE01-DMD01-A**
1″	110.27	**WE01-EHD00**	**WE01-EDA02**	**WE01-ESR03**	**WE01-ETD01-A**	**WE01-EMD01-A**
1-1/4″	184.73	**WE01-FHD00**	**WE01-FDA02**	**WE01-FSR03**	**WE01-FTD01-A**	**WE01-FMD01-A**
1-1/2″	266.62	**WE01-GHD00**	**WE01-GDA03**	**WE01-GSR04**	**WE01-GTD02-A**	**WE01-GMD01-A**
2″	485.3	**WE01-HHD00**	**WE01-HDA03**	**WE01-HSR05**	**WE01-HTD02-A**	**WE01-HMD02-A**
2-1/2″	791.57	**WE01-IHD00**	**WE01-IDA04**	**WE01-ISR07**	**WE01-ITD03-A**	**WE01-IMD03-A**
3″	1151.95	**WE01-JHD00**	**WE01-JDA05**	**WE01-JSR07**	**WE01-JTD03-A**	**WE01-JMD03-A**

MODEL CHART - HAND OPERATED & PNEUMATIC ACTUATOR

Example	WE01	-EDA02	-A	A	01		WE01-EDA02-AA01
Series	WE01						316 SS 2-piece NPT
Size and Actuator		CHD00					1/2″ hand operated
		DHD00					3/4″ hand operated
		EHD00					1″ hand operated
		FHD00					1-1/4″ hand operated
		GHD00					1-1/2″ hand operated
		HHD00					2″ hand operated
		IHD00					2-1/2″ hand operated
		JHD00					3″ hand operated
		CDA01					1/2″ double acting
		DDA01					3/4″ double acting
		EDA02					1″ double acting
		FDA02					1-1/4″ double acting
		GDA03					1-1/2″ double acting
		HDA03					2″ double acting
		IDA04					2-1/2″ double acting
		JDA05					3″ double acting
		CSR02					1/2″ spring return
		DSR02					3/4″ spring return
		ESR03					1″ spring return
		FSR03					1-1/4″ spring return
		GSR04					1-1/2″ spring return
		HSR05					2″ spring return
		ISR07					2-1/2″ spring return
		JSR07					3″ spring return
Solenoid			N				No solenoid
			A				NEMA 4X NAMUR solenoid
Solenoid Voltage				N			No solenoid
				A			110 VAC
				B			220 VAC
				C			24 VAC
				D			24 VDC
				E			12 VDC
Positioner and Switches					00		None
					01		42AD0 exp limit switch
					02		45VD0 exp position transmitter
					03		42AD0-B ATEX limit switch
					04		42AD0-IE IECEX limit switch
					06		QV-210101 poly limit switch
					07		VPS and P1 prox switch
					08		265ER-D5 positioner
					09		285ER-D5 smart positioner
Options						NO	Fail open spring return actuator

ACCESSORIES

Model	Description
AFR4	Air filter regulator 0 to 120 psi
VB-01	Volume booster

MODEL CHART - ELECTRIC ACTUATOR

Example	WE01	-GMD01	-A	WE01-GMD01-A
Series	WE01			316 SS 2-piece NPT
Size and Actuator		CTD01		1/2″ NEMA 4X two-position
		DTD01		3/4″ NEMA 4X two-position
		ETD01		1″ NEMA 4X two-position
		FTD01		1-1/4″ NEMA 4X two-position
		GTD02		1-1/2″ NEMA 4X two-position
		HTD02		2″ NEMA 4X two-position
		ITD03		2-1/2″ NEMA 4X two-position
		JTD03		3″ NEMA 4X two-position
		CMD01		1/2″ NEMA 4X modulating
		DMD01		3/4″ NEMA 4X modulating
		EMD01		1″ NEMA 4X modulating
		FMD01		1-1/4″ NEMA 4X modulating
		GMD01		1-1/2″ NEMA 4X modulating
		HMD02		2″ NEMA 4X modulating
		IMD03		2-1/2″ NEMA 4X modulating
		JMD03		3″ NEMA 4X modulating
		CTI01		1/2″ exp two-position
		DTI01		3/4″ exp two-position
		ETI02		1″ exp two-position
		FTI02		1-1/4″ exp two-position
		GTI02		1-1/2″ exp two-position
		HTI04		2″ exp two-position
		ITI05		2-1/2″ exp two-position
		JTI06		3″ exp two-position
		CMI01		1/2″ exp electric modulating
		DMI01		3/4″ exp electric modulating
		EMI02		1″ exp electric modulating
		FMI02		1-1/4″ exp electric modulating
		GMI02		1-1/2″ exp electric modulating
		HMI04		2″ exp electric modulating
		IMI05		2-1/2″ exp electric modulating
		JMI06		3″ exp electric modulating
Actuator Voltage			A	110 VAC
			B	220 VAC
			C	24 VAC
			D	24 VDC

REPAIR KIT

Model	Valve Series and Size
VRK-02	WE01-1/2″
VRK-03	WE01-3/4″
VRK-04	WE01-1″
VRK-06	WE01-1-1/2″
VRK-07	WE01-2″
VRK-08	WE01-2-1/2″
VRK-09	WE01-3″

Parts List - Included in Kit
1 PTFE thrust washer
1 FKM O-ring
2 PTFE stem packing
2 PTFE seals
2 RTFE seats

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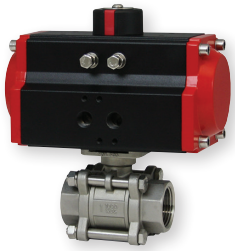
SERIES WE02 | W.E. ANDERSON™ BY DWYER

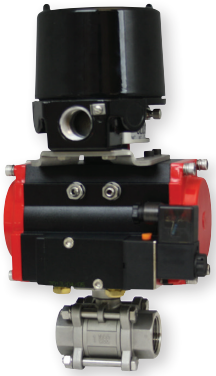
3-PIECE NPT STAINLESS STEEL BALL VALVES

Full Port, Vented Ball, Electric or Pneumatic Actuators

WE02-DHD00



WE02-DDA01



WE02-DDA01-AA01

WE02-DTD01-A

WE02-CTI01-A

The **Series WE02 3-Piece NPT Stainless Steel Ball Valves** incorporate a full port valve for great flow rates with minimal pressure drop. The valve features a blowout proof stem for added safety, reinforced PTFE seats and seals for longer life, and a 316 SS (ASTM CF8M) ball for better performance. Actuators are direct mounted creating a compact assembly for tight spaces. Limit switches are able to be mounted directly to the valves allowing for remote position indication.

The Series WE02 can be configured with either an electric or pneumatic actuator. Electric actuators are available in weatherproof or explosion-proof, a variety of supply voltages and two-position or modulating control. Two-position actuators use the supply voltage to drive the valve open or closed, while the modulating actuator accepts a 4-20 mA input for valve positioning. Actuators feature thermal overload protection and permanently lubricated gear train.

The pneumatic double acting actuator uses an air supply to drive the valve open and closed. The actuator has two supply ports, with one driving the valve open and the other driving the valve closed. Spring return pneumatic actuators use the air supply to open the valve, and internally loaded springs return the valve to the closed position. Also available is the SN solenoid valve to electrically switch the air supply pressure between the air supply ports for opening and closing the valve. Actuators are constructed of anodized and epoxy coated aluminum for years of corrosion free service.

FEATURES/BENEFITS

- Capable of being configured to fit any application
- Limit switches can be mounted to manual valves for remote monitoring
- Vented ball to reduce operating torque
- Weatherproof or explosion-proof electric actuators
- Double acting or spring return anodized aluminum pneumatic actuators
- 3-piece design for each replacement of seals
- Full port design reduces the pressure drop across the valve

APPLICATIONS

- Gas or liquid flow control
- Ideal for quick bubble tight shut-off

SPECIFICATIONS	
VALVE **Service:** Compatible liquids and gases. **Body:** 3-piece. **Line Sizes:** 1/2 to 3″ . **End Connections:** Female NPT. **Pressure Limits:** 28″ Hg to 1000 psi (-0.7 to 69 bar) up to 250°F. **Wetted Materials:** Body and ball: 316 SS (CF8M); Stem: 316 SS; Seat: RTFE/ PTFE; Seal, washer, and packing: PTFE. **Temperature Limits:** -20 to 392°F (-29 to 200°C). **Other Materials:** O-ring: Fluoroelastomer; Handle: 304 SS; Washer: 301 SS; Stem nut, Locking device, Gland ring: 304 SS; Handle sleeve: PVC. **Agency Approvals:** Meets the technical requirements of EU Directive 2011/65/ EU (RoHS II). **ACTUATORS** **Pneumatic "DA" and "SR" Series** **Type:** DA series is double acting and SR series is spring return (rack and pinion). **Normal Supply Pressure:** DA: 40 to 115 psi (2.7 to 7.9 bar); SR: 80 psi (5.5 bar). **Maximum Supply Pressure:** 120 psi (8.6 bar). **Air Connections:** DA01: 1/8″ female NPT; DA02 to DA05: 1/4″ female NPT; SR02 to SR07: 1/4″ female NPT. **Housing Material:** Anodized aluminum body and epoxy coated aluminum end caps. **Temperature Limits:** -40 to 176°F (-40 to 80°C). **Accessory Mounting:** NAMUR standard.	**Electric "TD" and "MD" Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC (MD models not available in 24 VDC). **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** TD01: 4 s; MD01: 10 s; TD02 and MD02: 20 s; TD03 and MD03: 30 s. **Duty Rating:** 85%. **Enclosure Rating:** NEMA 4X (IP67). **Housing Material:** Powder coated aluminum. **Temperature Limits:** -22 to 140°F (-30 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Manual override, position indicator, and TD models come with two limit switches. **Electric "TI" and "MI" Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC. **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** See instruction manual. **Duty Rating:** See instruction manual. **Enclosure Rating:** NEMA 7, designed to meet hazardous locations: Class I, Group C & D; Class II, Group E, F & G; Division I & II. **Housing Material:** Powder coated aluminum. **Temperature Limits:** -40 to 140°F (-40 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Position indicator and two limit switches.

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SERIES WE02 | W.E. ANDERSON™ BY DWYER

3-PIECE NPT STAINLESS STEEL BALL VALVES

Full Port, Vented Ball, Electric or Pneumatic Actuators

MODEL CHART

Size	Cv (gal/min)	Popular Hand Operated Model	Popular Double Acting Pneumatic Model	Popular Spring Return Pneumatic Model	Popular NEMA 4X Two Position Electric (110 VAC) Model	Popular NEMA 4X Modulating Electric (110 VAC) Model
1/2″	36.64	**WE02-CHD00**	**WE02-CDA01**	**WE02-CSR02**	**WE02-CTD01-A**	**WE02-CMD01-A**
3/4″	67.69	**WE02-DHD00**	**WE02-DDA01**	**WE02-DSR02**	**WE02-DTD01-A**	**WE02-DMD01-A**
1″	110.27	**WE02-EHD00**	**WE02-EDA02**	**WE02-ESR03**	**WE02-ETD01-A**	**WE02-EMD01-A**
1-1/4″	184.73	**WE02-FHD00**	**WE02-FDA02**	**WE02-FSR03**	**WE02-FTD01-A**	**WE02-FMD01-A**
1-1/2″	266.62	**WE02-GHD00**	**WE02-GDA03**	**WE02-GSR04**	**WE02-GTD02-A**	**WE02-GMD01-A**
2″	485.3	**WE02-HHD00**	**WE02-HDA03**	**WE02-HSR05**	**WE02-HTD02-A**	**WE02-HMD02-A**
2-1/2″	791.57	**WE02-IHD00**	**WE02-IDA04**	**WE02-ISR07**	**WE02-ITD03-A**	**WE02-IMD03-A**
3″	1151.95	**WE02-JHD00**	**WE02-JDA05**	**WE02-JSR07**	**WE02-JTD03-A**	**WE02-JMD03-A**

MODEL CHART - HAND OPERATED & PNEUMATIC ACTUATOR

Example	WE02	-CSR02	-N	N	09		WE02-CSR02-NN09
Series	WE02						316 SS 3-piece NPT
Size and Actuator		CHD00					1/2″ hand operated
		DHD00					3/4″ hand operated
		EHD00					1″ hand operated
		FHD00					1-1/4″ hand operated
		GHD00					1-1/2″ hand operated
		HHD00					2″ hand operated
		IHD00					2-1/2″ hand operated
		JHD00					3″ hand operated
		CDA01					1/2″ double acting
		DDA01					3/4″ double acting
		EDA02					1″ double acting
		FDA02					1-1/4″ double acting
		GDA03					1-1/2″ double acting
		HDA03					2″ double acting
		IDA04					2-1/2″ double acting
		JDA05					3″ double acting
		CSR02					1/2″ spring return
		DSR02					3/4″ spring return
		ESR03					1″ spring return
		FSR03					1-1/4″ spring return
		GSR04					1-1/2″ spring return
		HSR05					2″ spring return
		ISR07					2-1/2″ spring return
		JSR07					3″ spring return
Solenoid			N				No solenoid
			A				NEMA 4X NAMUR solenoid
Solenoid Voltage				N			No solenoid
				A			110 VAC
				B			220 VAC
				C			24 VAC
				D			24 VDC
				E			12 VDC
Positioner and Switches					00		None
					01		42AD0 exp limit switch
					02		45VD0 exp position transmitter
					03		42AD0-B ATEX limit switch
					04		42AD0-IE IECEX limit switch
					06		QV-210101 poly limit switch
					07		VPS and P1 prox switch
					08		265ER-D5 positioner
					09		285ER-D5 smart positioner
Options						NO	Fail open spring return actuator

MODEL CHART - ELECTRIC ACTUATOR

Example	WE02	-ETD01	-B	WE02-ETD01-B
Series	WE02			316 SS 3-piece NPT
Size and Actuator		CTD01		1/2″ NEMA 4X two-position
		DTD01		3/4″ NEMA 4X two-position
		ETD01		1″ NEMA 4X two-position
		FTD01		1-1/4″ NEMA 4X two-position
		GTD02		1-1/2″ NEMA 4X two-position
		HTD02		2″ NEMA 4X two-position
		ITD03		2-1/2″ NEMA 4X two-position
		JTD03		3″ NEMA 4X two-position
		CMD01		1/2″ NEMA 4X modulating
		DMD01		3/4″ NEMA 4X modulating
		EMD01		1″ NEMA 4X modulating
		FMD01		1-1/4″ NEMA 4X modulating
		GMD01		1-1/2″ NEMA 4X modulating
		HMD02		2″ NEMA 4X modulating
		IMD03		2-1/2″ NEMA 4X modulating
		JMD03		3″ NEMA 4X modulating
		CTI01		1/2″ exp two-position
		DTI01		3/4″ exp two-position
		ETI02		1″ exp two-position
		FTI02		1-1/4″ exp two-position
		GTI03		1-1/2″ exp two-position
		HTI04		2″ exp two-position
		ITI05		2-1/2″ exp two-position
		JTI05		3″ exp two-position
		CMI01		1/2″ exp electric modulating
		DMI01		3/4″ exp electric modulating
		EMI02		1″ exp electric modulating
		FMI02		1-1/4″ exp electric modulating
		GMI03		1-1/2″ exp electric modulating
		HMI04		2″ exp electric modulating
		IMI05		2-1/2″ exp electric modulating
		JMI05		3″ exp electric modulating
Actuator Voltage			A	110 VAC
			B	220 VAC
			C	24 VAC
			D	24 VDC

ACCESSORIES

Model	Description
AFR4	Air filter regulator 0 to 120 psi
VB-01	Volume booster

REPAIR KIT

Model	Valve Series and Size
VRK-10	WE02-1/2″
VRK-11	WE02-3/4″
VRK-12	WE02-1″
VRK-14	WE02-1-1/2″
VRK-15	WE02-2″
VRK-16	WE02-2-1/2″
VRK-17	WE02-3″

Parts List - Included in Kit

1 PTFE thrust washer
1 FKM O-ring
2 PTFE stem packing
2 PTFE seals
2 RTFE seats

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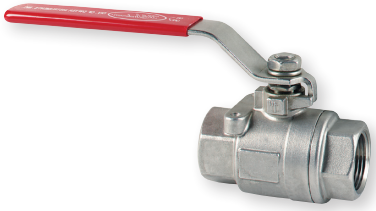
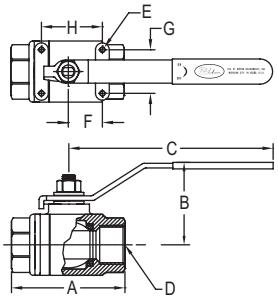
SERIES BV2M | W.E. ANDERSON™ BY DWYER

2-PIECE STAINLESS STEEL BALL VALVE

Full Port, 1000 psig (69 bar)





DIMENSIONS (IN)							
A (Ref)	B (Ref)	C (Ref)	D (NPT)	E (UNC)	F (+.015)	G (+.015)	H (+.015)
1/4″	2.165	4.055	1/4″	(2) 3/16-24	0.500	1.102	N/A
3/8″	2.165	4.055	3/8″	(2) 3/16-24	0.500	1.102	N/A
1/2″	2.559	5.236	1/2″	(2) 3/16-24	0.500	1.102	N/A
3/4″	2.992	5.236	3/4″	(2) 3/16-24	0.882	1.378	N/A
1″	3.465	6.024	1″	(2) 3/16-24	0.882	1.378	N/A
1-1/4″	3.976	6.024	1-1/4″	(2) 1/4-20	1.000	1.500	N/A
1-1/2″	4.331	7.520	1-1/2″	(2) 1/4-20	1.000	1.500	N/A
2″	4.882	7.520	2″	(4) 1/4-20	1.000	1.500	2.000
2-1/2″	6.299	9.724	2-1/2″	(4) 1/4-20	1.382	2.165	2.764
3″	6.929	9.724	3″	(4) 1/4-20	1.382	2.165	2.764

The **Series BV2M 2-Piece Stainless Steel Ball Valve** is the economical choice for high quality, SS ball valves for use in chemical, petrochemical, pulp and paper and general applications. The Series BV2M body and endcaps are constructed of investment cast SS, while stem is 316 SS. Seats and body seals are 15% glass reinforced PTFE providing broad media compatibility and bubble tight shutoff to 1000 psig (69 bar). Internally loaded, blowout-proof stem provides safety in the event of overpressure. Full port design allows for maximum Cv with minimal pressure drop. Integral actuator mounting pads allows for ease of automation.

FEATURES/BENEFITS
- Wide chemical compatibility
- Bubble tight shut off to 1000 psig
- Blowout-proof stem
- Actuator mounting pad

APPLICATIONS
- Gas or liquid flow control
- Chemical, petrochemical, pulp and paper, and other general applications

SPECIFICATIONS

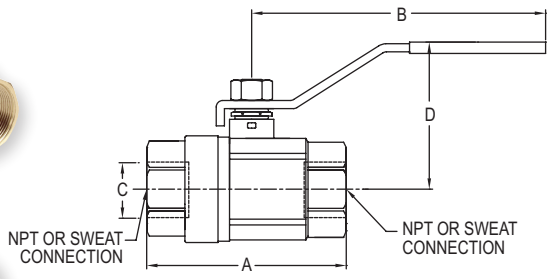
End Connections: Female NPT.
Pressure Limits: 1000 psi (69 bar) WOG, 150 psi (10.3 bar) SWP.
Wetted Materials: Body, ball, end cap: CF8M SS; Stem: 316 SS; Seat, thrust washer: RTFE; End gasket, stem packing: PTFE.
Temperature Limits: -20 to 450°F (-29 to 232°C).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART			
Model	Size	Model	Size
BV2M100	1/4″	**BV2M105**	1-1/4″
BV2M101	3/8″	**BV2M106**	1-1/2″
BV2M102	1/2″	**BV2M107**	2″
BV2M103	3/4″	**BV2M108**	2-1/2″
BV2M104	1″	**BV2M109**	3″

SERIES DBVL & SWBV | W.E. ANDERSON™ BY DWYER

LOW LEAD NPT BRASS BALL VALVES

Economical, Easy to Install



DBVL DIMENSIONS				
NPT Size	A in [mm]	B in [mm]	C in [mm]	D in [mm]
1/4″	1-3/4 [44.6]	3-5/32 [80]	25/64 [10]	1-47/64 [44.2]
3/8″	1-3/4 [44.6]	3-5/32 [80]	25/64 [10]	1-47/64 [44.2]
1/2″	2-3/64 [52]	4-1/64 [102]	19/32 [15]	1-7/8 [47.5]
3/4″	2-23/64 [60]	4-1/64 [102]	3/4 [19]	2-1/64 [51]
1″	2-3/4 [70]	4-17/32 [115]	63/64 [25]	2-23/32 [69]
1-1/4″	3-5/16 [84]	5 [127]	1-17/64 [32]	3-1/32 [77]
1-1/2″	3-21/32 [93]	5-19/32 [142]	1-37/64 [40]	3-1/32 [94]
2″	4-3/16 [106.2]	5-19/32 [142]	1-31/32 [50]	4 [101]
2-1/2″	5-3/8 [136.6]	8-21/32 [220]	2-33/64 [64]	1-49/64 [121]
3″	6-1/32 [153.4]	8-21/32 [220]	2-29/32 [74]	5-5/64 [129]

SWBV DIMENSIONS				
Sweat Size	A in [mm]	B in [mm]	C in [mm]	D in [mm]
1/4″	1-55/64 [47.24]	3-5/32 [80.01]	23/64 [9.14]	1-47/64 [43.94]
3/8″	1-55/64 [47.24]	3-5/32 [80.01]	1/2 [12.70]	1-47/64 [43.94]
1/2″	2-15/64 [56.90]	3-55/64 [98.04]	5/8 [15.75]	2-15/64 [56.90]
3/4″	2-51/64 [70.87]	3-55/64 [98.04]	7/8 [22.35]	2-23/64 [59.94]
1″	3-35/64 [89.92]	4-13/32 [112.01]	1-1/8 [28.70]	2-45/64 [68.58]
1-1/4″	4-1/8 [104.90]	4-51/64 [121.92]	1-3/8 [35.05]	3-3/64 [77.22]
1-1/2″	4-11/16 [119.13]	5-7/16 [137.92]	1-5/8 [41.40]	3-51/64 [96.27]
2″	5-35/64 [140.97]	5-7/16 [137.92]	2-1/8 [54.10]	4-5/32 [105.41]
2-1/2″	6-39/64 [167.89]	8-3/16 [207.77]	2-41/64 [67.06]	4-63/64 [126.49]
3″	6-57/64 [175.01]	9-11/16 [245.87]	3-13/32 [86.61]	5-1/16 [128.52]

The **Series DBVL & SWBV Low Lead NPT Brass Ball Valves** are economical hand lever ball valves ideal for commercial or industrial use where lead content is regulated. The valve body, body cap, and stem are made of a quality low lead brass for great durability and compatibility. The seats and stem packing are constructed of PTFE for long lasting service. A blowout-proof stem provides safety in the event of overpressure, and the full port design allows for the maximum flow coefficient while still retaining minimal pressure drop.

FEATURES/BENEFITS
- Low lead brass
- PTFE seats to stem
- Blowout-proof stem

APPLICATIONS
- Gas or liquid flow control

SPECIFICATIONS

Service: Gases and liquids compatible with wetted materials.
End Connections: DBVL: 1/4″ to 3″ female NPT; SWBV: 1/4″ to 3″ sweat connections.
Pressure Limits: 1/4″ to 2″: -29″ Hg to 600 psi (-736 mm Hg to 41 bar) WOG; DBVL: 2-1/2″ to 3″: -29″ Hg to 250 psi (-736 mm Hg to 17 bar) WOG; SWBV: 2-1/2″ to 3″, -29″ Hg to 400 psi (-736 mm Hg to 27 psi) WOG.
Temperature Limits: -40° to 365°F (-40° to 185°C).
Wetted Materials: Body, body cap, and stem: Brass; Seat and packing: PTFE; Ball: DBVL: 1/4″ to 1″: Chrome plated brass; 1-1/4″ to 3″: SS; SWBV: SS.
Other Materials: Body gland and stem nut: Brass; Handle and handle nut: Steel; Handle cover: Rubber.
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

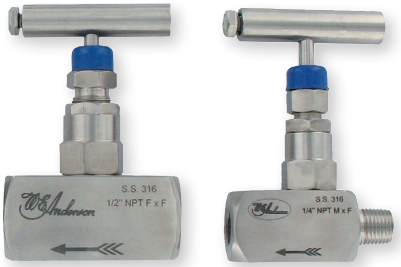
MODEL CHART			
Model	Pipe Size (in)	Model	Pipe Size (in)
DBVL-00	1/4	**SWBV-00**	1/4
DBVL-01	3/8	**SWBV-01**	3/8
DBVL-02	1/2	**SWBV-02**	1/2
DBVL-03	3/4	**SWBV-03**	3/4
DBVL-04	1	**SWBV-04**	1
DBVL-05	1-1/4	**SWBV-05**	1-1/4
DBVL-06	1-1/2	**SWBV-06**	1-1/2
DBVL-07	2	**SWBV-07**	2
DBVL-08	2-1/2	**SWBV-08**	2-1/2
DBVL-09	3	**SWBV-09**	3

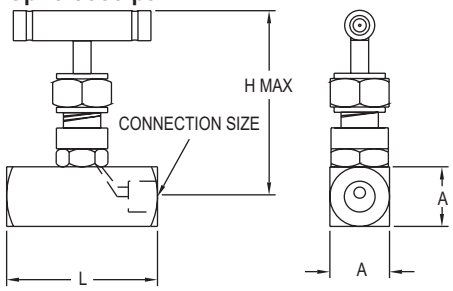
Dwyer

SERIES HNV | W.E. ANDERSON™ BY DWYER

NEEDLE VALVE 1-VALVE BLOCK MANIFOLDS

For Use with Gas and Liquids, Pressures Up to 6000 psi





Connection	A in [mm]	L in [mm]	H in [mm]
1/8″ F x F	-	1-31/32 [50.01]	-
1/8″ M x F	7/8 [22.3]	2-11/64 [55.17]	2-3/8 [60.33]
1/4″ F x F	-	2-3/8 [60.33]	-
1/4″ M x F	63/64 [25]	2-9/16 [65.09]	2-9/16 [65.09]
3/8″ F x F	-	2-3/8 [60.33]	-
3/8″ M x F	63/64 [25]	2-9/16 [65.09]	2-9/16 [65.09]
1/2″ F x F	-	2-9/16 [65.09]	-
1/2″ M x F	1-17/64 [32.15]	2-49/64 [70.25]	2-49/64 [70.25]
3/4″ F x F	-	2-61/64 [59.13]	-
3/4″ M x F	1-1/2 [38.10]	3-5/32 [80.17]	3-23/64 [85/33]
1″ F x F	-	3-23/64 [85.33]	-
1″ M x F	1-25/32 [45.24]	4-7/64 [104.38]	3-3/4 [95.25]

Series HNV Needle Valve 1-Valve Block Manifolds are barstock style needle valves that is designed for isolating instruments from liquids or gases. The valve series features fine threading and large seat area to ensure tight shutoff. Wetted materials are 316 SS and PTFE making these ideal for use with corrosives. The HNV has been tested to assure vibration and thermal stability.
Body includes a lock pin to prevent accidental bonnet disengagement. The HNV is available in male x female and female x female connections from 1/8″ to 1″. Tee handle is constructed of 316 SS and allows low torque operation.

FEATURES/BENEFITS
- Pressures to 6000 psi
- Fine threading and large seat area to ensure tight shutoff
- Barstock style needle value
- 316 SS and PTFE wetted materials
- Includes lockpin to prevent accidental bonnet disengagement

APPLICATIONS
- Instruments line shut off, instrument isolation, drain valve, specially designed for gas service and liquid applications

SPECIFICATIONS

Service: Gases and liquids compatible with wetted materials.
End Connections: NPT.
Wetted Materials: 316 SS and PTFE packing.
Pressure Limits: 6000 psi (431 bar) @ 200°F (93°C). 4000 psi (276 bar) @ 464°F (240°C).
Temperature Limits: 464°F (240°C).
Other Materials: Handle: 316 SS.

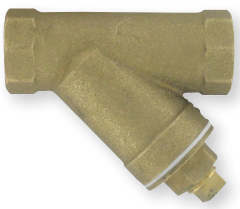
MODEL CHART

Pipe Size	Female x Female Model	Female x Male Model
1/8″	**HNV-SSS31B**	**HNV-SSS21B**
1/4″	**HNV-SSS32B**	**HNV-SSS22B**
3/8″	**HNV-SSS33B**	**HNV-SSS23B**
1/2″	**HNV-SSS34B**	**HNV-SSS24B**
3/4″	**HNV-SSS35B**	**HNV-SSS25B**
1″	**HNV-SSS36B**	**HNV-SSS26B**

SERIES BYS & SYS | W.E. ANDERSON™ BY DWYER

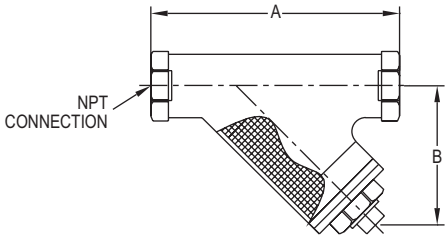
BRASS OR STAINLESS STEEL Y-STRAINERS

Cost Effective, Excellent Filtration, High Flow



BYS ++

SYS



BYS DIMENSIONS

NPT Size	A in [mm]	B in [mm]
1/4″	1-31/32 [50.04]	2-11/16 [68.07]
3/8″	1-31/32 [50.04]	2-11/16 [68.07]
1/2″	1-31/32 [50.04]	2-11/16 [68.07]
3/4″	2-23/64 [59.94]	3-59/64 [99.57]
1″	2-41/64 [67.06]	4-17/32 [115.06]
1-1/4″	3-3/16 [81.03]	5-25/64 [136.91]
1-1/2″	3-7/16 [87.12]	6-17/64 [159.00]
2″	4-19/64 [108.97]	7-31/64 [189.99]

SYS DIMENSIONS

NPT Size	A in [mm]	B in [mm]
1/4″	2-33/64 [64.00]	1-27/32 [46.99]
3/8″	2-33/64 [64.00]	1-27/32 [46.99]
1/2″	2-33/64 [64.00]	1-27/32 [46.99]
3/4″	3-1/16 [78.00]	2-15/64 [56.90]
1″	3-35/64 [90.00]	2-41/64 [67.06]
1-1/4″	4-11/64 [106.00]	2-53/64 [71.88]
1-1/2″	4-11/16 [119.00]	3-5/32 [80.01]
2″	5-33/64 [140.00]	3-21/32 [92.96]

The **Series BYS & SYS Brass or Stainless Steel Y-Strainers** are a cost effective option for use in any type of industrial application. Versatile Y configuration and availability in a wide range of sizes allow for many different uses. Body, cap, and plug are made from either a high quality brass or stainless steel to ensure reliability. The seal is constructed of PTFE to ensure long service life. The stainless steel strainer provides excellent filtration to help prevent damage to valves, meters, etc. from rust and dirt, without sacrificing high flow characteristics.

FEATURES/BENEFITS
- Cost effective
- Stainless steel strainer

APPLICATIONS
- Ideal for installations upstream to proect pumps, control valves, regulators, etc from rust, pipe scale dirt

SPECIFICATIONS

Service: Gases, steam and liquids compatible with wetted materials.
End Connections: Female NPT.
Pressure Limits: See model chart.
Temperature Limits: -10 to 250°F (-23 to 121°C).
Wetted Materials: BYS: Valve body: Cast brass; Cap and plug: Brass; Screen: SS; Seal: PTFE; SYS: Valve body and cap: Cast 316 SS (CF8M); Plug and screen: 316 SS; Seal: PTFE.

MODEL CHART

Model	Pipe Size	Max. Pressure	Model	Pipe Size	Max. Pressure
BYS-00	1/4″	400 psi (27.6 bar)	**SYS-00**	1/4″	800 psi (55.2 bar)
BYS-01	3/8″	400 psi (27.6 bar)	**SYS-01**	3/8″	800 psi (55.2 bar)
BYS-02	1/2″	400 psi (27.6 bar)	**SYS-02**	1/2″	800 psi (55.2 bar)
BYS-03	3/4″	400 psi (27.6 bar)	**SYS-03**	3/4″	800 psi (55.2 bar)
BYS-04	1″	300 psi (20.7 bar)	**SYS-04**	1″	800 psi (55.2 bar)
BYS-05	1-1/4″	300 psi (20.7 bar)	**SYS-05**	1-1/4″	800 psi (55.2 bar)
BYS-06	1-1/2″	300 psi (20.7 bar)	**SYS-06**	1-1/2″	800 psi (55.2 bar)
BYS-07	2″	300 psi (20.7 bar)	**SYS-07**	2″	800 psi (55.2 bar)

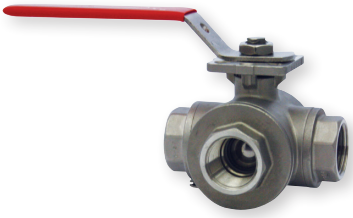
++USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

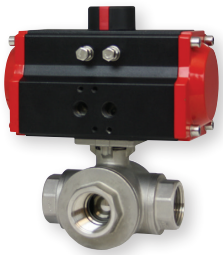
SERIES WE31 | W.E. ANDERSON™ BY DWYER

3-WAY NPT STAINLESS STEEL BALL VALVES

Full Port, Vented Ball, Electric or Pneumatic Actuators



WE31-DHD00-T1



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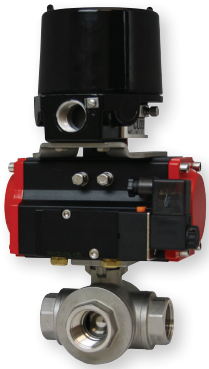
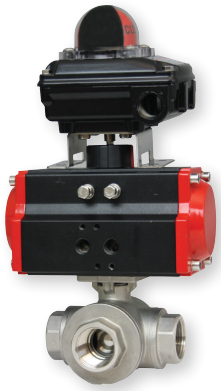
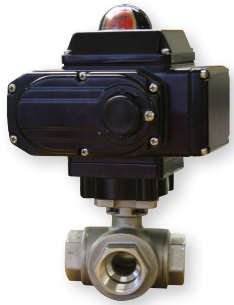


WE31-DDA02-T1-AA01



WE31-DDA02-T3-NN05



WE31-DTD01-T3-A

The **Series WE31 3-Way NPT Stainless Steel Ball Valves** incorporate a full port valve for great flow rates with minimal pressure drop. The valve features a blowout-proof stem for added safety, reinforced PTFE seats and seals for longer life, and a 316 SS (ASTM CF8M) ball for better performance. Actuators are direct mounted creating a compact assembly for tight spaces. Limit switches are able to be mounted directly to the valves allowing for remote position indication.

The Series WE31 can be configured with either an electric or pneumatic actuator. Electric actuators are available in weatherproof or explosion-proof, a variety of supply voltages and two-position or modulating control. Two-position actuators use the supply voltage to drive the valve open or closed, while the modulating actuator accepts a 4-20 mA input for valve positioning. Actuators feature thermal overload protection and permanently lubricated gear train.

The pneumatic double acting actuator uses an air supply to drive the valve open and closed. The actuator has two supply ports, with one driving the valve open and the other driving the valve closed. Spring return pneumatic actuators use the air supply to open the valve, and internally loaded springs return the valve to the closed position. Also available is the SN solenoid valve to electrically switch the air supply pressure between the air supply ports for opening and closing the valve. Actuators are constructed of anodized and epoxy coated aluminum for years of corrosion free service.

FEATURES/BENEFITS

- Capable of being configured to fit any application
- Limit switches can be mounted to manual valves for remote monitoring
- Vented ball to reduce operating torque
- Weatherproof or explosion-proof electric actuators
- Double acting or spring return anodized aluminum pneumatic actuators
- Full port design reduces the pressure drop across the valve

APPLICATIONS

- Gas or liquid flow control
- Ideal for quick bubble tight shut-off
- Mixing or diverting liquids and gases

SPECIFICATIONS	
VALVE **Service:** Compatible liquids and gases. **Body:** 3-way. **Line Sizes:** 1/2 to 2″. **End Connections:** Female NPT. **Pressure Limits:** 28″ Hg to 1000 psi (-0.7 to 69 bar) up to 250°F. **Wetted Materials:** Body and ball: 316 SS (CF8M); Stem: 316 SS; Seat: RTFE/PTFE; Seal, washer, and packing: PTFE. **Temperature Limits:** -20 to 392°F (-29 to 200°C). **Other Materials:** O-ring: Fluoroelastomer; Handle: 304 SS; Washer: 301 SS; Stem nut, Locking device, Gland ring: 304 SS; Handle sleeve: PVC. **Agency Approvals:** Meets the technical requirements of EU Directive 2011/65/EU (RoHS II). **ACTUATORS** **Pneumatic "DA" and "SR" Series** **Type:** DA series is double acting and SR series is spring return (rack and pinion). **Normal Supply Pressure:** DA: 40 to 115 psi (2.7 to 7.9 bar); SR: 80 psi (5.5 bar). **Maximum Supply Pressure:** 120 psi (8.6 bar). **Air Connections:** DA01: 1/8″ female NPT; DA02 to DA04: 1/4″ female NPT; SR03 to SR07: 1/4″ female NPT. **Housing Material:** Anodized aluminum body and epoxy coated aluminum end caps. **Temperature Limits:** -40 to 176°F (-40 to 80°C). **Accessory Mounting:** NAMUR standard.	**Electric "TD" and "MD" Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC (MD models not available in 24 VDC). **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** TD01: 4 s; MD01: 10 s; TD02 and MD02: 20 s; TD03 and MD03: 30 s. **Duty Rating:** 85%. **Enclosure Rating:** NEMA 4X (IP67). **Housing Material:** Powder coated aluminum. **Temperature Limits:** -22 to 140°F (-30 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Manual override, position indicator, and TD models come with two limit switches. **Electric "TI" and "MI" Series** **Power Requirements:** 110 VAC, 220 VAC, 24 VAC or 24 VDC. **Power Consumption:** See instruction manual. **Cycle Time (per 90°):** See instruction manual. **Duty Rating:** See instruction manual. **Enclosure Rating:** NEMA 7, designed to meet hazardous locations: Class I, Group C & D; Class II, Group E, F & G; Division I & II. **Housing Material:** Powder coated aluminum. **Temperature Limits:** -40 to 140°F (-40 to 60°C). **Electrical Connection:** 1/2″ female NPT. **Modulating Input:** 4-20 mA. **Standard Features:** Position indicator and two limit switches.

3-WAY NPT STAINLESS STEEL BALL VALVES

Full Port, Vented Ball, Electric or Pneumatic Actuators

MODEL CHART

Size	Cv (gal/min)	Popular Hand Operated Model	Popular Double Acting Pneumatic Model	Popular Spring Return Pneumatic Model	Popular NEMA 4X Two Position Electric (110 VAC) Model	Popular NEMA 4X Modulating Electric (110 VAC) Model
1/2″	11	**WE31-CHD00-T1**	**WE31-CDA02-T2**	**WE31-CSR02-T2**	**WE31-CTD01-T2-A**	**WE31-CMD01-T2-A**
3/4″	14	**WE31-DHD00-T1**	**WE31-DDA02-T2**	**WE31-DSR03-T2**	**WE31-DTD01-T2-A**	**WE31-DMD01-T2-A**
1″	18	**WE31-EHD00-T1**	**WE31-EDA03-T2**	**WE31-ESR04-T2**	**WE31-ETD02-T2-A**	**WE31-EMD02-T2-A**
1-1/4″	43	**WE31-FHD00-T1**	**WE31-FDA03-T2**	**WE31-FSR05-T2**	**WE31-FTD02-T2-A**	**WE31-FMD02-T2-A**
1-1/2″	84	**WE31-GHD00-T1**	**WE31-GDA04-T2**	**WE31-GSR06-T2**	**WE31-GTD03-T2-A**	**WE31-GMD03-T2-A**
2″	90	**WE31-HHD00-T1**	**WE31-HDA04-T2**	**WE31-HSR07-T2**	**WE31-HTD03-T2-A**	**WE31-HMD03-T2-A**

MODEL CHART - HAND OPERATED & PNEUMATIC ACTUATOR

Example	WE31	-CSR02	-T1	-A	A	00	WE31-CSR02-T1-AA00
Series	WE31						316 SS 3-way NPT
Size and Range		CHD00					1/2″ hand operated
		DHD00					3/4″ hand operated
		EHD00					1″ hand operated
		FHD00					1-1/4″ hand operated
		GHD00					1-1/2″ hand operated
		HHD00					2″ hand operated
		CDA02					1/2″ double acting
		DDA02					3/4″ double acting
		EDA03					1″ double acting
		FDA03					1-1/4″ double acting
		GDA04					1-1/2″ double acting
		HDA04					2″ double acting
		CSR02					1/2″ spring return
		DSR03					3/4″ spring return
		ESR04					1″ spring return
		FSR05					1-1/4″ spring return
		GSR06					1-1/2″ spring return
		HSR07					2″ spring return
Valve Position			T1				Flow path A
			T2				Flow path B
			T3				Flow path C
			T4				Flow path D
			L1				Flow path E
Solenoid				N			No solenoid
				A			NEMA 4X NAMUR solenoid
Solenoid Voltage					N		No solenoid
					A		110 VAC
					B		220 VAC
					C		24 VAC
					D		24 VDC
					E		12 VDC
Positioner and Switches						00	None
						01	42AD0 exp limit switch
						02	45VD0 exp position transmitter
						03	42AD0-B ATEX limit switch
						04	42AD0-IE IECEX limit switch
						06	QV-210101 poly limit switch
						07	VPS and P1 prox switch
						08	265ER-D5 positioner
						09	285ER-D5 smart positioner

MODEL CHART - ELECTRIC ACTUATOR

Example	WE31	-DMI02	-T2	-A	WE31-DMI02-T2-A
Series	WE31				316 SS 3-way NPT
Size and Range		CTD01			1/2″ NEMA 4X two-position
		DTD01			3/4″ NEMA 4X two-position
		ETD02			1″ NEMA 4X two-position
		FTD02			1-1/4″ NEMA 4X two-position
		GTD03			1-1/2″ NEMA 4X two-position
		HTD03			2″ NEMA 4X two-position
		CMD01			1/2″ NEMA 4X modulating
		DMD01			3/4″ NEMA 4X modulating
		EMD02			1″ NEMA 4X modulating
		FMD02			1-1/4″ NEMA 4X modulating
		GMD03			1-1/2″ NEMA 4X modulating
		HMD03			2″ NEMA 4X modulating
		CTI01			1/2″ exp two-position
		DTI02			3/4″ exp two-position
		ETI02			1″ exp two-position
		FTI04			1-1/4″ exp two-position
		GTI05			1-1/2″ exp two-position
		HTI06			2″ exp two-position
		CMI01			1/2″ exp electric modulating
		DMI02			3/4″ exp electric modulating
		EMI02			1″ exp electric modulating
		FMI04			1-1/4″ exp electric modulating
		GMI05			1-1/2″ exp electric modulating
		HMI06			2″ exp electric modulating
Valve Position			T1		Flow path A
			T2		Flow path B
			T3		Flow path C
			T4		Flow path D
			L1		Flow path E
Actuator Voltage				A	110 VAC
				B	220 VAC
				C	24 VAC
				D	24 VDC

ACCESSORIES

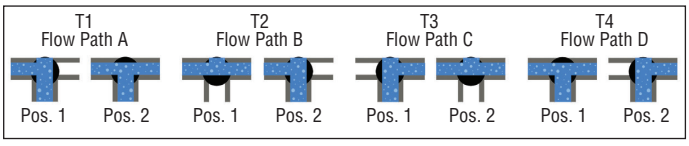
Model	Description
AFR4	Air filter regulator 0 to 120 psi
VB-01	Volume booster

REPAIR KIT

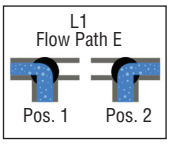
Model	Valve Series and Size
VRK-36	WE31-1/2″
VRK-37	WE31-3/4″
VRK-38	WE31-1″
VRK-40	WE31-1-1/2″
VRK-41	WE31-2″

Parts List - Included in Kit
1 PTFE thrust washer
1 FKM O-ring
2 PTFE stem packing
2 PTFE seals
2 RTFE seats

"T" Port Ball



"L" Port Ball



Dwyer

SERIES WE20 | W.E. ANDERSON™ BY DWYER

BUTTERFLY VALVES

Lug or Wafer, EPDM or PTFE, Electric or Pneumatic Actuators

WE20-CHD00-LE

WE20-EDA06-LE

WE20-ETD04-LE-A

WE20-CDA04-WP-AA07

WE20-CDA04-WP-NN08

The **Series WE20 Butterfly Valves** are offered in lug or wafer body styles and is equipped with a PTFE or EPDM liner. The most critical aspect of the Series WE20 Butterfly Valves is the cartridge seat design, which alleviates installation problems associated with common "dove tail design" seats. Valve torques are lower and more consistent as the seat dynamics are not dependent on being coupled between two flanges. Precision machining of the disc and body allow the cartridge design to maintain a tighter disc to seat tolerance, providing a perfect low torque seal each and every time the valve is cycled. The seat to disc seal is independent of flange support and capable of full rated dead end service.

Actuators are directly mounted creating a compact assembly for tight spaces. Limit switches are able to be mounted directly to the valves allowing for remote position indication.

The Series WE20 can be configured with either an electric or pneumatic actuator. Electric actuators are available in weatherproof or explosion-proof, a variety of supply voltages and two-position or modulating control. Two-position actuators use the supply voltage to drive the valve open or closed, while the modulating actuator accepts a 4-20 mA input for valve positioning. Actuators feature thermal overload protection and permanently lubricated gear train. The pneumatic double acting actuator uses an air supply to drive the valve open and closed. The actuator has two supply ports, with one driving the valve open and the other driving the valve closed. Spring return pneumatic actuators use the air supply to open the valve, and internally loaded springs return the valve to the closed position.

The pneumatic double acting actuator uses an air supply to drive the valve open and closed. The actuator has two supply ports with one driving the valve open and the other driving the valve closed. Spring return pneumatic actuators use the air supply to open the valve and internally loaded springs return the valve to the closed position. Also available is the SV3 solenoid valve to electrically switch the air supply pressure between the air supply ports for opening and closing the valve. Actuators are constructed of anodized and epoxy coated aluminum for years of corrosion free service.

FEATURES/BENEFITS

- Machined flats attach disc/stem - no pins
- Phenolic backed cartridge seat design for extended service and ease of replacement
- Extended neck for insulation - no fabricated extensions required
- Capable of being configured to fit any application
- Limit switches can be mounted to manual valves for remote monitoring
- Available with a variety of electric and pneumatic actuators

APPLICATIONS

- Gas or liquid flow control

SPECIFICATIONS

VALVE

Service: Compatible liquids, gases, and steam.
Body: 2-way, wafer or lug butterfly.
Line Sizes: 2 to 12″.
End Connections: Lug and wafer pattern designed for flanges that are ANSI Class 125 (B16.1) and ANSI Class 150 (B16.5) dimension.
Pressure Limits: 225 psi (15.5 bar).
Wetted Materials: Body material: Ductile iron; Disc: 316 SS; Seat: EPDM or PTFE; O-ring: EPDM; Stem: 410 SS.
Temperature Limits: Disc: EPDM: -50 to 250°F (-46 to 121°C); PTFE: 0 to 300°F (-18 to 149°C).
Bearings: Nylatron.
Operator: 2 to 6″ 10-position locking hand lever; 8 to 12″: manual gear.

ACTUATORS

Pneumatic "DA" and "SR" Series

Type: DA series is double acting and SR series is spring return (rack and pinion).
Normal Supply Pressure: DA: 40 to 115 psi (2.7 to 7.9 bar); SR: 70 to 115 psi (4.8 to 7.9 bar).
Maximum Supply Pressure: 120 psi (8.6 bar).
Air Connections: DA03 thru DA11: 1/4″ FNPT; SR03 thru SR11: 1/4″ FNPT.
Housing Material: Anodized aluminum body and epoxy coated aluminum end caps.
Temperature Limits: -40 to 176°F (-40 to 80°C).
Accessory Mounting: NAMUR standard.

Electric "TD" and "MD" Series

Power Requirements: 110 VAC, 220 VAC or 24 VAC.
Power Consumption: See instruction manual.
Cycle Time (per 90°): TD01 and MD01: 4 s; TD02 and MD02: 20 s; TD03 and MD03: 30 s; TD04 and MD04: 30 s; TD05 and MD05: 30 s; TD06 and MD06: 45 s; TD07 and MD07: 30 s.
Duty Rating: 85%.
Enclosure Rating: NEMA 4X (IP67).
Housing Material: Powder coated aluminum.
Temperature Limits: -22 to 140°F (-30 to 60°C).
Electrical Connection: 1/2″ female NPT.
Modulating Input: 4-20 mA.
Standard Features: Manual override, position indicator, and TD models come with two limit switches.

Electric "TH and MH Series

Power Requirements: 110 VAC, 220 VAC, 24 VAC or 24 VDC.
Power Consumption: See instruction manual.
Cycle Time (per 90°): See instruction manual.
Duty Rating: See instruction manual.
Enclosure Rating: NEMA 7, designed to meet hazardous locations: Class I, Group C & D; Class II, Group E, F & G; Division I & II.
Housing Material: Powder coated aluminum.
Temperature Limits: -22 to 140°F (-30 to 60°C).
Electrical Connection: 1/2″ female NPT.
Modulating Input: 4-20 mA.
Standard Features: Position indicator and two limit switches.

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SERIES WE20 | W.E. ANDERSON™ BY DWYER

BUTTERFLY VALVES

Lug or Wafer, EPDM or PTFE, Electric or Pneumatic Actuators

MODEL CHART

Size	Cv (gal/min)	Popular Hand Operated Model	Popular Double Acting Pneumatic Model	Popular Spring Return Pneumatic Model	NEMA 4X Two-Position Electric (110 VAC) Model	NEMA 4X Modulating Electric (110 VAC) Model
2″	135	**WE20-AHD00-WE**	**WE20-ADA03-WE**	**WE20-ASR04-WE**	**WE20-ATD02-WE-A**	**WE20-AMD02-WE-A**
2-1/2″	220	**WE20-BHD00-WE**	**WE20-BDA03-WE**	**WE20-BSR04-WE**	**WE20-BTD02-WE-A**	**WE20-BMD02-WE-A**
3″	302	**WE20-CHD00-WE**	**WE20-CDA04-WE**	**WE20-CSR06-WE**	**WE20-CTD02-WE-A**	**WE20-CMD02-WE-A**
4″	600	**WE20-DHD00-WE**	**WE20-DDA05-WE**	**WE20-DSR07-WE**	**WE20-DTD03-WE-A**	**WE20-DMD03-WE-A**
5″	1022	**WE20-EHD00-WE**	**WE20-EDA06-WE**	**WE20-ESR08-WE**	**WE20-ETD04-WE-A**	**WE20-EMD04-WE-A**
6″	1579	**WE20-FHD00-WE**	**WE20-FDA07-WE**	**WE20-FSR09-WE**	**WE20-FTD04-WE-A**	**WE20-FMD04-WE-A**
8″	3136	**WE20-GHD00-WE**	**WE20-GDA08-WE**	**WE20-GSR10-WE**	**WE20-GTD05-WE-A**	**WE20-GMD05-WE-A**
10″	5340	**WE20-HHD00-WE**	**WE20-HDA09-WE**	**WE20-HSR11-WE**	**WE20-HTD06-WE-A**	**WE20-HMD06-WE-A**
12″	8250	**WE20-IHD00-WE**	**WE20-IDA11-WE**	**WE20-ISR11-WE**	**WE20-ITD07-WE-A**	**WE20-IMD07-WE-A**

MODEL CHART - HAND OPERATED & PNEUMATIC ACTUATOR

Example	WE20	-BSR04	-WE	-A	A	00		WE20-BSR04-WE-AA00
Series	WE20							Butterfly valve
Size and Actuator		AHD00 BHD00 CHD00 DHD00 EHD00 FHD00 GHD00 HHD00 IHD00 ADA03 BDA03 CDA04 DDA05 EDA06 FDA07 GDA08 HDA09 IDA11 ASR04 BSR04 CSR06 DSR07 ESR08 FSR09 GSR10 HSR11 ISR11						2″ hand operated 2-1/2″ hand operated 3″ hand operated 4″ hand operated 5″ hand operated 6″ hand operated 8″ hand operated 10″ hand operated 12″ hand operated 2″ double acting 2-1/2″ double acting 3″ double acting 4″ double acting 5″ double acting 6″ double acting 8″ double acting 10″ double acting 12″ double acting 2″ spring return 2-1/2″ spring return 3″ spring return 4″ spring return 5″ spring return 6″ spring return 8″ spring return 10″ spring return 12″ spring return
Body Type /Liner			WE WP LE LP					Wafer-EPDM Wafer-PTFE Lug-EPDM Lug-PTFE
Solenoid				N A				No solenoid NEMA 4X NAMUR solenoid
Solenoid Voltage					N A B C D E			No solenoid 120 VAC 220 VAC 24 VAC 24 VDC 12 VDC
Positioner and Switches						00 01 02 03 04 06 07 08 09		None 42AD0 exp limit switch 45VD0 exp position transmitter 42AD0-B ATEX limit switch 42AD0-IE IECEX limit switch QV-210101 poly limit switch VPS and P1 prox switch 265ER-D5 positioner 285ER-D5 smart positioner
Options							NO	Fail open spring return actuator

MODEL CHART - ELECTRIC ACTUATOR

Example	WE20	-DMH05	-WE	-A	WE20-DMH05-WE-A
Series	WE20				Butterfly valve
Size and Actuator		ATD02 BTD02 CTD02 DTD03 ETD04 FTD04 GTD05 HTD06 ITD07 AMD02 BMD02 CMD02 DMD03 EMD04 FMD04 GMD05 HMD06 IMD07 ATH03 BTH03 CTH05 DTH05 ETH06 FTH08 GTH09 HTH10 ITH11 AMH03 BMH03 CMH05 DMH05 EMH06 FMH08 GMH09 HMH10 IMH11			2″ NEMA 4X two-position 2-1/2″ NEMA 4X two-position 3″ NEMA 4X two-position 4″ NEMA 4X two-position 5″ NEMA 4X two-position 6″ NEMA 4X two-position 8″ NEMA 4X two-position 10″ NEMA 4X two-position 12″ NEMA 4X two-position 2″ NEMA 4X modulating 2-1/2″ NEMA 4X modulating 3″ NEMA 4X modulating 4″ NEMA 4X modulating 5″ NEMA 4X modulating 6″ NEMA 4X modulating 8″ NEMA 4X modulating 10″ NEMA 4X modulating 12″ NEMA 4X modulating 2″ exp two-position 2-1/2″ exp two-position 3″ exp two-position 4″ exp two-position 5″ exp two-position 6″ exp two-position 8″ exp two-position 10″ exp two-position 12″ exp two-position 2″ exp electric modulating 2-1/2″ exp electric modulating 3″ exp electric modulating 4″ exp electric modulating 5″ exp electric modulating 6″ exp electric modulating 8″ exp electric modulating 10″ exp electric modulating 12″ exp electric modulating
Material/ Liner			WE WP LE LP		Wafer-EPDM Wafer-PTFE Lug-EPDM Lug-PTFE
Actuator Voltage				A B C D	110 VAC 220 VAC 24 VAC 24 VDC

ACCESSORIES

Model	Description
AFR4	Air filter regulator 0 to 120 psi
VB-01	Volume booster

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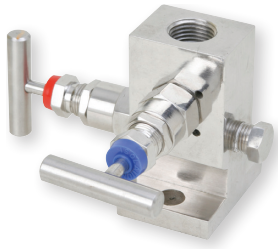
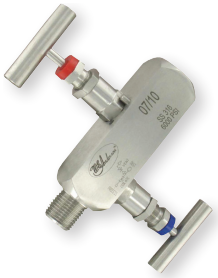
SERIES BBV-0 | W.E. ANDERSON™ BY DWYER

2-VALVE BLOCK MANIFOLDS

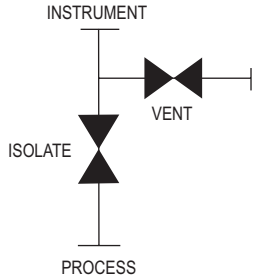
Stainless Steel Body, NPT Connections



BBV-0F



BBV-0N



The **Series BBV-0 2-Valve Block Manifolds** are perfect for use over a broad range of industrial applications including oil refineries, nuclear power stations, petrochemical processing, and more. The Series BBV-0 is forged from 316 stainless steel bar stock and designed to withstand repeated open and close operations. Suited to control oil, water, toxic fluids, chemicals, air, and steam; the 2-valve block manifold has (1) isolate and (1) vent valves. Each valve stem is precision machined with hard seats to reduce operating torque.

FEATURES/BENEFITS
- 6000 psi pressure limit
- 316 SS body, stem and valve assembly
- PTFE stem packing

APPLICATIONS
- Industrial gage or transmitter isolation

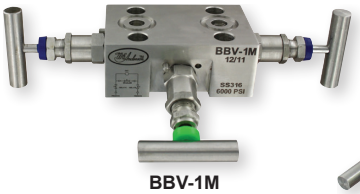
SPECIFICATIONS
Service: Compatible liquids, gases, or steam.
End Connections: Process connection: 1/2″ male NPT; Instrument connection: No flange: 1/2″ female NPT; Flange: 1/2″ DIN 19213 flange; Vent/test: 1/4″ female NPT.
Wetted Materials: Body, stem, valve assembly: 316 SS; Stem packing: PTFE.
Pressure Limit: 6000 psi (400 bar).
Temperature Limit: 464°F (240°C).
Other Materials: Handle: 304 SS.

MODEL CHART	
Model	**Description**
BBV-0F	Flanged 2-valve block manifold
BBV-0N	2-valve block manifold

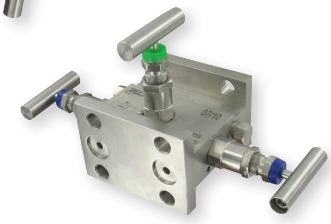
SERIES BBV-1 | W.E. ANDERSON™ BY DWYER

3-VALVE BLOCK MANIFOLDS

Stainless Steel Body, NPT Connections



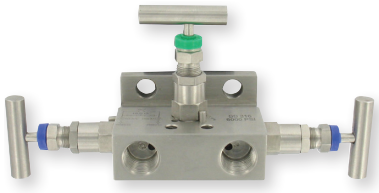
BBV-1M



BBV-1D

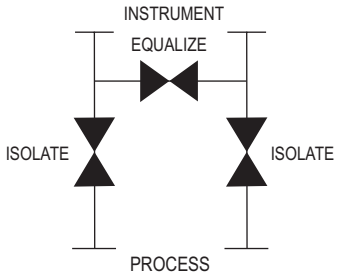
BBV-1

*Please see website for dimensional drawing



BBV-1F

BBV-1B



Flow diagram

The **Series BBV-1 3-Valve Block Manifolds** can be used over a broad range of industrial applications including oil refineries, nuclear power stations, petrochemical processing, and more. The Series BBV-1 body is forged from 316 stainless steel bar stock and designed to withstand repeated open and close operations. Suited to control oil, water, toxic fluids, chemicals, air, and steam.

FEATURES/BENEFITS
- High pressure shut-off
- All stainless steel and PTFE wetted materials
- Precision machined hard seats to reduce operating torque

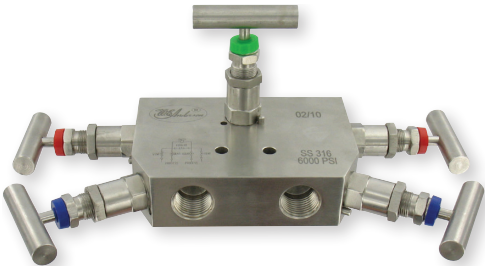
APPLICATIONS
- Industrial gage or transmitter isolation

SPECIFICATIONS
Service: Compatible liquids, gases, or steam.
End Connections: BBV-1B: 1/4″ NPT x 1/4″ NPT; BBV-1: 1/2″ NPT x 1/2″ NPT BBV-1F: 1/2″ NPT x DIN 19213 flange; BBV-1M: 1/2″ NPT x DIN 19213 flange; BBV-1D: DIN 19213 flange x DIN 19213 flange.
Wetted Materials: Body, stem, valve assembly: 316 SS; Stem packing: PTFE.
Pressure Limit: 6000 psi (400 bar).
Temperature Limit: 464°F (240°C).
Other Material: Handle: 304 SS.

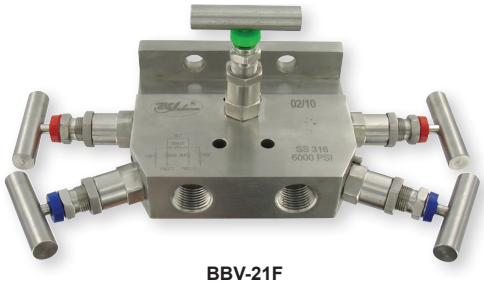
MODEL CHART	
Model	**Description**
BBV-1B	Mini 3-valve block manifold
BBV-1	3-valve block manifold
BBV-1F	Flanged 3-valve block manifold
BBV-1M	Multiplanar 3-valve manifold
BBV-1D	Double flanged 3-valve block manifold

5-VALVE BLOCK AND BLEED MANIFOLDS

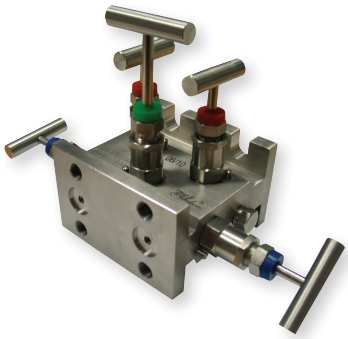
Stainless Steel Body, NPT Connections



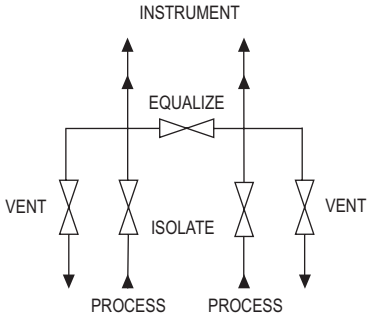
BBV-21



BBV-21F

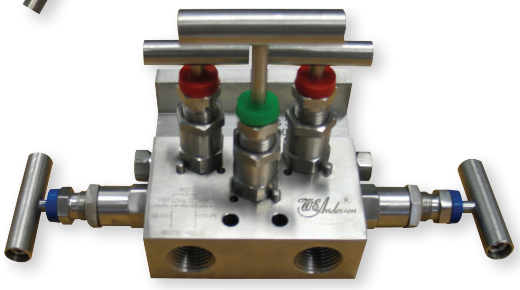


BBV-23F



Flow diagram

BBV-22



BBV-22F

Series BBV-2 5-Valve Block and Bleed Manifolds are ideal for use over a broad range of industrial applications including oil refineries, nuclear power stations, petrochemical processing, and more. The Series BBV-2 body is forged from 316 stainless steel bar stock and designed to withstand repeated open and close operations. Suited to control oil, water, toxic fluids, chemicals, air, and steam; the 5-Valve Block and Bleed Manifold has (2) isolate, (1) equalizing, and (2) vent valves. Each valve stem is precision machined with hard seats to reduce operating torque.
Flanged models are designed to mount to an industrial differential pressure transmitter. The BBV-21F and BBV-22F come with four 7/16-20 UNF mounting bolts and two PTFE gaskets. The BBV-23F comes with eight 7/16-20 UNF mounting bolts and two PTFE gaskets.

FEATURES/BENEFITS

- High pressure shut-off
- All stainless steel and PTFE wetted materials
- Precision machined hard seats to reduce operating torque

APPLICATIONS

- Industrial gage or transmitter isolation

SPECIFICATIONS
Service: Compatible liquids, gases, or steam.
End Connections: Process connection: No flange: 1/2″ female NPT; Flange: DIN 19213 flange; Instrument connection: No flange: 1/2″ female NPT; Flange: DIN 19213 flange; Vent/test: 1/4″ female NPT.
Wetted Materials: Body, stem, valve assembly: 316 SS; Stem packing: PTFE.
Pressure Limit: 6000 psi (400 bar).
Temperature Limit: 464°F (240°C).
Other Materials: Handle: 304 SS.

MODEL CHART	
Model	**Description**
BBV-21	5-valve manifold with side mounted vent valves
BBV-21F	Flanged 5-valve manifold with side mounted vent valves
BBV-22	5-valve manifold with top mounted vent valves
BBV-22F	Flanged 5-valve manifold with top mounted vent valves
BBV-23F	Double flanged 5-valve manifold with top mounted vent valves

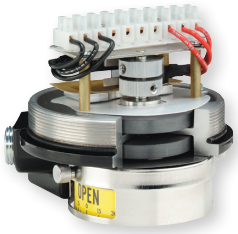
Dwyer

SERIES MARK | PROXIMITY® BY DWYER

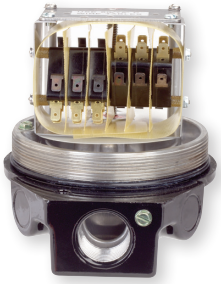
POSITION INDICATORS/SWITCHES/TRANSMITTERS

Mark 1
stainless steel
(environmentally sealed
for corrosive areas)

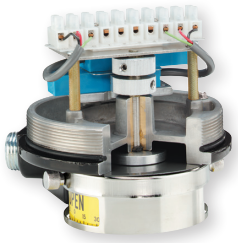
Mark 1
polyester coated aluminum
(environmentally sealed
for corrosive areas)



Mark 1
magnetic coupling cutaway
Model 12VDOJ2



Mark 3
multi turn



Mark 4
thru-shaft cutaway
Model 42RDOJ2

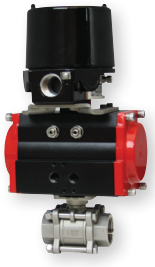
The Proximity™ **Series Mark Position Indicators/Switches/Transmitters** are a line of position indicators with a selection of various output options. Three model styles make up the Mark series to cover almost any application. Standard models in the Mark Series have visual position indicators and are weatherproof, explosion-proof, and submersible. A large variety of outputs are available to fit specific applications. There is a choice of 1 to 6 switch outputs of 14 varieties including inductive sensors, high temperature switches, gold contact switches, hermetically sealed switches, and high current switches. Besides the switch outputs the Series offers potentiometer outputs, transmitters, and HART® Communication. The units are purchased for either direct drive applications, such as rotary valves, or lever drive applications, such as linear valves. Adjustable visual indicator is standard on direct drive units that displays OPEN / CLOSED status and degrees.
A magnetic drive that completely seals the switch compartment from the atmosphere for maximum leak protection is utilized in the Mark 1. The Mark 3 uses the same magnetic drive of the Mark 1, but it can be used for multi-turn applications with 1 to 25 revolutions, such as gate valves. A through shaft drive is incorporated in the Mark 4 making the unit a more cost effective alternative to the Mark 1 for applications that are not as demanding.

APPLICATIONS
- Rotary valve actuators and dampers
- Linear valve actuators and cylinders
- Manual valves
- Gear operators
- Positioners

MARK 1 FEATURES/BENEFITS
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection
- EZ set cams on switch models provide simple set point adjustment
- Flexible design allows multiple switches and transmitter options
- Ideal for corrosive environments

MARK 3 FEATURES/BENEFITS
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection
- Multi-Turn models that can provide switch signals between 1 and 25 revolutions, and transmitter models for up to 10 revolutions without gear reduction
- Flexible design allows multiple switches and transmitter options
- Ideal for corrosive environments

MARK 4 FEATURES/BENEFITS
- Thru-Shaft design that features a 1″ bushing for long life and O-rings to seal the switch compartment for hazard, corrosion, and leak protection
- EZ set cams on switch models provide simple set point adjustment
- Flexible design allows multiple switches and transmitter options
- A more cost effective alternative to the Mark 1 Series for less demanding applications



Mark Series
mounted to an actuator

MODEL CHART					
Model	**Function**	**Design**	**Model**	**Function**	**Design**
12AD0	2 SPDT	Magnetic coupling	**42AD0**	2 SPDT	Thru-shaft drive
12AL0	2 SPDT (lever drive)	Magnetic coupling	**44AD0**	4 SPDT	Thru-shaft drive
14AD0	4 SPDT	Magnetic coupling	**45VD0**	2 SPDT and 4-20 mA position transmitter	Thru-shaft drive
15VD0	2 SPDT and 4-20 mA position transmitter	Magnetic coupling	**42VD0-J1**	2 SPDT	Thru-shaft drive
12AD1	2 SPDT	Magnetic coupling	**44VD0-J1**	4 SPDT	Thru-shaft drive
14AD1	4 SPDT	Magnetic coupling			
12VD0-J1	2 SPDT	Magnetic coupling			
14VD0-J1	4 SPDT	Magnetic coupling			

Stainless Mounting Kit
1/4 turn actuator
Manual 1/4 turn valves
Linear control valves

Mounting kits with drive yoke (see drawing), or slotted lever arm, bracket, fasteners and other stainless steel hardware fit over 2000 popular valves and actuators. A high strength spring tempered stainless steel drive yoke/coupling is tailored to fit securely to a specific valve or actuator stem. There is no slippage or binding. No special alignment fixtures are required due to switch offset design and yoke to stem engagement that makes installation a “snap”. Each kit is specially designed for a particular valve or actuator, making field mounting simple with standard tools. Please specify make and model of valve or actuator on order.
Mounting kits can be used interchangeably with all models since external mounting features are identical. Rotary valves utilize direct drive couplings and a slotted lever drive is used with linear valves. Lever drives convert linear motion to rotary. Stainless steel visual indicators are standard for direct drive, automated quarter-turn valve applications.

POSITION INDICATORS/SWITCHES/TRANSMITTERS

Construction	1 3 4						Mark 1, magnetic coupling Mark 3, multi-turn Mark 4, thru-shaft	Available options "A" signifies available with corresponding construction style Mark 1	 3	 4
Output Type		1 2 3 31 32 35 310 320 4 5 51 52 7 8 9					1 switch 2 switches 1 kΩ potentiometer 1/2%. Available with switches, see note below.* 1 kΩ potentiometer 1/4%. Available with switches, see note below.* 2 kΩ potentiometer. Available with switches, see note below.* 5 kΩ potentiometer. Available with switches, see note below.* 10 kΩ potentiometer. Available with switches, see note below.* 20 kΩ potentiometer. Available with switches, see note below.* 4 Switches Transmitter 1 kΩ potentiometer 1/2%. 4-20 mA. Available with switches, see note below.* Transmitter 1 kΩ potentiometer 1/4%. Available with switches, see note below.* Transmitter 2 kΩ potentiometer. Available with switches, see note below.* AS-interface and 1 switch. Available with switch types B, I, R, W. AS-interface and 2 switches. Available with switch types B, I, R, W. Transmitter with HART® communication. Available with switches, see note below.*	A A A A A A A A A A A A A A A	-- A A A A A A A A A A A A -- --	A A A A A A A A A A A A A A A
Switch Type and Rating			A B C D G H I M O R S T V W				SPDT snap, rated: 15 A @ 125/250/480 VAC (~) ; 1/8 hp @ 125 VAC (~), 1/4 hp @ 250 VAC (~), 1/2 A @ 125 VDC (⎓), 1/4 A @ 250 VDC (⎓). Inductive sensor. 10-30 VDC (⎓). Load: 0.1 A. SPDT High Temperature snap, 350°F (176°C) for 600 hours, Rated:15.1 A @ 125/250/277 VAC (~). DPDT snap, rated: 10 A @ 125/250 VAC (~), 0.3 A @ 125 VDC (⎓),0.15 A @ 250 VDC (⎓). SPDT gold contact snap, rated: 1 A @ 125 VAC (~). SPDT hermetically sealed snap, rated: 1 A @ 125 VAC (~). NAMUR inductive sensor. 15 mA max @ 5-25 VDC (⎓). SPDT magnetic blow-out, rated: 10 A @ 125 VAC (~)/VDC (⎓), 1/4 hp @ 125 VAC (~)/VDC (⎓). No switches SPDT hermetically sealed reed, rated: 2 A @ 125 VAC (~), 2 A @ 24 VDC (⎓). SPDT snap, rated: 4 A @ 125/250 VAC (~). SPDT high temperature snap, 250°F (121°C) continuous, rated: 5 A @ 125/250/480 VAC (~). SPDT snap, rated: 10 A @ 125/250 VAC (~), 1/3 hp @ 125/250 VAC (~), 1/2 A @ 125 VDC (⎓), 1/4 A @ 250 VDC (⎓), 4 A @ 125 VAC (~) (tungsten). SPDT gold contact snap, rated 0.1 A @ 125 VAC (~).	A A A A A A A A A A A A A A A A	A -- A A A A -- -- A A -- -- A A A A	A A A A A A A A A A A A A A A A
Driving Method				A D E L M			A direct or yoke drive without visual indicator. Direct drive (or yoke) with visual indicator. Direct or yoke drive with visual indicator, single window. Lever drive (shaft projection) without visual indicator. Lever (shaft projection) with visual indicator.	A A A A A	A A A A A	A A A A A
Enclosure					0 1 2 5 6 7 thru 20		Aluminum, painted black Aluminum, painted white epoxy with SS trim Aluminum, painted red Aluminum, painted (color not yet specified) Cast 316 stainless steel Aluminum, painted (color not yet specified)	A A A A A A	A A A A A A	A A A A A A
Options						C1 C2 FKM J1 J2 SV1 SV2 MT B B IS IS IE IE II II LB LB LB LB PP PT STR STW	Long dwell cam (not on Mark 3) Double cam (not on Mark 3) FKM seals Junction package with one 1/2″ NPT female conduit connection and terminal strip. Junction package with two 1/2″ NPT female conduit connection and terminal strip. 1 attached solenoid valve (Must be ordered with J1 option). 2 attached solenoid valves (Must be ordered with J2 option). Metric threaded conduit connection, M25 X 1.5 (M20 X 1.5 for optional J1 and J2 connections). Any output type except 91: Directive 2014/34/EU, KEMA 03ATEX2391 X, CE 2813 Ex II 2G Ex db IIC T6 Gb (-25/-40/-50°C ≤ Tamb ≤ 70°C and T5 for -25°C/-40°C/-50°C ≤ Tamb ≤ 80°C). Depending on output switch type selected. Output type 91: Directive 2014/34/EU, KEMA 03ATEX2391 X, CE 2813 Ex II 2G Ex db IIC T4 Gb (-40°C ≤ Tamb ≤ 80°C). Any output type except 91: Directive 2014/34/EU, KEMA 03ATEX1392 X, CE 2813 Ex II 1G Ex ia IIC T4 Ga. Output type 91: Directive 2014/34/EU, KEMA 03ATEX1392 X, CE 2813 Ex II 1G Ex ia IIC T4 Ga for -40°C ≤ Tamb ≤ 80°C. Any output type except 91:IECEx DEK 11.0056X Ex db IIC T6 Gb (-25/-40/-50°C ≤ Tamb ≤ 70°C and T5 for -25/-40/-50°C ≤ Tamb ≤ 80°C) optional wording depending on output and switch type selected. Output type 91: IECEx DEK 11.0056X, Ex db IIC T4 Gb. Any output type except 91: IECEx DEK 11.0061X Ex ia IIC T4 Ga. Output type 91: IECEx DEK 11.0061X Ex ia IIC T4 Ga. Output type 91 with suffix B directive 2014/34/EU, KEMA 03ATEX2391 X, CE 2813 Ex II 2G Ex db IIC T4 Gb (-40°C ≤ Tamb ≤ 80°C). Battery not included. Output Type 91 with suffix IS directive 2014/34/EU, KEMA 03ATEX1392 X, CE 2813 Ex II 2G Ex ia IIC T4 Ga for -40°C ≤ Tamb ≤ 80°C. Battery not included. Output type 91 with suffix IE IECEx DEK 11.0056X, Ex db IIC T4 Gb. Battery not included. Output type 91 with suffix II IECEx DEK 11.0061X Ex ia IIC T4 Ga. Battery not included. Plug J1, J2 ports Paper tag Stainless steel tag riveted Stainless steel tag wired	A A A A A A A A A A A A A A A A A A A A A A A A	-- -- A A A -- -- A A -- A -- A -- -- A -- -- -- -- A A A A	A A A A A A A A A A A A A A A A A A A A A A A A

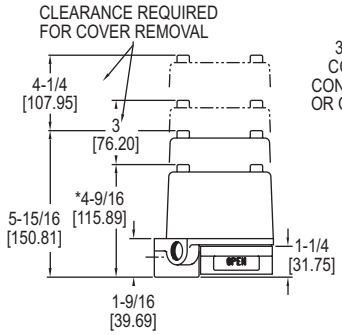
***Note:** Mark 1 and 4 potentiometer and transmitter outputs will have no switches when ordered with switch type O; 2 switches if ordered with switch types B, C, D, I, R, V, or W; and 4 switches if ordered with switch type S. Mark 3 potentiometer and transmitter outputs will have no switches when ordered with switch type O, and 2 switches if ordered with switch types A, D, G, M or T.

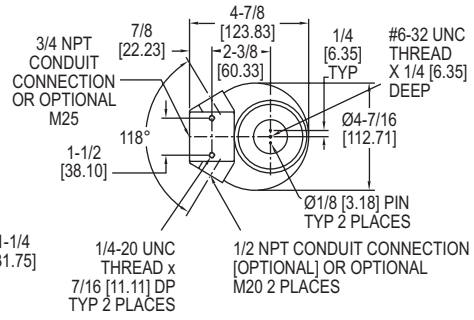
Example: 12VD0-J1. Mark 1, 2 switches both type V – SPDT, direct drive, painted aluminum enclosure with junction package.
Example: 15VD0. Mark 1, 2 switches both type V – SPDT, 4-20 mA transmitter, direct drive, painted aluminum enclosure.

Dwyer

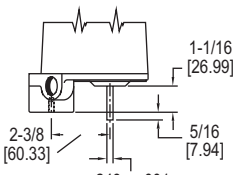
SERIES MARK | PROXIMITY® BY DWYER

POSITION INDICATORS/SWITCHES/TRANSMITTERS

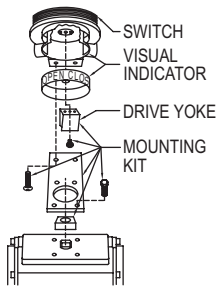




DIRECT DRIVE



LEVER DRIVE



For Models 11, 12, 41 & 42

SPECIFICATIONS

Mark 1, 3, and 4 with Potentiometer
Accuracy: ± 0.5% of full span. Optional ± 0.25% of full span.
Temperature Limits: -40 to 176°F (-40 to 80°C).(ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, T, V, or W, -13 to 145°F (-25 to 63°C) for switch types B, D, or I.; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -13 to 104°F (-25 to 40°C) for switch type I, -40 to 104°F (-40 to 40°C) for switch types O, R, S, V, or W.
Power Rating: 1.5 watt maximum.
Output Signal: 1000 Ω standard. Optional 2000, 5000, 10000, or 20000 Ω.
Zero and Span Adjustments: Span trim pot with 2000Ω adjustment. No zero adjustment.
Rotational Travel: Mark 1 and 4: Minimum: 0°, Maximum: 340°. Mark 3: 0 to 10 revolutions.

Mark 1, 3, and 4 with Transmitter
Accuracy: ± 0.5% of full span. Optional ± 0.25% of full span.
Temperature Limits: -40 to 176°F (-40 to 80°C). (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, T, V, or W, -13 to 145°F (-25 to 63°C) for switch types B, D, or I.; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -13 to 104°F (-25 to 40°C) for switch type I, -40 to 104°F (-40 to 40°C) for switch types O, R, S, V, or W.).
Power Requirements: 5-30 VDC.
Current Consumption: 50 mA.
Output Signal: 4-20 mA.
Zero and Span Adjustments: Trim pots for adjusting both. Mark 1 and 4: Span is adjustable from 50 to 300°. Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.
Conduit Connection: 3/4″ female NPT standard. Optional one or two 1/2″ female NPT. M25 X 1.5 and M20 X 1.5 optional.
Rotational Travel: Mark 1 and 4: Minimum: 50°, Maximum: 300°. Mark 3: Minimum: 1.5 revolutions, Maximum: 8.5 revolutions.

Mark 1 and 4 Transmitter with HART® communication
Accuracy: ± 0.5% of full span. Optional ± 0.25% of full span.
Temperature Limits: -40 to 176°F (-40 to 80°C). (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, V or W, -13 to 145°F (-25 to 63°C) for switch types B, D or I; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -40 to 104°F (-40 to 40°C) for switch types O, R, S, V or W; -13 to 104°F (-25 to 40°C) for switch type I.).
Power Requirements: 8-30 VDC.
Current Consumption: 21 mA.
Output Signal: 4-20 mA.
HART® Receive Impedance: Rx = 500 kΩ; Cx = 2500 pF.
Zero and Span Adjustments: Pushbuttons or HART® communication master for setting both. Mark 1 and 4: Span is adjustable from 0 to 330°. Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.
Conduit Connection: 3/4″ female NPT standard. Optional one or two 1/2″ female NPT. M25 X 1.5 and M20 X 1.5 optional.
Rotational Travel: Mark 1 and 4: Maximum: 330°.

Mark 1 and 4 Transmitter with WirelessHART® communication
Accuracy: ±0.5% of full span. Optional ±0.25% of full span.
Temperature Limits: -40 to 158°F (-40 to 70°C). ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix: rated -40 to 145°F (-40 to 63°C). ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix: rated -40 to 176°F (-40 to 80°C).
Power Requirements: 8-30 VDC.
Current Consumption: 50 mA max.
Power Output: +10 dBm (10 mW).
Operating Frequency: 2400 to 2483.5 MHz.
Operating Channels: 15.
Sensitivity: -85dB.
Zero and Span Adjustments: Pushbuttons or WirelessHART® communication master for setting both. Span is adjustable from -160 to 160°.
Conduit Connection: Two 1/2″ female NPT, M20 X 1.5 optional.
Rotational Travel: Mark 1 and 4: Maximum: 320°.

SPECIFICATIONS

Product Ratings:
Weatherproof and flameproof. NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, 9, 12, 13.

UL rated: Class I, Div. 1 & 2, Groups B, C, D (Some units available for Group A, consult factory); Class II, Div. 1 & 2, Groups E, F, and G.

CSA rated: Class I, Div. 1 & 2, Groups A, B, C, D; Class II, Div. 1 & 2, Groups E, F, and G. Submersible to 15 meters (IP68); It is up to the end user to source the proper fittings to ensure a watertight seal.

ATEX Compliant:
-B suffix, any Output Type except 91: Directive 2014/34/EU, KEMA 03ATEX2391 X, CE 2813 Ex II 2G Ex db IIC T6 Gb for -25°C/-40°C/-50°C ≤ Tamb ≤ 63°C and T5 for -25°C/-40°C/-50°C ≤ Tamb ≤ 63°C, optional wording depending on output and switch type selected. Compliant per EN 60079-0:2012+A11:2013 and EN 60079-1:2014.
-B suffix, Output Type 91, with or without -LB suffix: Directive 2014/34/EU, KEMA 03ATEX2391 X, CE 2813 Ex II 2G Ex db ib IIC T4 Gb for -40°C ≤ Tamb ≤ 63°C . Compliant per EN 60079-0:2012 + A11:2013, EN 60079-1:2014 and EN 60079-11:2012.

-IS suffix, any Output Type except 91: Directive 2014/34/EU, KEMA 03ATEX1392 X, CE 2813 Ex II 1G Ex ia IIC T4 Ga. Compliant per EN 60079-0:2012 + A11: 2013 and EN 60079-11:2012.
-IS suffix, Output Type 91, with or without -LB suffix: Directive 2014/34/EU, KEMA 03ATEX1392 X, CE 2813 Ex II 2G Ex ia IIC T4 Ga. Compliant per EN 60079-0:2012+A11:2013 and EN 60079-11:2012.

IECEx Compliant:
-IE suffix, any Output Type except 91:IECEx DEK 11.0056X Ex db IIC T6 Gb for -25°C/-40°C/-50°C ≤ Tamb ≤ 63°C and T5 for -25°C/-40°C/-50°C ≤ Tamb ≤ 63°C, optional wording depending on output and switch type selected. Compliant per IEC 60079-0:2011 and IEC 60079-1:2014.
-IE suffix, Output Type 91, with or without -LB suffix: IECEx DEK 11.0056X, Ex db ib IIC T4 Gb for -40° ≤ Tamb ≤ 63°C. Compliant per IEC 60079-0:2011, IEC 60079-1:2014 and IEC 60079-11: 2011.

-II suffix, any Output Type except 91: IECEx DEK 11.0061X Ex ia IIC T4 Ga. Compliant per IEC 60079-0:2011, IEC 60079-11:2011, and IEC 60079-26:2014.
-II suffix, Output Type 91, with or without -LB suffix: DEK 11.0061X Ex ia IIC T4 Ga. Compliant per IEC 60079-0:2014, and IEC 60079-11:2011.

Electrical Connections: Screw terminal. Optional factory sealed leads that are 36″ (914.4 mm) of 16 AWG.
Conduit Connection: Standard: one 3/4″ female NPT; optional one to two 1/2″ female NPT; WirelessHART® models: two 1/2″ female NPT; Optional: M25 X 1.5 or M20 X 1.5 connections may be supplied in lieu of 3/4″ and 1/2″ female NPT for all models.
Mounting Orientation: Not position sensitive.
Weight: 4 to 6 lb (1.5 to 3.0 kg).
Operational Life: Over 10,000,000 cycles.
Maximum Altitude: 2000 meters.

Mark 1, 3 and 4 with Switch Outputs
Temperature Limits: -58 to 176°F (-50 to 80°C). Switch Type C rated to 350°F (176°C) for 600 hours, Switch Type T rated to 250°F (121°C) continuous. (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -58 to 145°F (-50 to 63°C) for switch type A, G, H, T, or M, -40 to 145°F (40 to 63°C) for switch type O, R, S, V, or W, -13 to 145°F (-25 to 63°C) for switch type B, D, I, or AS Interface; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -13 to 104°F (-25 to 40°C) for switch type D or I, -40 to 104°F (-40 to 40°C) for switch type R, V, or W, or -58 to 104°F (-50 to 40°C) for switch type A, G, or H.).
Switch Type: See page reference ❶ below.
Electrical Rating: See page reference ❷ below.
Set Point Adjustment: Mark 1 and 4: 5 to 360°.

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❶Switch Type: See page 70 (Series Mark)
❷Electrical Rating: See page 70 (Series Mark)

PRESSURE CONVERSION CHART

in/H₂O	P.S.I.	in/Hg	mm/H₂O	mm/Hg	kg/cm²	bar	mbar	Pa	kPa
.1	.0036	.0073	2.534	.1863	.0002	.0002	.2482	24.82	.0248
.2	.0072	.0146	5.067	.3726	.0005	.0005	.4964	49.64	.0496
.4	.0144	.0293	10.13	.7452	.0010	.0010	.9928	99.28	.0993
.6	.0216	.0440	15.20	1.118	.0015	.0015	1.489	148.9	.1489
.8	.0289	.0588	20.34	1.496	.0020	.0020	1.992	199.2	.1992
1.0	.0361	.0735	25.41	1.868	.0025	.0025	2.489	248.9	.2489
2	.0722	.1470	50.81	3.736	.0051	.0050	4.978	497.8	.4978
3	.1083	.2205	76.22	5.604	.0076	.0075	7.467	746.7	.7476
4	.1444	.2940	101.62	7.472	.0102	.0099	9.956	995.6	.9956
5	.1804	.3673	127.0	9.335	.0127	.0124	12.44	1244	1.244
6	.2165	.4408	152.4	11.203	.0152	.0149	14.93	1493	1.493
7	.2526	.5143	177.8	13.072	.0178	.0174	17.42	1742	1.742
8	.2887	.5878	203.2	14.940	.0203	.0199	19.90	1990	1.990
9	.3248	.6613	228.6	16.808	.0228	.0224	22.39	2239	2.239
10	.3609	.7348	254.0	18.676	.0254	.0249	24.88	2488	2.488
11	.3970	.8083	279.4	20.544	.0279	.0274	27.37	2737	2.737
12	.4331	.8818	304.8	22.412	.0304	.0299	29.86	2986	2.986
13	.4692	.9553	330.2	24.280	.0330	.0324	32.35	3235	3.235
14	.5053	1.029	355.6	26.148	.0355	.0348	34.84	3484	3.484
15	.5414	1.102	381.0	28.016	.0381	.0373	37.33	3733	3.733
16	.5774	1.176	406.4	29.879	.0406	.0398	39.81	3981	3.981
17	.6136	1.249	431.8	31.752	.0431	.0423	42.31	4231	4.231
18	.6496	1.322	457.2	33.616	.0457	.0448	44.79	4479	4.479
19	.6857	1.396	482.6	35.484	.0482	.0473	47.28	4728	4.728
20	.7218	1.470	508.0	37.352	.0507	.0498	49.77	4977	4.977
21	.7579	1.543	533.4	39.22	.0533	.0523	52.26	5226	5.226
22	.7940	1.616	558.8	41.09	.0558	.0547	54.74	5474	5.474
23	.8301	1.690	584.2	42.96	.0584	.0572	57.23	5723	5.723
24	.8662	1.764	609.6	44.82	.0609	.0597	59.72	5972	5.972
25	.9023	1.837	635.0	46.69	.0634	.0622	62.21	6221	6.221
26	.9384	1.910	660.4	48.56	.0660	.0647	64.70	6470	6.470
27	.9745	1.984	685.8	50.43	.0685	.0672	67.19	6719	6.719
28	1.010	2.056	710.8	52.26	.0710	.0696	69.64	6964	6.964
29	1.047	2.132	736.8	54.18	.0736	.0722	72.19	7219	7.219
30	1.083	2.205	762.2	56.04	.0761	.0747	74.67	7467	7.467
31	1.119	2.278	787.5	57.91	.0787	.0772	77.15	7715	7.715
32	1.155	2.352	812.8	59.77	.0812	.0796	79.63	7963	7.963
33	1.191	2.425	836.2	61.63	.0837	.0821	82.12	8212	8.212
34	1.227	2.498	863.5	63.49	.0862	.0846	84.60	8460	8.460
35	1.263	2.571	888.9	65.36	.0888	.0871	87.08	8708	8.708
36	1.299	2.645	914.2	67.22	.0913	.0896	89.56	8956	8.956
37	1.335	2.718	939.5	69.08	.0938	.0920	92.04	9204	9.204
38	1.371	2.791	964.9	70.95	.0964	.0945	94.53	9453	9.453
39	1.408	2.876	990.9	72.86	.0990	.0971	97.08	9708	9.708
40	1.444	2.940	1016	74.72	.1015	.0996	99.56	9956	9.956
41	1.480	3.013	1042	76.59	.1040	.1020	102.0	10204	10.20
42	1.516	3.086	1067	78.45	.1066	.1045	104.5	10452	10.45
43	1.552	3.160	1092	80.31	.1091	.1070	107.0	10701	10.70
44	1.588	3.233	1118	82.18	.1116	.1095	109.5	10949	10.95
45	1.624	3.306	1143	84.04	.1142	.1120	112.0	11197	11.20
46	1.660	3.378	1168	85.90	.1167	.1144	114.5	11445	11.44
47	1.696	3.453	1194	87.76	.1192	.1169	116.9	11694	11.69
48	1.732	3.526	1219	89.63	.1218	.1194	119.4	11942	11.94
49	1.768	3.600	1244	91.49	.1243	.1219	121.9	12190	12.19
50	1.804	3.673	1270	93.35	.1268	.1244	124.4	12438	12.44
51	1.841	3.748	1296	95.27	.1294	.1269	126.9	12693	12.69
52	1.877	3.822	1321	97.13	.1320	.1294	129.4	12941	12.94
53	1.913	3.895	1346	98.99	.1345	.1319	131.9	13190	13.19
54	1.949	3.968	1372	100.8	.1370	.1344	134.4	13438	13.44
55	1.985	4.041	1397	102.7	.1395	.1369	136.9	13686	13.69
56	2.021	4.115	1422	104.6	.1421	.1393	139.3	13934	13.93
57	2.057	4.188	1448	106.4	.1146	.1418	141.8	14182	14.18
58	2.093	4.261	1473	108.3	.1471	.1443	144.3	14431	14.43
59	2.129	4.335	1498	110.2	.1497	.1468	146.8	14679	14.68
60	2.165	4.408	1524	112.0	.1522	.1493	149.3	14927	14.93
61	2.202	4.483	1550	113.9	.1548	.1518	151.8	15182	15.18
62	2.238	4.556	1575	115.8	.1573	.1543	154.3	15430	15.43
63	2.274	4.630	1600	117.7	.1599	.1568	156.8	15679	15.68
64	2.310	4.703	1626	119.5	.1624	.1593	159.3	15927	15.93
65	2.346	4.776	1651	121.4	.1649	.1618	161.8	16175	16.18
66	2.382	4.850	1676	123.3	.1674	.1642	164.2	16423	16.42
67	2.418	4.923	1702	125.1	.1700	.1667	166.7	16672	16.67
68	2.454	4.996	1727	127.0	.1725	.1692	169.2	16920	16.92
69	2.490	5.070	1752	128.8	.1750	.1717	171.7	17168	17.17
70	2.526	5.143	1778	130.7	.1776	.1742	174.2	17416	17.42
71	2.562	5.216	1803	132.6	.1801	.1766	176.6	17664	17.66
72	2.598	5.290	1828	134.4	.1826	.1791	179.1	17912	17.91
73	2.635	5.365	1854	136.4	.1852	.1817	181.7	18168	18.17
74	2.671	5.438	1880	138.2	.1878	.1842	184.2	18416	18.42
75	2.707	5.511	1905	140.1	.1903	.1866	186.6	18664	18.66
76	2.743	5.585	1930	141.9	.1928	.1891	189.1	18912	18.91
77	2.779	5.658	1956	143.8	.1954	.1916	191.6	19160	19.16
78	2.815	5.731	1981	145.7	.1979	.1941	194.1	19409	19.41
79	2.851	5.805	2006	147.5	.2004	.1966	196.6	19657	19.66
80	2.887	5.878	2032	149.4	.2030	.1991	199.1	19905	19.90
81	2.923	5.951	2057	151.2	.2055	.2015	201.5	20153	20.15
82	2.959	6.024	2082	153.1	.2080	.2040	204.0	20402	20.40
83	2.996	6.100	2108	155.0	.2106	.2066	206.6	20657	20.66
84	3.032	6.173	2134	156.9	.2131	.2091	209.1	20905	20.90
85	3.068	6.246	2159	158.8	.2157	.2115	211.5	21153	21.15
86	3.104	6.320	2184	160.6	.2182	.2140	214.0	21401	21.40
87	3.140	6.393	2210	162.5	.2207	.2165	216.5	21650	21.65
88	3.176	6.466	2265	164.4	.2233	.2190	219.0	21898	21.90
89	3.212	6.450	2260	166.2	.2258	.2215	221.5	22146	22.15
90	3.248	6.613	2286	168.1	.2283	.2239	223.9	22394	22.39
91	3.284	6.686	2311	169.9	.2309	.2264	226.4	22642	22.64
92	3.320	6.760	2336	171.8	.2334	.2289	228.9	22890	22.89
93	3.356	6.833	2362	173.7	.2359	.2314	231.4	23139	23.14
94	3.392	6.906	2387	175.5	.2384	.2339	233.9	23387	23.39
95	3.429	6.981	2413	177.4	.2410	.2364	236.4	23642	23.64
96	3.456	7.055	2438	179.3	.2436	.2389	238.9	23890	23.89
97	3.501	7.128	2464	181.2	.2461	.2414	241.4	24138	24.14
98	3.537	7.201	2489	183.0	.2486	.2439	243.9	24387	24.39
99	3.573	7.275	2514	184.9	.2512	.2464	246.4	24635	24.64
100	3.609	7.348	2540	186.8	.2537	.2488	248.8	24883	24.88

P.S.I.	in/H₂O	in/Hg	mm/H₂O	mm/Hg	kg/cm²	bar	mbar	Pa	kPa
1.0	27.71	2.036	703.1	51.75	.0703	.0689	68.95	6895	6.895
1.1	30.45	2.240	773.4	56.89	.0773	.0758	75.84	7584	7.584
1.2	33.22	2.443	843.7	62.06	.0844	.0827	82.74	8274	8.274
1.3	35.98	2.647	914.0	67.23	.0914	.0896	89.63	8963	8.963
1.4	38.75	2.850	984.3	72.40	.0984	.0965	96.52	9652	9.652
1.5	41.52	3.054	1055	77.57	.1055	.1034	103.4	10340	10.34
1.6	44.29	3.258	1125	82.74	.1125	.1103	110.3	11030	11.03
1.7	47.06	3.461	1195	87.92	.1195	.1172	117.2	11720	11.72
1.8	49.82	3.665	1266	93.09	.1266	.1241	124.1	12410	12.41
1.9	52.59	3.686	1336	98.26	.1336	.1310	131.0	13100	13.10
2.0	55.36	4.072	1406	103.4	.1406	.1379	137.9	13790	13.79
2.1	58.13	4.276	1476	108.6	.1476	.1448	144.8	14480	14.48
2.2	60.90	4.479	1547	113.8	.1547	.1517	151.7	15170	15.17
2.3	63.67	4.683	1617	118.9	.1617	.1586	158.6	15860	15.86
2.4	66.43	4.886	1687	124.1	.1687	.1655	165.5	16550	16.55
2.5	69.20	5.090	1758	129.3	.1758	.1724	172.4	17240	17.24
2.6	71.97	5.294	1828	134.5	.1828	.1793	179.3	17930	17.93
2.7	74.74	5.497	1898	139.6	.1898	.1862	186.2	18620	18.62
2.8	77.51	5.701	1969	144.8	.1968	.1930	193.0	19300	19.30
2.9	80.27	5.904	2039	150.0	.2039	.1999	199.9	19990	19.99
3.0	83.04	6.108	2109	155.1	.2109	.2068	206.8	20680	20.68
3.1	85.81	6.312	2180	160.3	.2180	.2137	213.7	21370	21.37
3.2	88.58	6.515	2250	165.5	.2250	.2206	220.6	22060	22.06
3.3	91.35	6.719	2320	170.7	.2320	.2275	227.5	22750	22.75
3.4	94.11	6.922	2390	175.8	.2390	.2344	234.4	23440	23.44
3.5	96.88	7.126	2461	181.0	.2461	.2413	241.3	24130	24.13
3.6	99.65	7.330	2531	186.2	.2531	.2482	248.2	24820	24.82
3.7	102.4	7.535	2601	191.3	.2601	.2551	255.1	25510	25.51
3.8	105.2	7.737	2672	196.5	.2672	.2620	262.0	26200	26.20
3.9	108.0	7.940	2742	201.7	.2742	.2689	268.9	26890	26.89
4.0	110.7	8.144	2812	206.9	.2812	.2758	275.8	27580	27.58
4.1	113.5	8.348	2883	212.0	.2883	.2827	282.7	28270	28.27
4.2	116.3	8.551	2953	217.2	.2953	.2896	289.6	28960	28.96
4.3	119.0	8.775	3023	222.4	.3023	.2965	296.5	29650	29.65
4.4	121.8	8.958	3094	227.5	.3094	.3034	303.4	30338	30.34
4.5	124.6	9.162	2164	232.7	.3164	.3103	310.3	31030	31.03
4.6	127.3	9.366	3234	237.9	.3234	.3172	317.2	31720	31.72
4.7	130.1	9.569	3304	243.1	.3304	.3240	324.0	32400	32.40
4.8	132.9	9.773	3375	248.2	.3375	.3310	331.0	33100	33.10
4.9	135.6	9.976	3445	253.4	.3445	.3378	337.8	33780	33.78
5.0	138.4	10.18	3515	258.6	.3515	.3447	344.7	34470	34.47
5.1	141.2	10.38	3586	263.7	.3586	.3516	351.6	35160	35.16
5.2	143.9	10.59	3656	268.9	.3656	.3585	358.5	35850	35.85
5.3	146.7	10.79	3726	274.1	.3726	.3654	365.4	36540	36.54
5.4	149.5	10.99	3797	279.3	.3797	.3723	372.3	37230	37.23
5.5	152.2	11.20	3876	284.4	.3867	.3792	379.2	37920	37.92
5.6	155.0	11.40	3973	289.6	.3937	.3861	386.1	38610	38.61
5.7	157.8	11.60	4008	294.8	.4007	.3930	393.0	39300	39.30
5.8	160.5	11.81	4078	299.9	.4078	.3999	399.9	39990	39.99
5.9	163.3	12.01	4148	305.1	.4148	.4068	406.8	40680	40.68
6.0	166.1	12.22	4218	310.3	.4218	.4137	413.7	41370	41.37
6.1	168.8	12.42	4289	315.5	.4289	.4206	420.6	42060	42.06
6.2	171.6	12.62	4359	320.6	.4359	.4275	427.5	42750	42.75
6.3	174.4	12.83	4429	325.8	.4429	.4344	434.4	43440	43.44
6.4	177.2	13.03	4500	331.0	.4500	.4413	441.3	44130	44.13
6.5	179.9	13.23	4570	336.1	.4570	.4482	448.2	44820	44.82
6.6	182.7	13.44	4640	341.3	.4640	.4550	455.0	45500	45.50
6.7	185.5	13.64	4711	346.5	.4710	.4619	461.9	46190	46.19
6.8	188.2	13.84	4781	351.7	.4781	.4688	468.8	46880	46.88
6.9	191.0	14.05	4851	356.8	.4851	.4757	475.7	47570	47.57
7.0	193.8	14.25	4922	362.0	.4921	.4826	482.6	48260	48.26
7.1	196.5	14.46	4992	367.2	.4992	.4895	489.5	48950	48.95
7.2	199.3	14.66	5062	372.3	.5062	.4964	496.4	49640	49.64
7.3	202.1	14.86	5132	377.5	.5132	.5033	503.3	50330	50.33
7.4	204.8	15.07	5203	382.7	.5203	.5102	510.2	51020	51.02
7.5	207.6	15.27	5273	387.9	.5273	.5171	517.1	51710	51.71
7.6	210.4	15.47	5343	393.0	.5343	.5240	524.0	52400	52.40
7.8	215.9	15.88	5484	403.4	.5484	.5378	537.8	53780	53.78
8.0	221.4	16.29	5625	413.7	.5625	.5516	551.6	55160	55.16
8.2	227.0	16.70	5765	424.1	.5765	.5654	565.4	56540	56.54
8.4	232.5	17.10	5906	434.4	.5906	.5792	579.2	57920	57.92
8.6	238.0	17.51	6047	444.7	.6046	.5929	592.9	59290	59.29
8.8	243.6	17.92	6187	455.1	.6187	.6067	606.7	60670	60.67
9.0	249.1	18.32	6328	465.4	.6328	.6205	620.5	62050	62.05
9.2	254.7	18.73	6468	475.8	.6468	.6343	634.3	63430	63.43
9.4	260.2	19.14	6609	486.1	.6609	.6481	648.1	64810	64.81
9.6	265.7	19.54	6750	496.5	.6749	.6619	661.9	66190	66.19
9.8	271.3	19.95	6890	506.8	.6890	.6757	675.7	67570	67.57
10.0	276.8	20.36	7031	517.1	.7031	.6895	689.5	68950	68.95
11.0	304.5	22.40	7734	568.9	.7734	.7584	758.4	75840	75.84
12.0	332.2	24.43	8437	620.6	.8437	.8274	827.4	82740	82.74
13.0	359.8	26.47	9140	672.3	.9140	.8963	896.3	98630	89.63
14.0	387.5	28.50	9843	724.0	.9843	.9652	965.2	96520	96.52
14.7	406.9	29.93	10340	760.2	1.033	1.014	1014	101400	101.4
15.0	415.2	30.54	10550	775.7	1.055	1.034	1034	103400	103.4
16.0	442.9	32.58	11250	827.4	1.125	1.103	1103	110300	110.3
17.0	470.6	34.61	11950	879.1	1.195	1.172	1172	117200	117.2
18.0	498.2	36.65	12660	930.9	1.265	1.241	1241	124100	124.1
19.0	525.9	36.68	13360	982.6	1.336	1.310	1310	131000	131.0
20.0	553.6	40.72	14060	1034	1.406	1.379	1379	137900	137.9
21.0	581.3	42.76	14770	1086	1.476	1.448	1448	144800	144.8
22.0	609.0	44.79	15470	1138	1.547	1.517	1517	151700	151.7
23.0	636.7	46.83	16170	1189	1.617	1.586	1586	158600	158.6
24.0	664.3	48.86	16870	1241	1.687	1.655	1655	165500	165.5
25.0	692.0	50.90	17580	1293	1.758	1.724	1724	172400	172.4

CONVERSION FACTORS	
P.S.I. x 27.71 = in. H₂O	P.S.I. x .0689 = bar
P.S.I. x 2.036 = in. Hg	P.S.I. x 68.95 = mbar
P.S.I. x 703.1 = mm/H₂O	P.S.I. x 6895 = Pa
P.S.I. x 51.75 = mm/Hg	P.S.I. x 6.895 = kPa
P.S.I. x .0703 = kg/cm²	

Note: Conversion factors rounded.

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