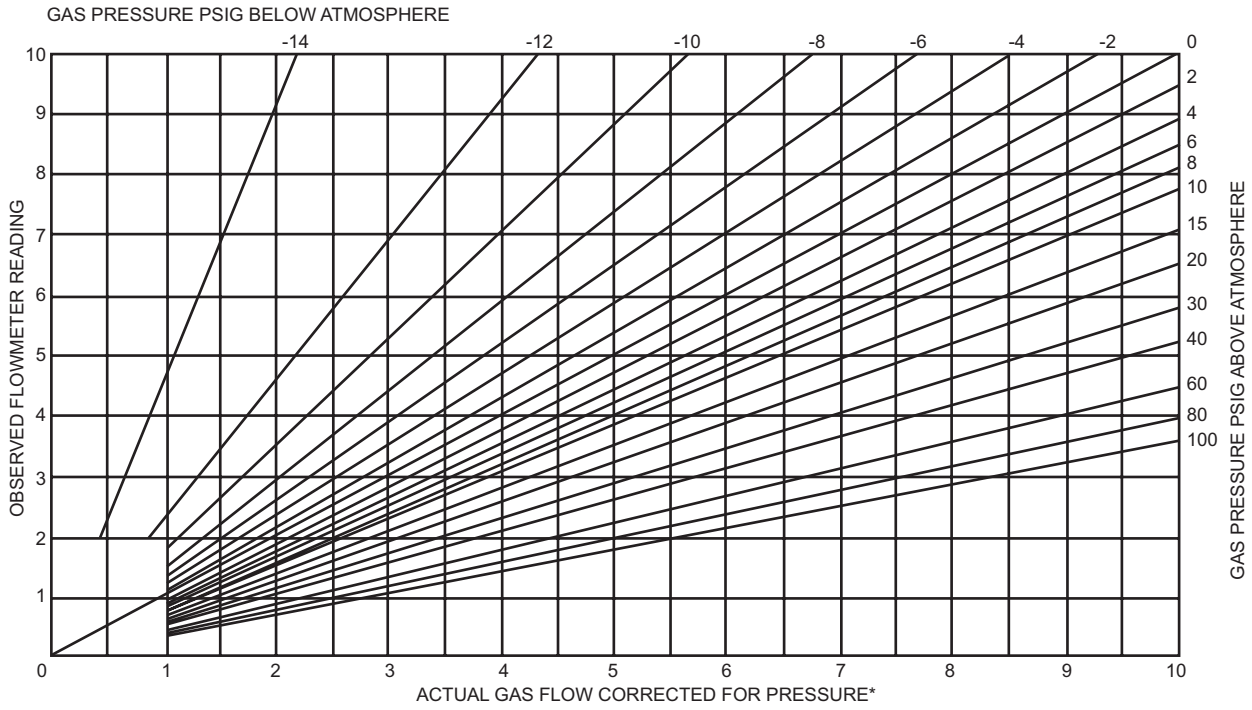
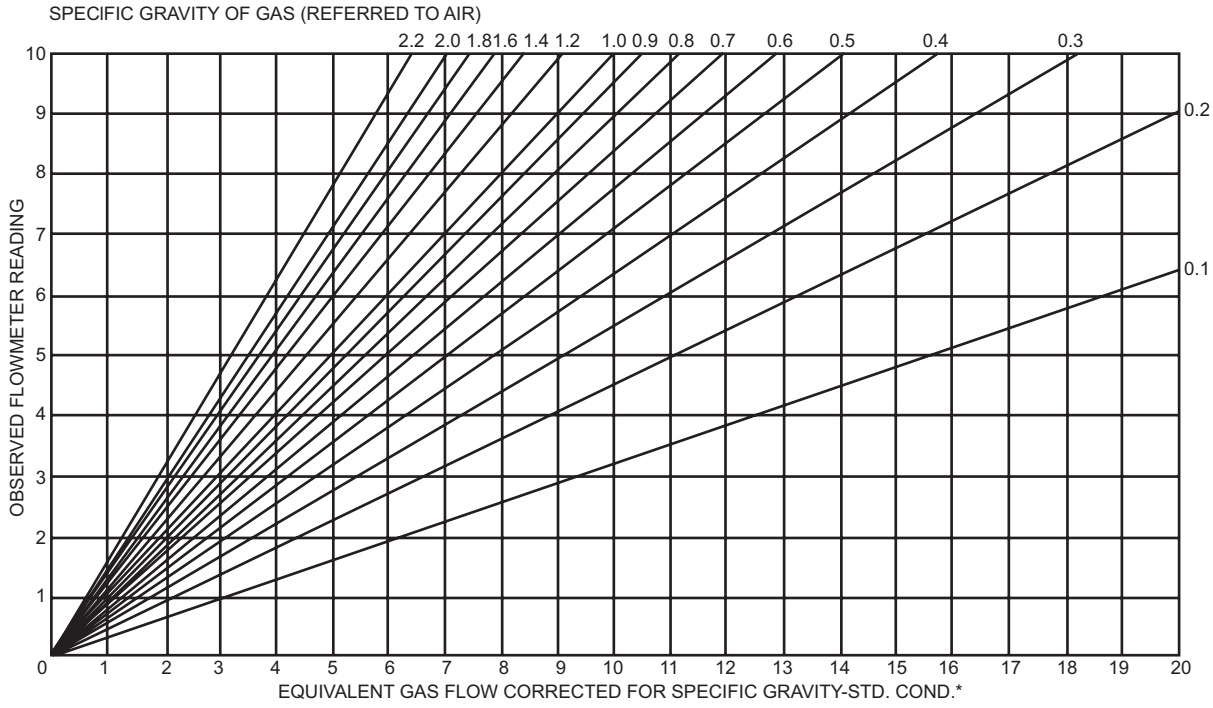
CONVERSION CURVES FOR GASES





If more convenient, approximate correction factors may be determined using the following formulas:

A. Pressure: $Q_2 = Q_1 \times \sqrt{\frac{P_1 \times T_2}{P_2 \times T_1}}$

Where:
- Q_1= Actual or observed flowmeter reading
- Q_2 = Standard flow corrected for pressure and temperature
- P_1 = Actual pressure (14.7 psia + gage pressure)
- P_2 = Standard pressure (14.7 psia, which is 0 psig)
- T_1 = Actual temperature (460 R + temp °F)
- T_2 = Standard temperature (530 R, which is 70°F)

B. Specific Gravity: $Q_2 = Q_1 \times \sqrt{\frac{1}{S.G.}}$

Where:
- Q_1 = Observed flowmeter reading
- Q_2 = Standard flow corrected for specific gravity
- 1 = Specific gravity of air or water
- S.G.= Specific gravity of media being used in flowmeter originally calibrated for air or water.

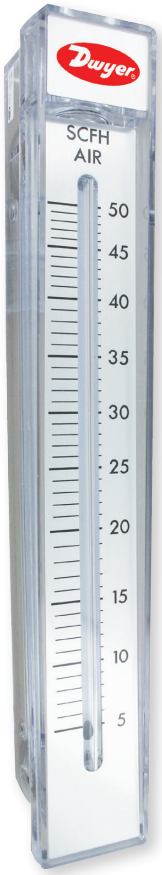
Note: The corrections shown in the curves and in the formulas are for variations in specific gravity and internal pressure* only. Further correction may be necessary for variations in viscosity and changes in type of flow from laminar to turbulent or vice versa. This is particularly true in the case of extremely low flows of the lighter gases. Nevertheless these charts and correction factors can be quite useful when dealing with small changes in pressure* and specific gravity.
*Measured at discharge on all but TMV units. Inlet pressure on TMV models.

Dwyer

SERIES RM

RATE-MASTER® POLYCARBONATE FLOWMETERS

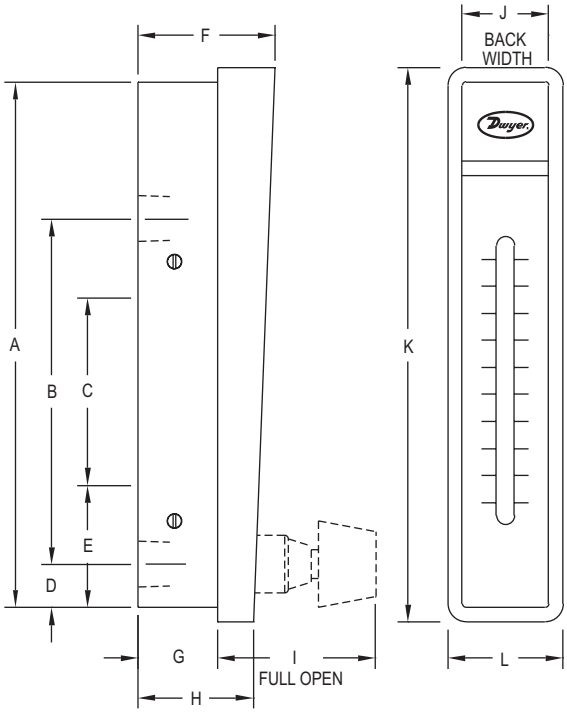
2″, 5″ or 10″ Scale, Interchangeable Bodies



Model RMC
10″ scale, 15-3/8″ high

Model RMB-SSV
5″ scale, 8-3/4″ high

Model RMA-TMV
2″ scale, 4-13/16″ high



DIMENSIONS - FLOWMETER			
	Model RMA	**Model RMB**	**Model RMC**
A	4-9/16 [115.90]	8-1/2 [215.90]	15-1/8 [384.20]
B	3 [76.20]	6-7/16 [163.50]	12-1/4 [311.20]
	1/8 NPT conn.	1/4 NPT conn.	1/2 NPT conn.
C	1-5/8 [41.28]	3-15/16 [100.00]	8-3/4 [222.30]
	10-32 mtg. holes	1/4-20 mtg. holes	3/8-24 mtg. holes
D	3/8 [9.525]	5/8 [15.88]	1 [25.40]
E	1-1/16 [26.99]	1-7/8 [47.63]	2-3/4 [69.85]
F	1-3/16 [30.16]	1-3/4 [44.45]	2-1/2 [63.50]
G	11/16 [17.46]	1 [25.40]	1-7/16 [36.51]
H	61/64 [24.21]	1-7/16 [36.51]	1-31/32 [50.00]
I	1-3/8 [34.92]	1-13/16 [46.04]	2-1/2 [63.50]
J	3/4 [19.05]	1-1/4 [31.75]	2 [50.80]
K	4-13/16 [122.20]	8-3/4 [222.30]	15-3/8 [390.50]
L	1 [25.40]	1-1/2 [38.10]	2-1/4 [57.15]

VIDEO ONLINE

The **SERIES RM** Rate-Master® Flowmeters are a line of general use, direct reading precision flowmeters suitable for both gas and liquid applications. This Series consists of 2″ (51 mm), 5″ (127 mm) and 10″ (254 mm) scales that can be panel or surface mounted with optional precision metering valves. Within a given Series, the Rate-Master® flowmeter bodies can be instantly interchanged, allowing the piping to remain undisturbed, interchangeability of the ranges, and easy cleaning.

FEATURES/BENEFITS

- Direct reading scales eliminate the need for troublesome conversions
- Stainless steel backbone absorbs piping torque reducing installation damage and cost
- Shatter-proof polycarbonate allows for long operation life
- Precision injection molding around a precision tapered pin enables high repeatability
- Increased reading accuracy with special integral flow guides that stabilize float movement
- Scale graduations on both side of the indicating tube allow for instantaneous flow reading saving time

APPLICATIONS

- Medical equipment
- Air samplers
- Gas analyzers
- Pollution monitors
- Chemical injectors
- Cabinet purging

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Body: Polycarbonate; O-ring: Neoprene and Buna-N; Metal parts: SS (except for optional brass valve); Float: SS, black glass, aluminum, K monel, tungsten carbide depending on range.
Temperature Limit: 130°F (54°C).
Pressure Limit: 100 psi (6.9 bar).
Accuracy: RMA: 4%; RMB: 3%; RMC: 2% of FS.
Process Connection: RMA: 1/8″; RMB: 1/4″; RMC: 1/2″ female NPT.
Weight: RMA: 4 oz (113.4 g); RMB: 13 oz (368.5 g); RMC: 39 oz (1105.6 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

CAUTION: Dwyer® Rate-Master® flowmeters are designed to provide satisfactory long term service when used with air, water, or other compatible media. Refer to factory for information on questionable gases or liquids. Caustic solutions, anti-freeze (ethylene glycol) and aromatic solvents should definitely not be used.

Dwyer

SERIES RM

RATE-MASTER® POLYCARBONATE FLOWMETERS

Gas Flow from 0.05 to 1800 SCFH, Water Flow to 10 GPM

RANGE CHART - RMA 2˝ SCALE - POPULAR RANGES			
Range No.	**SCFH Air**	**Range No.**	**LPM Air**
1	.05 to .4	26	.5 to 5
2	.1 to 1	21	1 to 10
3	.2 to 2	22	2 to 25
4	.5 to 5	23	5 to 50
5	1 to 10	24	5 to 70
6	2 to 20	25	10 to 100
7	5 to 50	**Range No.**	**CC/Min. Water**
8	10 to 100	32	5 to 50
9	15 to 150	33	10 to 110
10	20 to 200	34	20 to 300
Range No.	**CC/Min. Air**	**Range No.**	**GPH Water**
151*	5 to 50	42	1 to 11
150*	10 to 100	43	2 to 24
11	30 to 200	44	4 to 34
12	50 to 500	45	5 to 50
13	100 to 1000		
14	200 to 2500		
*Accuracy ±8%			

RANGE CHART - RMB 5˝ SCALE - POPULAR RANGES			
Range No.	**SCFH Air**	**Range No.**	**SCFH & LPM Air**
49*	0.5 to 5	50D	1.2 to 10/0.6 to 5
50	1 to 10	51D	2 to 20/1 to 9.5
51	3 to 20	52D	4 to 50/2 to 23
52	4 to 50	53D	10 to 100/5 to 50
53	10 to 100	54D	20 to 200/10 to 95
54	20 to 200	**Range No.**	**GPH & LPM Water**
55	40 to 400	82D	1 to 12/0.06 to 0.76
56	50 to 500	83D	1 to 20/0.065 to 1.25
57	60 to 600	85D	10 to 100/0.8 to 6.2
Range No.	**GPH Water**		
82	1 to 12		
83	1 to 20		
84	4 to 40		
85	10 to 100		
*Accuracy ±5%			

RANGE CHART - RMC 10˝ SCALE - POPULAR RANGES			
Range No.	**SCFH Air**	**Range No.**	**GPH Water**
101	5 to 50	134	2 to 20
102	10 to 100	135	8 to 90
103	20 to 200	**Range No.**	**GPM Water**
104	40 to 400	141	.1 to 1
105	60 to 600	142	.2 to 2.2
106	100 to 1000	143	.4 to 4
107	120 to 1200	144	.8 to 7
108	200 to 1800	145	1.2 to 10
Range No.	**SCFM Air**		
121	1 to 10		
122	2 to 20		
123	4 to 30		

MODEL CHART	
Model	**Description**
RMA-X	Standard RMA
RMA-X-BV+	RMA with brass valve
RMA-X-SSV+	RMA with stainless steel valve
RMA-X-TMV*+	RMA with top mounted valve
RMB-X	Standard RMB
RMB-X-BV+	RMB with brass valve
RMB-X-SSV+	RMB with stainless steel valve
RMC-X	Standard RMC
RMC-X-BV+	RMC with brass valve
RMC-X-SSV+	RMC with stainless steel valve
How To Order: Series-Range No.(“X”)-Valve-Option **Example:** RMA-2-SSV (Series RMA with .1-1 SCFH air range & stainless steel valve)	
*Provide same precision construction but for vacuum applications. +Valve is designed for flow adjustment only, not intended to be used as an open/shut-off valve.	

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
-APF	Adjustable pointer flag for Series RMA
-BPF	Adjustable pointer flag for Series RMB
-CPF	Adjustable pointer flag for Series RMC
Note: Special ranges, scales, mounting arrangements, etc., are available on special order, or in OEM quantities.	

Adjustable pointer flags
Red lined pointer flags provide quick visual reference to a required flow level. Of clear plastic, they snap into place inside bezel and slide to desired level.

ACCESSORIES	
Model	**Description**
RKA	Regulator kit for Series RMA
RK-RMB	Regulator kit for Series RMB

Regulator Kits
Available as optional extras for both Rate-Master® Flowmeters and Visi-Float® Flowmeters models. This view shows Model VFA Visi-Float® flowmeter with integrally connected constant differential pressure regulator. Recommended for use where inlet air pressure fluctuates widely and constant flow is required. The regulator maintains a constant pressure differential of approximately 3 ±.15 psig. Supply pressure must be at least 3 psig above the flowmeter discharge to operate. The standard regulator may be used with any Dwyer Series RM or VF flowmeter up to 200 scfh. For higher flow rates consult the factory.

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

Dwyer

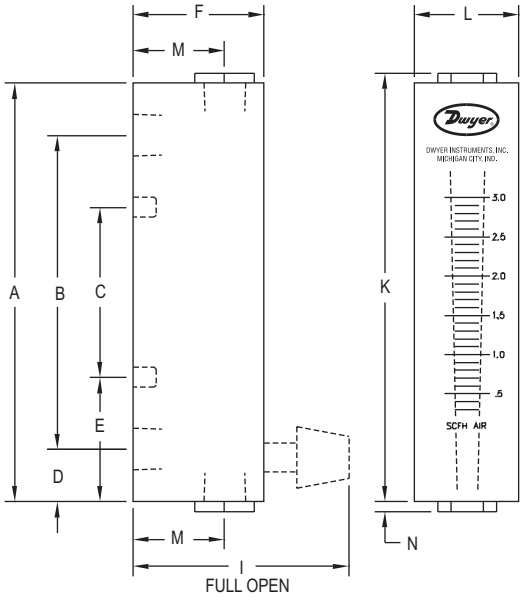
SERIES VF

VISI-FLOAT® ACRYLIC FLOWMETERS

Hot-Stamped Scales, Multi-Angle Views of Flow

Model VFB

Model VFA-SSV



DIMENSIONS - FLOWMETER		
	Model VFA	Model VFB
A	4 [101.6]	6-1/2 [165.1]
B	3 [76.20]; 1/8 NPT conn.	5-1/2 [139.7]; 1/8 NPT conn.
C	1-5/8 [41.28]; 10-32 thd	3-1/2 [88.90]; 10-32 thd
D	1/2 [12.70]	1/2 [12.70]
E	1-3/16 [30.16]	1-1/2 [38.10]
F	1-1/4 [31.75]	1-1/4 [31.75]
I	2-1/16 [52.39]; Open	2-1/16 [52.39] ; Open
K	4-3/32 [104.0]	6-11/16 [169.9]
L	1 [25.40]	1-3/8 [34.93]
M	7/8 [22.23] ; 1/8 NPT	7/8 [22.23]; 1/8 NPT
N	3/32 [2.381]	3/32 [2.381]

VIDEO ONLINE

The **SERIES VF** Visi-Float® Flowmeters are a line of direct reading, precision machined, clear acrylic body flowmeters suitable for both gas and liquid applications. The fabrication of the Visi-Float® Flowmeters is backed by over 60 years of experience in acrylic instrument machining. This Series consists of 2″ (51 mm) and 4″ (102 mm) scales with optional precision metering valves.

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 with metal mounting inserts that can be supported directly by system piping

APPLICATIONS

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

SPECIFICATIONS

Service: Compatible gases & liquids.
Wetted Materials: Body: Acrylic plastic; O-ring: Buna-N (fluoroelastomer available); Metal parts: Brass standard, SS optional; Float: SS, black glass, aluminum, K monel depending on range.
Temperature & Pressure Limits: Without valve: 100 psig (6.9 bar) @ 150°F (65°C); 150 psig (10 bar) @ 100°F (38°C); With valve: 100 psig (6.9 bar) @ 120°F (48°C).
Accuracy: VFA = 5% of FS; VFB = 3% of FS.
Process Connection: 1/8″ female NPT. VFB ranges 85 and 86 have 1/4″ NPT back connections or 3/8″ NPT end connections. These ranges not available with brass valves.
Scale Length: VFA 2″ typical length; VFB 4″ typical length.
Mounting Orientation: Mount in vertical position.
Weight: VFA: 4.0 to 4.8 oz (.11 to .14 kg); VFB: 7.2 to 8.8 oz (.20 to .25 kg).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

SERIES VF

VISI-FLOAT® ACRYLIC FLOWMETERS

Used to Indicate or Manually Control Air or Water Flow

RANGE CHART - VFA 2˝ SCALE - POPULAR RANGES			
Range No.	**SCFH Air**	**Range No.**	**LPM Air**
1	.1 to 1	21	.06 to 0.5
2	.2 to 2	22	.15 to 1
3	.6 to 5	23	.6 to 5
4	1 to 10	24	1 to 10
5	2 to 20	25	3 to 25
6	4 to 30	26	6 to 50
7	5 to 50	27	10 to 100
8	10 to 100		
9	20 to 200		
Range No.	**CC/Min. Water**	**Range No.**	**GPH Water**
32	6 to 50	41	.6 to 5
33	10 to 100	42	2 to 10
34	20 to 200	43	3 to 20
		44	8 to 40

RANGE CHART - VFB 4˝ SCALE - POPULAR RANGES			
Range No.	**SCFH Air**	**Range No.**	**LPM Air**
50	.3 to 3	65	.2 to 4
91*	1 to 10	66	1 to 10
51*	2 to 20	67	1 to 20
52	4 to 40	68	3 to 30
53*	10 to 100	69	4 to 40
54*	10 to 150	**Range No.**	**CC/Min. Water**
55*	20 to 200	82	2 to 30
Range No.	**SCFM Air**	**Range No.**	**GPH Water**
90	.3 to 3	80*	.5 to 12
Range No.	**CC/Min. Air**	83*	1 to 20
60	100 to 1000	84	6 to 40
		81	6 to 60
		Range No.	**GPM Water**
		85	.2 to 2
		86	.6 to 5
*For dual range models in English and Metric add “D” to end of Range No.			

ACCESSORIES	
Model	**Description**
RKA	Regulator kit for Series VFA
RK-VFB	Regulator kit for Series VFB

MODEL CHART	
Model	**Description**
VFA-X	Standard VFA
VFA-X-SS	VFA with stainless metal wetted parts
VFA-X-BV+	VFA with brass valve
VFA-X-SSV+	VFA with stainless steel valve
VFA-X-EC	VFA with end connections
VFA-X-EC-SS	VFA with end connections and stainless steel metal wetted parts
VFB-X	Standard VFB
VFB-X-SS	VFB with stainless metal wetted parts
VFB-X-BV+	VFB with brass valve
VFB-X-SSV+	VFB with stainless steel valve
VFB-X-EC	VFB with end connections
VFB-X-EC-SS	VFB with end connections and stainless steel metal wetted parts
How To Order: Series—Range No. (“X”)—Valve—Option **Example:** VFA-9-BV (Series VFA with 20-200 SCFH air range & brass valve)	
+Valve is designed for flow adjustment only, not intended to be used as an open/shut-off valve.	

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
-PF	Red ABS plastic pointer flag
-VIT	Fluoroelastomer O-rings

Regulator Kits
Available as optional extras for both Rate-Master® Flowmeters and Visi-Float® Flowmeters models. This view shows Model VFA Visi-Float® Flowmeter with integrally connected constant differential pressure regulator. Recommended for use where inlet air pressure fluctuates widely and constant flow is required.
The regulator maintains a constant pressure differential of approximately 3 ±.15 psig. Supply pressure must be at least 3 psig above the flowmeter discharge to operate. The standard regulator may be used with any Dwyer Series RM or VF flowmeter up to 200 scfh. For higher flow rates consult the factory.

Special Multi-Column Visi-Float® Flowmeters
Perfect for OEM applications, Visi-Float® Flowmeters can be custom made with up to 10 columns in a single block of acrylic plastic.
Available with or without valves. Consult factory for more information.

OEM Specials
Special flowmeter designs can be supplied to meet a wide range of requirements and specific applications. These include: on-off plunger and push-to-test valves, special gas or fluid calibration, special ranges, scales, name brand or other identification. Pointer flags can be furnished for instant visual reference. For specific information, please supply an outline of your requirements.

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

Dwyer

SERIES VFC & VFCII

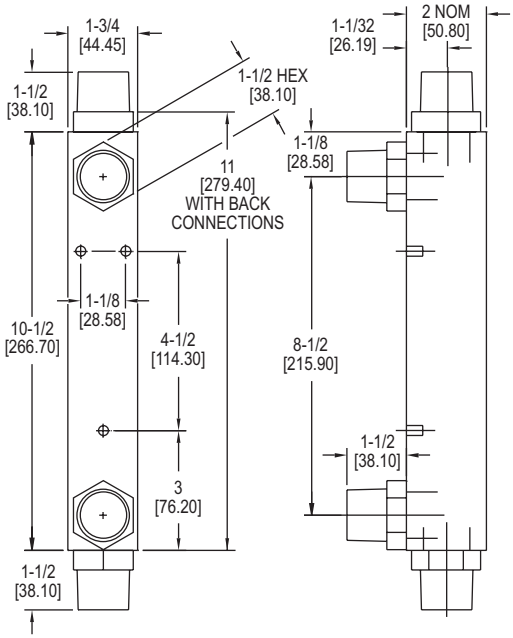
VISI-FLOAT® ACRYLIC FLOWMETERS

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



VIDEO ONLINE

The **SERIES VFC** Visi-Float® Flowmeter is a direct reading, precision machined, clear acrylic body flowmeter 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

SPECIFICATIONS
Service: Compatible gases & liquids.
Wetted Materials: Body: Acrylic plastic; O-ring: Buna-N (fluoroelastomer available); Metal parts: SS; Float: SS.
Fittings: VFC: PVC; VFCII: Acetal thermoplastic.
Temperature & 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)		

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

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

Dwyer

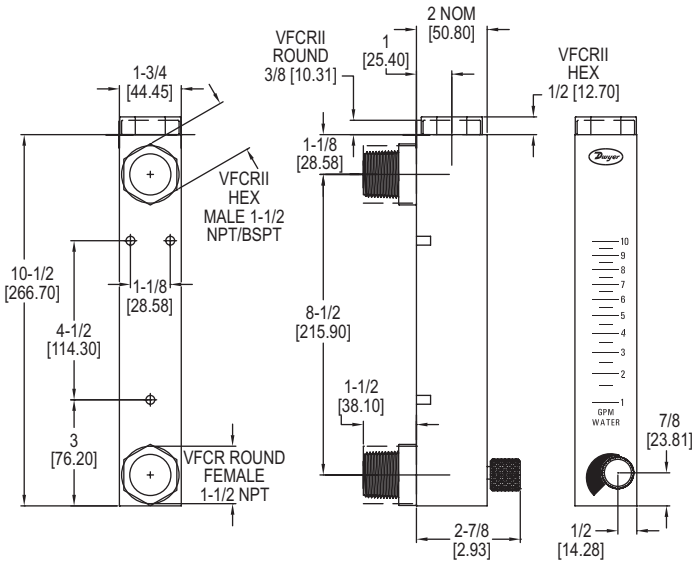
SERIES VFCR

VISI-FLOAT® ACRYLIC FLOWMETERS WITH ROTO-GEAR VALVE TECHNOLOGY

Full On/Off Control and Precise Flow Adjustment in One Valve Design

VFCR Left with 1˝ female NPT Connections

VFCRII with 1˝ male NPT Connections



The innovative **SERIES VFCR** Visi-Float® Acrylic Flowmeter with Roto-Gear Technology is a direct reading variable area flowmeter with scales for liquid or gas applications. Roto-gear valve technology permits full open to close adjustment while maintaining fine flow control of the process media in one valve design. Installation, operation, and maintenance are simple ensuring a long, accurate, and trouble-free operation life.

FEATURES/BENEFITS

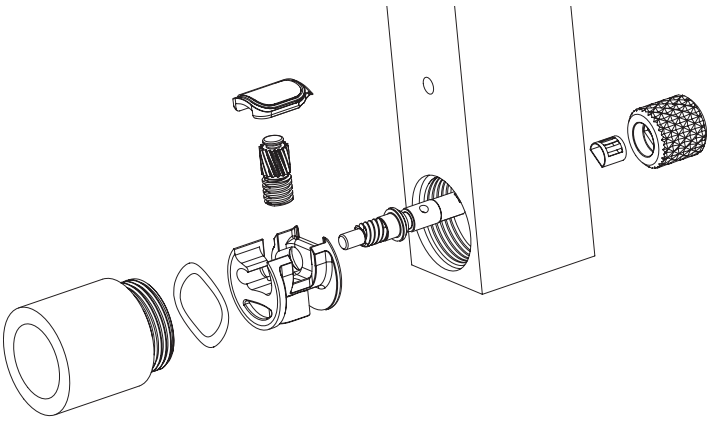
- Patent pending interlocking and rotating gear valve design offers fine flow control with full flow adjustment from fully open to fully closed
- Convenient valve cartridge assembly can easily be removed for effortless cleaning saving time and money
- Direct reading scales are hot stamped into the acrylic body resisting fading or wearing and extending product life
- Bodies are cut and precision machined from solid, clear acrylic blocks with white backgrounds for better visibility of the float, increasing reading accuracy
- Valve design features leak tight closure

APPLICATIONS

- Medical equipment
- Pollution monitors
- Chemical injectors
- Mining
- Laboratory
- Gas analysis
- Wastewater

REMOVABLE ROTO-GEAR VALVE CARTRIDGE ASSEMBLY

Easily remove or replace valve assembly



SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Body: Acrylic plastic; O-ring: Buna-N (optional fluoroelastomer); Valve: Delrin®; Float: Stainless steel; Float stop: Polyolefin (range no. 141 Polyolefin and PVC); Float rod: 18-8 SST; Fittings: PVC (VFCRII Delrin®); ABS plastic.
Temperature Limit: 120°F (48°C).
Pressure Limit: 100 psig (6.9 bar).
Accuracy: 2% of FS.
Process Connection: VFCR: 1˝ female NPT back connections; VFCRII: 1˝ male NPT back connections.
Scale Length: 5˝ (127 mm).
Mounting Orientation: Mount in vertical position.
Weight: 25.6 oz (0.73 kg).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART	
Model	**Thread Type**
VFCR-X	1˝ FNPT
VFCRII-X	1˝ MNPT
How To Order: Model - Range No. - Option **Example:** VFCR-121-NIST	

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

OPTIONS	
To order add suffix:	**Description**
-VIT	Fluoroelastomer O-rings
-NIST	NIST traceable calibration certificate
-BSPT	BSPT process connections
Example: VFCR-121-NIST	

Dwyer

SERIES MM

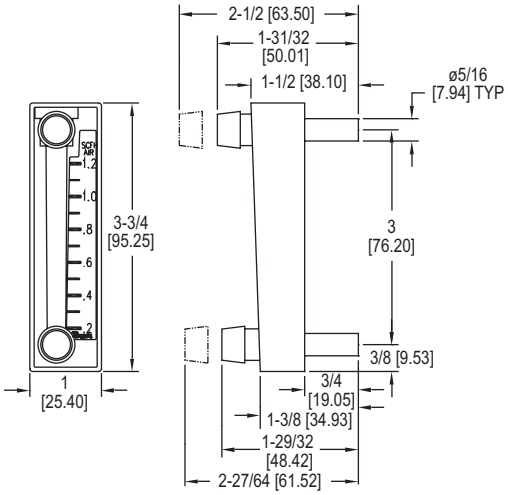
MINI-MASTER® FLOWMETERS

2″ or 1-1/2″ Scale, Configurable Valve Option

Standard Model MMA

Standard Model MMA with field configurable valve, bottom mount

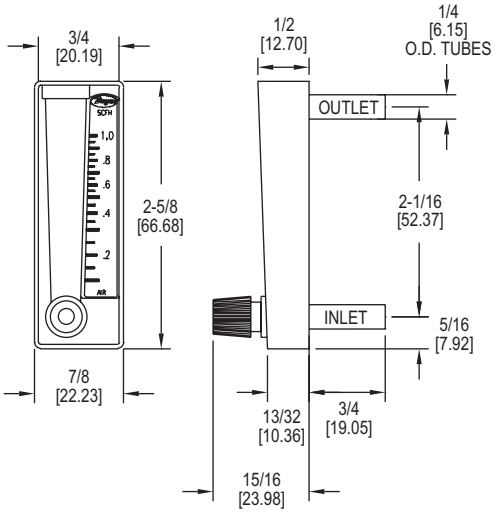
Standard Model MMA with field configurable valve, top mount



Model MMF-50-PV 1-1/2″ scale, with metering valve, knob.

Model MMF-10 with 1-1/2″ scale, no valve.

Model MMF-10-TMV with top-mounted valve- for vacuum service. Use screwdriver to adjust.



VIDEO ONLINE

The **SERIES MM** Mini-Master® Flowmeters consists of two series of flowmeters suitable for both gas and liquid applications with advanced features at a low cost.
The Series MMA is a 2″ (51 mm) scale flowmeter that is user configurable with or without non-removable top or bottom front mounted metering valves. It is constructed from transparent nylon material providing high chemical resistance and is easily disassembled via the provided key for cleaning or reconfiguration.
The Series MMF is a 1-1/2″ (38 mm) scale compact flowmeter ideal for measuring small volume air. It features bezel type mounting that can be quickly installed from the front of the instrument panel.

FEATURES/BENEFITS

- Low installation costs with easy mounting
- Long operation life with durable construction
- Precision molding enables high repeatability
- White back on the flow tube allows for better visibility of the float increasing reading accuracy
- Side printed scale graduations allows for instantaneous flow reading saving time
- Compact bodies require minimal panel space freeing valuable space

APPLICATIONS

- Medical equipment
- Air samplers
- Gas analyzers
- Pollution monitors
- Chemical injectors
- Cabinet purging

SPECIFICATIONS

MMA SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Body: Nylon 12; O-rings: Buna-N (optional materials available); Float: Black glass, K monel, stainless steel, tungsten carbide.
Temperature Limit: 130°F (54°C).
Pressure Limit: 100 psi (6.9 bar) with compression fitting. 50 psi (3.4 bar) with tubing clamp.
Accuracy: ±4% FS.
Process Connection: 5/16″ OD for push on rubber or plastic tubing with provided spring tubing clamp. Connect to rigid tubing with double compression fitting.
Weight: 1 oz (28.35 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MMF SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Body: Styrene acrylonitrile; Float: SS, black glass, nylon; Valve: Polyurethane.
Temperature Limit: 125°F (51°C).
Pressure Limit: 50 psi (3.4 bar). Valve option: 10 psi (0.6 bar).
Accuracy: ±10% FS.
Process Connection: 1/4″ OD for push on rubber or plastic tubing. Connect to rigid tubing with compression fittings.
Weight: 0.5 oz (14.17 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

SERIES MM

MINI-MASTER® FLOWMETERS

Used to Indicate or Manually Control Air or Water, Compact Size

MODEL CHART	
Model	**Description**
MMA	Standard MMA
How To Order: MMA-Range No. **Example:** MMA-4 (Series MMA with .5-5 SCFH air range)	

ACCESSORIES - MMA	
Model	**Description**
A-327	5/16″ union

RANGE CHART - MMA			
Range No.	**SCFH Air**	**Range No.**	**LPM Air**
3	.5 to 2.5	20	.2 to 1.2
4	.5 to 5	21	.25 to 2.5
5	1 to 10	22	.5 to 5
6	2 to 20	23	1 to 10
7	5 to 50	24	2.5 to 25
8	10 to 100	25	5 to 50
9	20 to 200	26	10 to 100
10	30 to 300	27	15 to 150
Range No.	**GPH Water**	**Range No.**	**CC/Min. Water**
30	1 to 8	35	5 to 50
31	1 to 16	36	10 to 150
32	4 to 40	37	20 to 200
33	5 to 60	38	50 to 500
Range No.	**LPM Water**		
40	.1 to 1.1		
41	.25 to 2.5		
42	.3 to 3.5		

MODEL CHART	
Model	**Description**
MMF-X	Standard MMF
MMF-X-PV	MMF with bottom mount valve
MMF-X-TMV	MMF with top mount valve
How To Order: MMF-Range No.-Valve **Example:** MMF-1-PV (Series MMF with .1-1 SCFH air range with valve)	

ACCESSORIES - MMF	
Model	**Description**
A-328	1/14″ union

RANGE CHART - MMF	
Range No.	**Range (SCFH Air)**
1	.1 to 1
2	.2 to 2
10	1 to 10
50	5 to 50
100	10 to 100

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate

MMA tubing connections secured by clamp. “Standup” mounting clip shown.

Spring retainers on connection tubes secure panel mounted MMA. Compression union, P/N A-327 shown.

Model MMF mounts easily from front of panel. Drill two 9/32″ or 5/16″ dia. holes in panel on 2-1/16″ centers. Insert mounting connector spuds. From rear, slide on the two spring retainers (furnished) and push on rubber or plastic tubing.

Model MMF connections. Connector at top, installed in panel, has retainer and flexible tubing in place. Connector at bottom shows alternative connection with metal or rigid plastic tubing, using a double compression nylon tube union (as Dwyer Part No. A-328).

Dwyer

SERIES UV

ULTRA-VIEW™ POLYSULFONE FLOWMETERS

High Corrosion - Resistant Body, Dual Scales

Shown with optional Polysulfone Fittings

Shown with optional Polycarbonate Shield

Shown with optional Polysulfone Fittings

The **SERIES UV** Ultra-View™ Polysulfone Flowmeter is an ultra-pure, laboratory grade flowmeter with a dual scale that measures flow in GPM and LPM of water, air and other compatible media. The Series UV is designed to withstand high temperatures up to 212°F (100°C) and pressures up to 150 psi (10.34 bar).

FEATURES/BENEFITS

- Corrosion-resistant polysulfone body ideal for applications where other flowmeters fail saving replacement cost and time
- Easy to clean body yields low maintenance costs
- Polycarbonate shield protects internal scale increasing product operating life
- Low installation costs with optional panel mount polysulfone fittings

APPLICATIONS

- Chill water flow
- Reverse osmosis systems
- Deionized water systems
- Potable water systems
- Remediation applications

SPECIFICATIONS
Service: Compatible liquids and gases.
Wetted Materials: Polysulfone body and fittings, fluoroelastomer O-rings and virgin PTFE float.
Temperature Limits: 35 to 212°F (2 to 100°C); 35 to 130°F (2 to 54°C) for PVC fitting option.
Pressure Limit: 150 psi (10.34 bar).
Accuracy: ±2% FS @ 70°F ±2°F (21.1°C) and 14.7 psia (in line connection rating only).
Repeatability: ±1% FS @ 70°F ±2°F (21.1°C) and 14.7 psia (in line connection rating only).
Process Connections: 1″ female NPT. Optional 90° polysulfone elbow – 1″ male NPT.
Scale Length: 6″ (152.40 mm) – 7″ (177.80 mm), depending on model.
Fitting Torque: Maximum 22 ft - lb.
Weight: 1 lb (457 g) for 20 GPM range.
CAUTION: Ball valves can have a "water cannon" effect on opening, creating pressure that exceeds the warranty ratings will damage the flowmeter. Series UV Flowmeters are for indoor use only or areas without direct sunlight. Polysulfone is adversely affected by ultraviolet light.

MODEL CHART			
Model	**Range (GPM water)**	**Model**	**Range (SCFM air)**
UV-0112	0.25 to 2.5 (1 to 9.5 LPM)	**UV-A112**	1 to 13 (30 to 370 LPM)
UV-1112	0.5 to 5.0 (2 to 19 LPM)	**UV-B112**	2.5 to 28 (70 to 780 LPM)
UV-2112	1.0 to 10.0 (4 to 38 LPM)	**UV-C112**	5 to 50 (70 to 1400 LPM)
UV-3112	2.0 to 20.0 (8 to 76 LPM)	**UV-D112**	14 to 100 (400 to 2800 LPM)
UV-4112	3.0 to 30.0 (12 to 112 LPM)		
UV-5112	4.0 to 40.0 (20 to 150 LPM)		
Note: For PVC 1″ female NPT fittings, change 12 to 22.			

ACCESSORIES	
Model	**Description**
A-801	Panel mount kit, polysulfone fittings
A-162	In-line fitting replacement kit. Two 1″ female NPT connection fittings included in kit

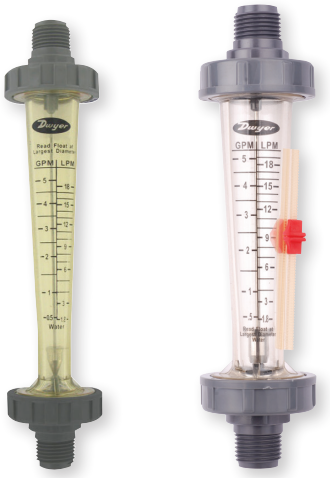
OPTIONS	
To order add suffix:	**Description**
-SHD	Protective polycarbonate shield
-NIST	NIST traceable calibration certificate

Dwyer

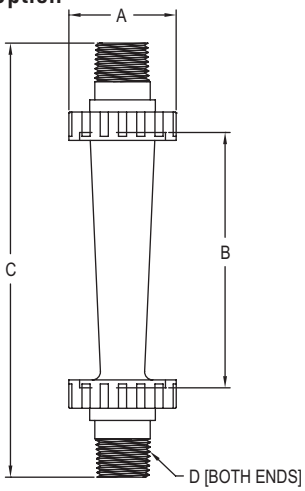
SERIES LFMA, LFMB, LFMC, LFMD, LFME, & LFMF

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

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 - 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

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Polycarbonate; Flange nut: ABS; Float stop: LFMA, LFMB, LFMC: ABS; LFMD, LFME, LFMF: Polypropylene; O-rings: Fluoroelastomer; Rod & float: 316 SS; Connections: 20 mm & 63 mm metric union fittings: ABS; 32 mm & 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″ & 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.

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

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

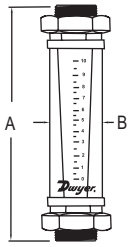
ACCESSORIES - LFMF	
Model	**Description**
A-565	63 mm metric union fittings - ABS
A-571	2″ male NPT fittings - nylon
A-574	2″ female NPT fittings - nylon

Dwyer

SERIES VAT

VARIABLE AREA FLUOROPOLYMER FLOWMETERS

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** Inline Fluoropolymer Flowmeters are 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: 0 to 10 markings.
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)

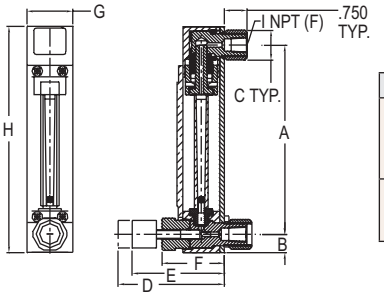
OPTIONS

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

SERIES TVA

ALL FLUOROPOLYMER FLOWMETERS

75 mm and 125 mm, 10:1 Turndown, Back Connect, Corrosive Resistant



Model	A	B	C	D	E	F	G
TVA11XX	4.97 [126]	0.56 [14]	1.06 [27]	3.35 [85]	1.25 [32]	6.16 [156]	1/4
TVA13XX	4.97 [126]	0.56 [14]	1.25 [32]	4.65 [118]	1.50 [38]	6.16 [156]	3/8
TVA22XX	8.72 [221]	0.88 [22]	1.75 [44]	4.57 [116]	2.00 [51]	10.4 [264]	1/2
TVA24XX	8.47 [215]	1.00 [25]	1.75 [44]	5.95 [151]	2.25 [57]	10.4 [264]	3/4

Note: Panel mounting: Drill two holes: 3/4″ dia. at 4.97″ apart for 1/4″ NPT models, 7/8″ dia. at 4.97″ apart for 3/8″ NPT models, 1″ dia. at 8.72″ apart for 1/2″ NPT models, and 1-1/4″ dia. at 8.47″ apart for 3/4″ NPT models (center-to-center).

The **SERIES TVA** Fluoropolymer Flowmeters are ideal for high purity or corrosive liquid applications. This series of flowmeters features a 0 to 10 scale graduations denoting a discrete flow rate.

FEATURES/BENEFITS
- Chemically inert wetted components yield long life even in corrosive liquid applications
- Low installation costs with standard back process connections for easy panel mounting

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).
Repeatability: ±0.25%.
Leak Integrity: 1 x 10–7 sccs of helium.
Scales: 0 to 10 markings, 75 mm or 125 mm lengths.
Turn-down Ratio: 10:1.
Mounting: Vertical.

MODEL CHART

Model		Low Range		
With Valve	Without Valve	Length	Connections	Flow Rate Water GPH (ml/min)
TVA1113	TVA1103	75 mm	1/4″ female NPT	6.34 (400)
TVA1115	TVA1105	75 mm	1/4″ female NPT	15.9 (1000)
TVA1317	TVA1307	75 mm	3/8″ female NPT	39.6 (2500)
TVA1319	TVA1309	75 mm	3/8″ female NPT	79.2 (5000)

MODEL CHART

Model		High Range		
With Valve	Without Valve	Length	Connections	Flow Rate Water GPM (L/min)
TVA22110	TVA22010	125 mm	1/2″ female NPT	3.43 (13)
TVA24112	TVA24012	125 mm	3/4″ female NPT	7.93 (30)
TVA24114	TVA24014	125 mm	3/4″ female NPT	11.9 (45)

OPTIONS

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

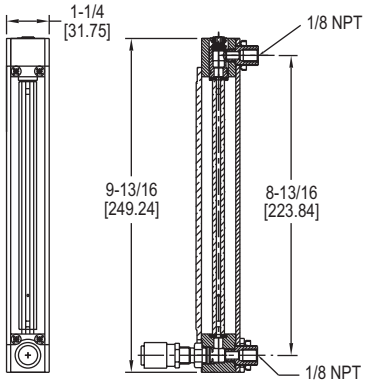
Dwyer

SERIES VA

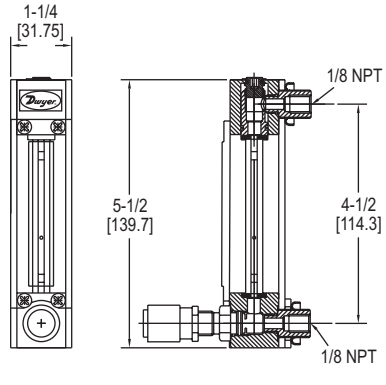
VARIABLE AREA GLASS FLOWMETERS

65 mm and 150 mm, ±2% FS Accuracy, Interchangeable Flowtubes, PTFE Options, Universal mm Scale

150 mm 65 mm



150 mm



65 mm

Panel Mounting: Drill two 5/8˝ dia. holes at 4.5˝ apart for 65 mm models and 8.812˝ apart for 150 mm models (center-to center).

The **SERIES VA** Variable Area Glass Flowmeters are designed with easy to read universal mm scale and supplied with correlation charts containing calibration data for air and water.

FEATURES/BENEFITS

- Permanently fused ceramic scale with vertical locator line reduces parallax and eye fatigue saving time
- Long operating life with thick polycarbonate front shield that protects tube from breakage and serves as a magnifying lens to enhance reading resolution
- Standard 6-turn needle valve for flow rate control eliminating the need for a separate valve reducing cost
- No additional installation required with optional acrylic tripod base which allows for self-standing bench mounting
- High precision metering valves with non-rising stems are available for high sensitivity control and resolution for very low flow rate

APPLICATIONS

- Gas or liquid metering
- Chemical processing
- Semiconductor systems
- Water and air pollution analysis systems
- Laboratory systems

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Flowtube: Borosilicate glass; Floats: Glass or SS (sapphire, Carboloy and tantalum are optional); Float stops: PTFE; End fittings: Anodized aluminum, 316 SS, brass or PTFE; Packings: Fluoroelastomer; O-rings: Buna-N on aluminum models and brass models, fluoroelastomer on SS models, PTFE on VAX5XX models.
Temperature Limits: 250°F (121°C); VAX5XX: -15 to 150°F (-26 to 65°C).
Pressure Limits: 200 psig (13.8 bar); VAX5XX: 100 psig (6.7 bar).
Accuracy: ±2% FS @ 70°F (21.1°C) and 14.7 psia (1 atm absolute); VA1043, VA1243, VA1343, VA25425, VA25025: ±5% FS @ 70°F (21.1°C) and 14.7 psia (1 @ absolute).
Repeatability: ±0.25% FS.
Leak Rate: 1 x 10-7 sccs of helium.
Scales: Universal 65 mm or 150 mm with correlation charts.
Turn-Down Ratio: 10:1.
Connections: Two 1/8˝ female NPT.
Mounting: Vertical.
Valve: 6-turn needle (standard), optional 16-turn high precision valve.
Valve Orifice: Acetal on aluminum models and brass models, PCTFE on stainless steel models, PTFE on VAX5XX models.

MODEL CHART - METAL 65 MM SCALE

Model				Max. Flow Rate	
Aluminum	SS	Brass	Float	Air SCFH (ml/min)	Water GPH (ml/min)
VA1043	VA1243	VA1343	Glass	0.104 (49)	0.009 (0.55)
VA1044	VA1244	-	SS	0.307 (145)	0.038 (2.38)
VA1045	VA1245	VA1345	Glass	0.220 (104)	0.028 (1.8)
VA1046	VA1246	-	SS	0.633 (299)	0.122 (7.7)
VA1047	VA1247	VA1347	Glass	0.43 (202)	0.041 (2.6)
VA1048	VA1248	-	SS	1.1 (522)	0.19 (12.0)
VA10423	VA12423	VA1349	Glass	2.29 (1081)	0.329 (20.8)
VA10424	VA12424	-	SS	4.51 (2129)	0.930 (58.7)
VA10411	VA12411	VA13411	Glass	2.65 (1249)	0.428 (27)
VA10412	VA12412	-	SS	5.34 (2520)	1.125 (71)
VA10413	VA12413	VA13413	Glass	4.32 (2040)	0.63 (40)
VA10414	VA12414	-	SS	8.45 (3990)	1.71 (108)
VA10417	VA12417	VA13417	Glass	13.4 (6318)	2.33 (147)
VA10418	VA12418	-	SS	25.5 (12058)	5.77 (364)
VA10419	VA12419	VA13419	Glass	27.9 (13153)	4.9 (309)
VA10420	VA12420	-	SS	52.3 (24680)	11.81 (745)
VA10421	VA12421	VA13421	Glass	49.1 (23169)	8.27 (522)
VA10422	VA12422	-	SS	89.2 (42094)	19.97 (1260)

MODEL CHART - METAL 150 MM SCALE

Model				Max. Flow Rate	
Aluminum	SS	Brass	Float	Air SCFH (ml/min)	Water GPH (ml/min)
VA20429	VA22429	VA23429	Glass	0.792 (374)	0.087 (5.5)
VA20430	VA22430	-	SS	1.725 (814)	0.323 (20.4)
VA20433	VA22433	VA23433	Glass	4.9 (2313)	0.848 (54)
VA20434	VA22434	-	SS	9.67 (4562)	2.067 (130)
VA20435	VA22435	VA23435	Glass	8.07 (3807)	1.336 (84)
VA20436	VA22436	-	SS	16.08 (7590)	3.34 (217)
VA20437	VA22437	VA23437	Glass	18.38 (8678)	3.32 (210)
VA20438	VA22438	-	SS	35.5 (16737)	8.02 (506)
VA20439	VA22439	VA23439	Glass	49.9 (23564)	9.0 (568)
VA20440	VA22440	-	SS	93.9 (44336)	21.7 (1370)

OPTIONS

Use order code:	Description
NISTCAL-FL1*	NIST traceable calibration certificate
*Specify media type (air or water) for NISTCAL option	

MODEL CHART - PTFE 65 MM SCALE

Model			Max. Flow Rate	
With Valve	Without Valve	Float	Air SCFH (ml/min)	Water GPH (ml/min)
VA1545	VA1505	Glass	0.220 (104)	0.028 (1.8)
VA1547	VA1507	Glass	0.428 (202)	0.047 (2.95)
VA15411	VA15011	Glass	2.646 (1249)	0.428 (27)
VA15413	VA15013	Glass	4.322 (2040)	0.630 (39.7)
VA15417	VA15017	Glass	13.39 (6318)	2.33 (147)
VA15419	VA15019	Glass	27.9 (13153)	4.9 (309)
VA15421	VA15021	Glass	49 (23169)	8.27 (522)
Note: VAX5XX models indicate PTFE units.				

MODEL CHART - PTFE 150 MM SCALE

Model			Max. Flow Rate	
With Valve	Without Valve	Float	Air SCFH (ml/min)	Water GPH (ml/min)
VA25425	VA25025	Glass	0.104 (49)	0.01 (0.61)
VA25429	VA25029	Glass	0.792 (374)	0.087 (5.5)
VA25431	VA25031	Glass	1.75 (825)	0.262 (16.5)
VA25435	VA25035	Glass	8.07 (3807)	1.34 (84.3)
VA25437	VA25037	Glass	18.39 (8678)	3.32 (209)
Note: VAX5XX models indicate PTFE units.				

ACCESSORIES

Model	Description
VA81	High precision valve, 316 SS, 0.42 SCFH capacity
VA82	High precision valve, 316 SS, 0.85 SCFH capacity
VA83	High precision valve, 316 SS, 2.12 SCFH capacity
VA84	High precision valve, 316 SS, 4.87 SCFH capacity
VA85	High precision valve, 316 SS, 13.14 SCFH capacity
VA86	High precision valve, 316 SS, 45.55 SCFH capacity
VA7	Acrylic tripod for single meter

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

Dwyer

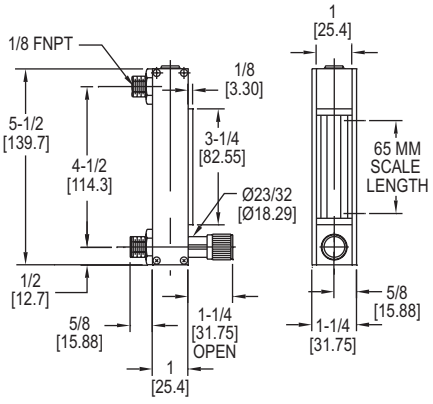
SERIES DR

DIRECT READING GLASS FLOWMETERS

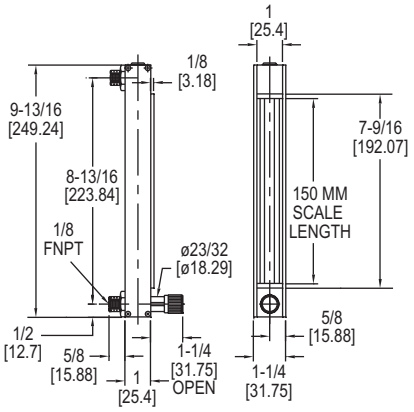
65 mm and 150 mm, Interchangeable Flowtubes, Direct Reading Scales

65 mm

150 mm



65 mm



150 mm

Panel Mounting: Drill two 5/8″ dia. holes at 4.5″ apart for 65mm models and 8.812″ apart for 150 mm models (center-to center).

The **SERIES DR** Direct Read Variable Area Glass Flowmeters are ideal for the direct flow measurement of air, water, and other commonly used gases. These flowmeters are designed with direct read scales with no need for correlation charts. They feature borosilicate glass tubes in 150 mm or 65 mm scales with aluminum and SS metering valve options.

FEATURES/BENEFITS

- Permanently fused ceramic scale with vertical locator line, reflective lens background and 1.5 X magnification lens reduces parallax and eye fatigue saving time
- Long operating life with thick polycarbonate front shield that protects tube from breakage and serves as a magnifying lens to enhance reading resolution
- Optional needle valve for flow rate control eliminating the need for a separate valve reducing cost
- Increased protection with included safety blow-out back panel for added safety

APPLICATIONS

- Gas or liquid metering
- Paper manufacturing
- Chemical processing
- Semiconductor systems
- Water and air pollution analysis systems
- Laboratory systems

SPECIFICATIONS	
Service: Compatible gases or liquids. **Wetting Materials:** Flowtube: Borosilicate glass; Float: 316 SS (black glass as indicated); Float stops: PTFE; End fittings: Anodized aluminum or 316 SS; O-rings: Buna-N on aluminum models and fluoroelastomer on SS models. **Temperature Limit:** 250°F (121°C). **Pressure Limit:** 250 psig (17 bar).	**Accuracy:** ±5% FS @ 70°F (21.1°C) and 14.7 psia (1 atm absolute). **Repeatability:** ±0.25% of scale reading. **Scales:** Direct reading 65 mm or 150 mm scales for air or water. **Turn-Down Ratio:** 10:1. **Connection:** 1/8″ female NPT. **Mounting:** Vertical. **Valve:** 6-turn needle (standard on models with valve).

MODEL CHART - 65 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Air SCFH (SCCM)
DR10010*	DR12010*	DR10410*	DR12410*	0.24 (130†)
DR10022	DR12022	DR10422	DR12422	0.65 (300†)
DR10030*	DR12030*	DR10430*	DR12430*	1.1 (500†)
DR10042	DR12042	DR10442	DR12442	2.2 (1000†)

Note: Add suffix "M" for metric scale. *Denotes glass float.
†Metric models use ccm as unit of measure for water & LPM for air.

MODEL CHART - 65 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Air SCFH (L/min)
DR10062	DR12062	DR10462	DR12462	5.6 (2.1)
DR10070*	DR12070*	DR10470*	DR12470*	11 (5)
DR10082	DR12082	DR10482	DR12482	20 (9.5)
DR10090*	DR12090*	DR10490*	DR12490*	55 (24)
DR100102	DR120102	DR104102	DR124102	100 (50)

Note: Add suffix "M" for metric scale. *Denotes glass float.

MODEL CHART - 65 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Water GPH (SCCM)
DR100120*	DR120120*	DR104120*	DR124120*	0.02 (1.5)
DR100132	DR120132	DR104132	DR124132	0.1 (6.5)
DR100140*	DR120140*	DR104140*	DR124140*	0.13 (8)
DR100152	DR120152	DR104152	DR124152	0.36 (24)
DR100172	DR120172	DR104172	DR124172	0.9 (55)
DR100180*	DR120180*	DR104180*	DR124180*	2.2 (140)
DR100192	DR120192	DR104192	DR124192	4.4 (280)
DR100200*	DR120200*	DR104200*	DR124200*	10 (600)
DR100212	DR120212	DR104212	DR124212	24 (1500)

Note: Add suffix "M" for metric scale. *Denotes glass float.

MODEL CHART - 150 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Air SCFH (SCCM)
DR20032	DR22032	DR20432	DR22432	0.33 (160)
DR20082	DR22082	DR20482	DR22482	0.54 (270)
DR200132	DR220132	DR204132	DR224132	2 (840)

Note: Add suffix "M" for metric scale.

MODEL CHART - 150 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Air SCFH (L/min)
DR200182	DR220182	DR204182	DR224182	3.8 (1.8)
DR200232	DR220232	DR204232	DR224232	10 (4.8)
DR200282	DR220282	DR204282	DR224282	16 (7.5)
DR200332	DR220332	DR204332	DR224332	35 (16)
DR200382	DR220382	DR204382	DR224382	90 (44)

Note: Add suffix "M" for metric scale.

MODEL CHART - 150 MM SCALE

Model Without Valve		Model With Valve		Max. Flow Rate
Aluminum	SS	Aluminum	SS	Water GPH (SCCM)
DR200432	DR220432	DR204432	DR224432	0.05 (3.2)
DR200482	DR220482	DR204482	DR224482	0.075 (4.6)
DR200532	DR220532	DR204532	DR224532	0.34 (21)
DR200582	DR220582	DR204582	DR224582	0.75 (46)
DR200632	DR220632	DR204632	DR224632	2.2 (140)
DR200682**	DR220682	DR204682**	DR224682	3.6 (230)
DR200732	DR220732	DR204732	DR224732	7.5 (480)
DR200782	DR220782	DR204782	DR224782	21 (1300)

Note: Add suffix "M" for metric scale. **Not available in metric scale.

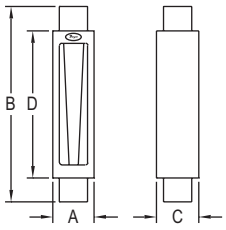
OPTIONS	
Use order code:	**Description**
NISTCAL-FL1	NIST traceable calibration certificate

Dwyer

SERIES IF

INDUSTRIAL DIRECT READING FLOWMETERS

Air/Water Direct Reading Scale, 304 SS Protective Shield



DIMENSIONS					
Tube Size	Female NPT	A	B	C	D
1 and 2	1/2″	2 [50.8]	9.54 [242]	2.25 [57.2]	8.04 [204]
3 and 4	1″	3.5 [89]	13.69 [348]	3.75 [95.3]	10.50 [267]
5 and 6	2″	5 [127]	15.59 [396]	5.25 [133]	11.55 [293]

The **SERIES IF** Industrial Direct Reading Flowmeters are flowmeters that directly measure flow rates up to 116 GPM (439 LPM) for water and 250 SCFM (7080 LPM) for air service.

FEATURES/BENEFITS
- Direct read scales with no need for correlation charts saves time
- Detachable, clear 3/16″ thick polycarbonate front shield provides protection at maximum rated temperature and pressure

APPLICATIONS
- Gas or liquid metering
- Industrial pneumatic or hydraulic systems

SPECIFICATIONS

Service: Liquids or gases.
Wetted Materials: Flowtube: Borosilicate glass; float, guide rods, float stops, end; Fittings: 316 SS; O-rings: Fluoroelastomer.
Temperature Limit: 200°F (93°C).
Pressure Limit: 200 psi (13.8 bar); 125 psi for tube size 5 & 6.
Accuracy: ±3% of FS.
Repeatability: ±0.5% of FS.
Turn-Down Ratio: 10:1.
Scale: Dual scale GPM and SCFM.
Process Connection: See table.
Mounting: Vertical.
Front Shield: Polycarbonate.
Side Panels: 304 SS.

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

MODEL CHART

Model	Maximum Flow Rate: Water GPM (LPM)	Maximum Flow Rate: Air SCFM (LPM)	Tube Size	Press. Drop (in H_2O)	Model	Maximum Flow Rate: Water GPM (LPM)	Maximum Flow Rate: Air SCFM (LPM)	Tube Size	Press. Drop (in H_2O)	Model	Maximum Flow Rate: Water GPM (LPM)	Maximum Flow Rate: Air SCFM (LPM)	Tube Size	Press. Drop (in H_2O)
IF2700	0.25 (0.95)	1.2 (35)	1	-	**IF2708**	6 (20)	25.5 (725)	4	5	**IF2716**	41 (155)	160 (4531)	6	5
IF2701	0.36 (1.3)	1.7 (50)	1	2	**IF2709**	7.4 (27.5)	30 (900)	4	6	**IF2717**	44 (167)	180 (5098)	5	30
IF2702	0.76 (3.0)	3.3 (90)	1	5	**IF2710**	9.6 (35)	40 (1200)	4	10	**IF2718**	60 (227)	245 (6938)	6	16
IF2703	1 (3.7)	4.2 (120)	2	6	**IF2711**	11 (40)	47.5 (1400)	4	13	**IF2719**	61 (231)	250 (7080)	5	40
IF2704	1.5 (5.6)	6.5 (180)	2	-	**IF2712**	14 (50)	62 (1800)	4	24	**IF2720**	86 (326)	-	6	25
IF2705	2.2 (8.2)	8.5 (250)	2	10	**IF2713**	20 (75)	90 (2600)	4	39	**IF2721**	116 (439)	-	6	45
IF2706	3.8 (14)	16 (475)	3	10	**IF2714**	22 (83)	90 (2550)	5	16					
IF2707	5 (18)	21.5 (650)	3	14	**IF2715**	26 (98)	-	4	70					

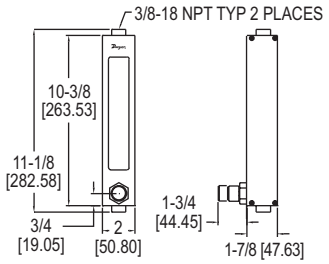
SERIES RSF

ROTATABLE SCALE FLOWMETERS

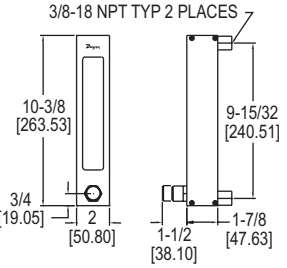
Dual, Rotatable Direct Reading Scales for Air and Water

In-Line Meter

Panel Mount Meter



In-Line Meter



Panel Mount Meter

The **SERIES RSF** Rotatable Scale Flowmeters are ideal for the direct flow measurement of air, water, and other commonly used gases. These flowmeters are designed with direct read scales with no need for correlation charts and graduations are marked on a rotating, polycarbonate tube shield. They feature borosilicate glass tubes with brass and SS metering valve options.

FEATURES/BENEFITS
- Reflective lens background and 1.5 X magnification lens reduces parallax and eye fatigue saving time and allowing for a more accurate reading
- Long operating life with thick polycarbonate front shield that protects tube from breakage and serves as a magnifying lens to enhance reading resolution
- Increased protection with included safety blow-out back panel for added safety in the event of breakage

APPLICATIONS
- Gas or liquid metering
- Water and air pollution analysis systems

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Flowtube: Borosilicate glass; Float: Brass/SS models: 316 SS; PTFE models: PTFE; Float stops: Brass/SS models: 316 SS; PTFE models: PTFE; End fittings: Brass/SS models: Brass or 316 SS; PTFE models: PTFE; O-rings: Brass/SS models: Fluoroelastomer; PTFE models: PTFE.
Temperature Limit: 250°F (121°C); PTFE models: 150°F (65°C).
Pressure Limit: 150 psig (10.34 bar) @ 200°F (93°C). PTFE models: 100 psig (6.7 bar).
Accuracy: ±7% FS.
Repeatability: ±0.25% FS.
Scale: Direct Reading 127 mm scales for air and water.
Turn-Down Ratio: 10:1.
Connections: Two 3/8″ female NPT.
Mounting: Vertical or panel mount.
Panel Cutout: Drill two 7/8″ diameter holes 9.469″ (240.5 mm) apart (for panel mount meters only).
Valve: 6-turn needle (standard on models indicating "with valve").

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

MODEL CHART

Brass & SS Vertical In-Line Meters						Brass & SS Panel Mount Meters					
Model Without Valve		Model With Valve		Max. Flow Rate		Model Without Valve		Model With Valve		Max. Flow Rate	
Brass	SS	Brass	SS	Air SCFM (SLPM)	Water GPM (LPM)	Brass	SS	Brass	SS	Air SCFM (SLPM)	Water GPM (LPM)
RSF011	**RSF111**	**RSF011V**	**RSF111V**	5 (140)	1.2 (4)	**RSF021**	**RSF121**	**RSF021V**	**RSF121V**	5 (140)	1.2 (4)
RSF012	**RSF112**	**RSF012V**	**RSF112V**	10 (280)	2 (8)	**RSF022**	**RSF122**	**RSF022V**	**RSF122V**	10 (280)	2 (8)
RSF013	**RSF113**	**RSF013V**	**RSF113V**	15 (425)	3 (11.5)	**RSF023**	**RSF123**	**RSF023V**	**RSF123V**	15 (425)	3 (11.5)
RSF014	**RSF114**	**RSF014V**	**RSF114V**	20 (575)	4 (15)	**RSF024**	**RSF124**	**RSF024V**	**RSF124V**	20 (575)	4 (15)
RSF015	**RSF115**	**RSF015V**	**RSF115V**	30 (900)	5 (20)	**RSF025**	**RSF125**	**RSF025V**	**RSF125V**	30 (900)	5 (20)

Note: For PTFE models select RSF2XX_ (not available for all models).

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

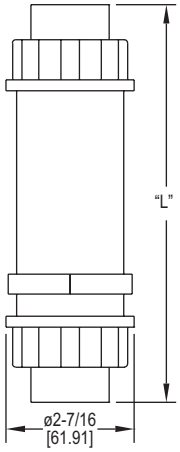
Dwyer

SERIES HFPC & HFPS

PLASTIC FLOWMETERS

Mount in any Position, Corrosive Resistant

HFPC HFPS



Meter Size	DIM "L"
1/2″ male	7-11/16 [195.26]
1/2″ female	7-5/32 [181.76]
3/4″ male	8-1/32 [204.00]
3/4″ female	7-9/16 [192.09]
1″ male	8-3/32 [205.58]
1″ female	7-9/16 [192.09]

The **SERIES HFPC & HFPS** Flowmeters are a series of clear body, in-line flowmeters. This Series consists of the HFPC polycarbonate body flowmeter and the HFPS polysulfone body flowmeter. These flowmeters have dual scales measuring both in GPM and LPM.

FEATURES/BENEFITS

- Clear body allows for visual inspection of the fluid conditions and immediate problem detection
- Reduce cost with multi position mounting and bidirectional flow eliminating the need for multiple flowmeters
- Rugged construction allows for high pressure and temperature rating for long operation life
- Injection molded, polycarbonate or polysulfone bodies yield great repeatability

APPLICATIONS

- Chemical processing
- Pulp and paper
- Process control
- Fluid power
- Hydraulic flow
- Heating loop flow

SPECIFICATIONS

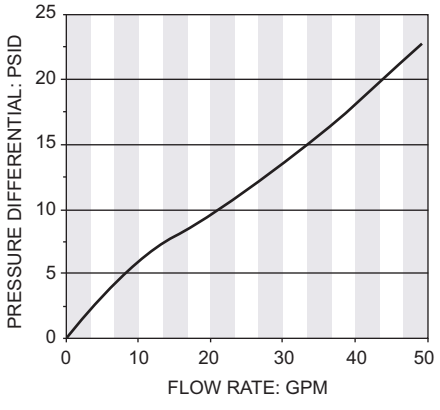
Service: Compatible liquids.
Wetted Materials: HFPC: Polycarbonate body, Buna-N seals, SS spring, Polysulfone connections; HFPS: Polysulfone body, Buna-N seals, SS spring, polysulfone connections.
Pressure Limit: 325 psig (22.4 bar).
Temperature Limit: HFPC: 200°F (93°C); HFPS: 250°F (121°C).
Accuracy: ±5% FS.
Repeatability: ±1% FS.
Pressure Loss: See chart.
Weight: Standard models 1 lb (453.6 g). Models with optional brass connections 2 lb (907 g).

CAUTION: Series HFPC & HFPS Flowmeters are for indoor use only or areas without direct sunlight. Polycarbonate & polysulfone are adversely affected by ultraviolet light.

MODEL CHART

Example	HF	PC	-1	-1	-BC	HFPC-1-1-BC
Series	HF					HF plastic flow meters
Wetted Parts		PC				Polycarbonate body, polysulfone connections
		PS				Polysulfone body, polysulfone connections
Connection			1			1/2″ female NPT
			2			3/4″ female NPT
			3			1″ female NPT
			4			1/2″ male NPT brass connections only
			5			3/4″ male NPT brass connections only
			6			1″ male NPT brass connections only
			7			1/2″ female BSPP
			8			3/4″ female BSPP
			9			1″ female BSPP
Range				1		.5 to 5 GPM (1 to 19 LPM)
				2		1 to 10 GPM (3.8 to 38 LPM)
				3		2 to 15 GPM (7.5 to 55 LPM)
				4		3 to 30 GPM (11 to 113 LPM)
Option					BC	Brass connections

TYPICAL PRESSURE DIFFERENTIAL



OPTIONS

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

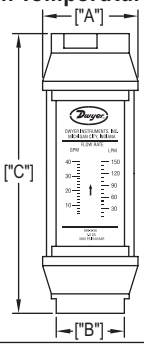
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES HF

IN-LINE FLOW MONITORS

For Air, Water or Caustic Fluids, ±2% FS, Unrestricted Mounting, High Temperature and Pressure Options



Valve Size	"A" Reference	"B" Wrench Flats	"C" Reference
1/8 NPT	1.25	0.875	4.813
1/4 to 1/2 NPT	1.875	1.250	6.562
3/4 to 1 NPT	2.375	1.750	7.125
1-1/4 to 1-1/2 NPT	3.500	2.250	10.125
2 NPT	3.500	2.250	12.625

The **SERIES HF** In-Line Flow Monitors are ruggedly constructed and ideal for direct measurement for a range of compatible gases, oil or water based liquids. This Series is designed based on a floating orifice disk and variable area flow measurement. Flowing media forces linear motion of the orifice disk and a ring shaped magnet which ride on a tapered center shaft. The transfer magnet drives a clearly visible magnet follower located outside the flow tube, and a ring on the magnet follower indicates flow rate on the direct reading scale.

FEATURES/BENEFITS

- This unique design allows accurate performance with fluid viscosities up to 500 SSU
- All internal wetted parts are contained inside a sealed metal tubular casing assuring a virtually maintenance-free unit
- Increased application versatility with no inlet or outlet straight plumbing requirement and can be mounted horizontally, vertically, or inverted
- Rugged construction allows for high pressure and temperature rating for long operation life

APPLICATIONS

- Setting pressure relief valves
- Fluid handling equipment
- Detecting low-flow rates for lubricating liquids
- Pulp and paper
- Industrial maintenance
- Fluid power
- Heating loop flow

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: HFA: Aluminum casing, Buna-N seals, PTFE coated Alnico magnet, SS disk; HFB: Brass casing, Buna-N seals, PTFE coated Alnico magnet, SS disk; HFS: 303 SS casing, FKM seals with PTFE backup, PTFE coated Alnico magnet, SS disk.
Maximum Viscosity: 500 SSU.
Temperature Limits: 240°F (116°C).
Pressure Limits: HFA, HFB, HFL and HFH models: 600 psig (41 bar) for air and gas, 3500 psig (241 bar) for liquids; HFS model: 1000 psig (70 bar) for air and gas, 6000 psig (413 bar) for liquids.
Accuracy: ±2% FS.
Repeatability: ±1% of FS.
Shipping Weight: 1/4″ to 1/2″ female NPT models; 2 lb (0.9 kg); 3/4 to 1″ female NPT models: 3.5 lb (1.59 kg); 1-1/2″ female NPT models: 11 lb (5 kg); 2″ female NPT models: 13.5 lb (6.12 kg).

Note: Series HF monitors are recommended for use with system filtration of at least 74 microns or a 200 mesh screen

MODEL CHART - BRASS BODY FOR WATER BASED FLUIDS (NON-STEAM)

Model	Connection Size	Range: Water GPM (LPM)*
HFB-2-05	1/2″ female NPT	0.5 to 5.0 (1 to 19)
HFB-3-15	3/4″ female NPT	2 to 15 (7.5 to 55)
HFB-3-20	3/4″ female NPT	2 to 20 (7.5 to 75)
HFB-4-35	1″ female NPT	5 to 35 (19 to 130)
HFB-5-50	1-1/2″ female NPT	5 to 50 (19 to 189)
HFB-5-100	1-1/2″ female NPT	10 to 100 (38 to 379)
HFB-6-75	2″ female NPT	8 to 75 (31 to 284)
HFB-6-150	2″ female NPT	20 to 150 (76 to 568)

*Dual scale range

MODEL CHART - ALUMINUM BODY FOR OIL BASED FLUIDS

Model	Connection Size	Range: Oil GPM (LPM)*
HFL-2-05	1/2″ female NPT	0.5 to 5.0 (1 to 19)
HFL-4-25	1″ female NPT	2 to 25 (7.5 to 95)

*Dual scale range

MODEL CHART - 304 SS BODY FOR HIGH-PRESSURE FLUIDS

Model	Connection Size	Range: Water GPM (LPM)*
HFS-2-02	1/2″ female NPT	0.2 to 2.0 (0.75 to 7.5)
HFS-2-10	1/2″ female NPT	0.5 to 10 (1.9 to 38)

*Dual scale range

MODEL CHART - ALUMINUM, BRASS, AND STAINLESS STEEL FOR AIR AND OTHER NON-CORROSIVE GASES

Aluminum Model	Brass Model	Stainless Steel Model	Connection (NPT female, dry seal)	Range: SCFM (LPS)*
HFA-1-001	**HFB-1-001**	**HFS-1-001**	1/4″	1.5 to 12 (0.5 to 5.5)
HFA-1-002	**HFB-1-002**	**HFS-1-002**	1/4″	4 to 23 (2 to 10)
HFA-1-003	**HFB-1-003**	**HFS-1-003**	1/4″	5 to 50 (2.5 to 25)
HFA-1-004	**HFB-1-004**	**HFS-1-004**	1/4″	10 to 100 (5 to 45)
HFA-8-001	**HFB-8-001**	**HFS-8-001**	3/8″	1.5 to 12 (.5 to 5.5)
HFA-8-002	**HFB-8-002**	**HFS-8-002**	3/8″	4 to 23 (2 to 10)
HFA-8-003	**HFB-8-003**	**HFS-8-003**	3/8″	5 to 50 (2.5 to 25)
HFA-8-004	**HFB-8-004**	**HFS-8-004**	3/8″	10 to 100 (5 to 45)
HFA-2-001	**HFB-2-001**	**HFS-2-001**	1/2″	1.5 to 12 (.5 to 5.5)
HFA-2-002	**HFB-2-002**	**HFS-2-002**	1/2″	4 to 23 (2 to 10)
HFA-2-003	**HFB-2-003**	**HFS-2-003**	1/2″	5 to 50 (2.5 to 25)
HFA-2-004	**HFB-2-004**	**HFS-2-004**	1/2″	10 to 100 (5 to 45)
HFA-3-003	**HFB-3-003**	**HFS-3-003**	3/4″	5 to 50 (3 to 23)
HFA-3-004	**HFB-3-004**	**HFS-3-004**	3/4″	10 to 100 (4 to 48)
HFA-3-005	**HFB-3-005**	**HFS-3-005**	3/4″	15 to 150 (8 to 56)
HFA-3-006	**HFB-3-006**	**HFS-3-006**	3/4″	30 to 330 (20 to 150)
HFA-4-003	**HFB-4-003**	**HFS-4-003**	1″	5 to 50 (3 to 23)
HFA-4-004	**HFB-4-004**	**HFS-4-004**	1″	10 to 100 (4 to 48)
HFA-4-005	**HFB-4-005**	**HFS-4-005**	1″	15 to 150 (8 to 56)
HFA-4-006	**HFB-4-006**	**HFS-4-006**	1″	30 to 330 (20 to 150)
HFA-9-007	**HFB-9-007**	**HFS-9-007**	1-1/4″	30 to 470 (15 to 220)
HFA-9-008	**HFB-9-008**	**HFS-9-008**	1-1/4″	150 to 900 (75 to 425)
HFA-5-007	**HFB-5-007**	**HFS-5-007**	1-1/2″	30 to 470 (15 to 220)
HFA-5-008	**HFB-5-008**	**HFS-5-008**	1-1/2″	150 to 900 (75 to 425)

*Dual scale range

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

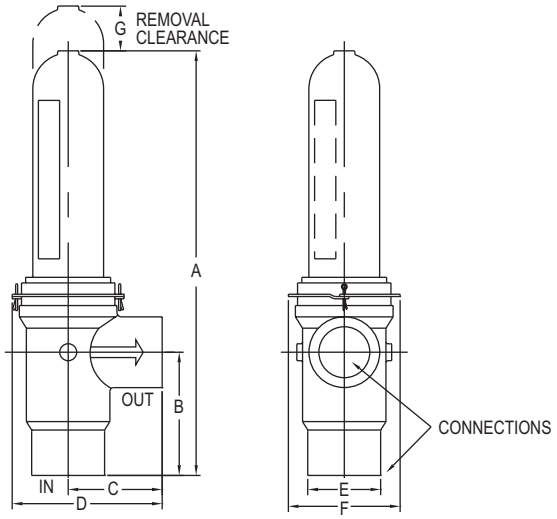
Dwyer

SERIES TVF

TOTAL VIEW INDUSTRIAL FLOWMETERS

View Flow Rate from 360°, Water or Air Ranges

TVFS



A	B	C	D	E	F	G	Female NPT	Material
9.36	2.81	2.68	4.00	1.35	2.72	3.00	3/4″	SS
15.22	4.53	3.71	5.70	2.48	3.95	5.00	1-1/2″	SS

The **SERIES TVF** Total View Industrial Flowmeters are economically priced, tough, simple and accurate meters. The flowmeters have a full scale accuracy of ±2% and constructed of T-316 stainless steel. The Series TVF flowmeters are available with standard 3/4″ and 1-1/2″ female NPT connections.

FEATURES/BENEFITS

- Easy to read with 360° rotation of scale on plastic sight tube models
- The sight tube is comprised of polysulfone for added corrosion resistance
- Easily disassembled without the meter being removed from the pipeline for easy cleaning
- Rugged construction allows for high pressure and temperature rating for long operation life

APPLICATIONS

- Water & oil flow monitoring
- Coolant lines
- Compressed gases
- Industrial applications

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Body: SS; O-rings: Buna-N; Sight tube: Polysulfone.
Temperature Limits: See “Operating Limits” table.
Pressure Limits: See “Operating Limits” table.
Accuracy: ±2% of FS.
Repeatability: ±0.25% of indicated flow rate.
Process Connections: 3/4″ and 1-1/2″ female NPT.
Scale Length: 3.2″ (8 cm) for 3/4″ NPT connection, 5.2″ (13 cm) for 1-1/2″ NPT connection.
Weight: 4 lb (1.8 kg) for 3/4″, and 12 lb (5.5 kg) for 1-1/2″.

MODEL CHART

Example	TVFS	-00	TVFS-00
Series	TVFS		3/4″ female NPT 1-1/2″ female NPT
Range Code		-XX	See Range/Connection Chart (add range code to Series designator for model number)
Note: Contact factory for optional metric scales (liters/minute).			

OPERATING LIMITS

Maximum Non-Shock Working Pressure psig @ °F (bar @ °C)			
Connection	**200°F (93°C)**	**250°F (121°C)**	**300°F (148°C)**
3/4″	300 (20.6)	250 (17.2)	115 (7.9)
1-1/2″	180 (12.4)	145 (10.0)	70 (4.8)

RANGE/CONNECTION CHART

Range Code	Range GPM Water	Connection (Female NPT)	Range Code	Range SCFM Air	Connection (Female NPT)	Range Code	Range SCFM Air	Connection (Female NPT)
-00	0.025 to 0.545	3/4″	-19	0.16 to 3.20	3/4″	-33	1.50 to 25.0	1-1/2″
-01	0.04 to 0.80	3/4″	-20	0.50 to 5.00	3/4″	-34	1.00 to 31.0	1-1/2″
-02	0.06 to 1.20	3/4″	-21	0.30 to 7.40	3/4″	-35	2.00 to 40.0	1-1/2″
-03	0.08 to 1.64	3/4″	-22	0.50 to 10.2	3/4″	-36	3.0 to 70.0	1-1/2″
-04	0.10 to 2.60	3/4″	-23	0.60 to 14.0	3/4″	-37	4.0 to 100.0	1-1/2″
-05	0.15 to 3.80	3/4″	-24	1.00 to 20.0	3/4″	-38	5.0 to 140.0	1-1/2″
-06	0.20 to 5.40	3/4″	-25	1.00 to 26.0	3/4″	-39	5.0 to 175.0	1-1/2″
-07	0.20 to 7.00	3/4″	-26	1.00 to 35.0	3/4″	-40	6.00 to 250.0	1-1/2″
-08	0.20 to 10.0	3/4″	-27	2.00 to 50.0	3/4″	-41	2.00 to 310.0	1-1/2″
-09	0.60 to 14.00	3/4″	-28	3.00 to 70.0	3/4″	-42	7.50 to 390.0	1-1/2″
-10	0.50 to 23.00	3/4″	-29	4.00 to 85.0	3/4″	-43	10.0 to 510.0	1-1/2″
-11	0.50 to 11.0	1-1/2″	-30	6.00 to 125.0	3/4″	-44	35.0 to 750.0	1-1/2″
-12	0.70 to 15.0	1-1/2″	-31	6.0 to 160.0	3/4″	-45	20.0 to 1000.0	1-1/2″
-13	1.00 to 21.0	1-1/2″	-32	4.00 to 260.0	3/4″			
-14	0.50 to 35.0	1-1/2″						
-15	1.00 to 50.0	1-1/2″						
-16	2.00 to 70.0	1-1/2″						
-17	3.00 to 90.0	1-1/2″						
-18	4.00 to 120.0	1-1/2″						

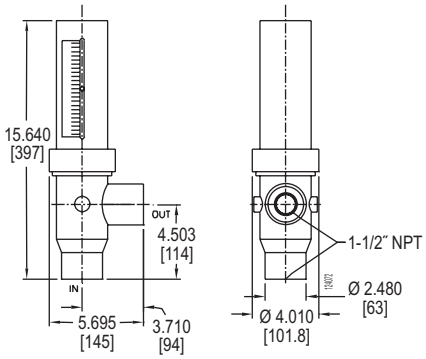
SERIES SSM

ALL METAL FLOWMETERS

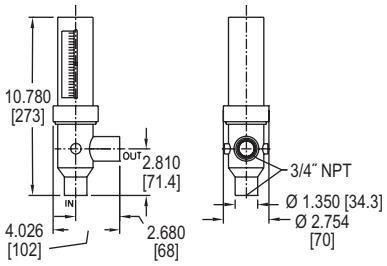
Available in Stainless Steel for Industrial Environments

1-1/2″ Models

3/4″ Models



1-1/2″ Models



3/4″ Models

The **SERIES SSM** Metal Flowmeters are rugged, general purpose industrial flowmeters with a direct reading scale and ±2% accuracy. These meters are of T316SS construction and offered in 3/4″ and 1-1/2″ process connections.

FEATURES/BENEFITS

- Increased compatibility with an internal magnet that moves the external flow indicator in a non-wetted enclosure
- Easily disassembled without the meter being removed from the pipeline for easy cleaning
- Pipe adaptors may be used to adapt to alternate size liner without altering accuracy
- Higher than typical ±2% accuracy on a 25 to 1 ratio range compared to typical variable area ball float flowmeters

APPLICATIONS

- Dirty or opaque fluids
- High temperature & pressure industrial flow
- Harsh environments
- Coolant lines
- Compressed gases

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Material: T316 SS, Alnico magnet, FKM O-ring.
Temperature Limits: 300ºF (149ºC).
Pressure Limits: 3/4″ models: 1000 psig (68.9 bar) @ 250ºF (121ºC), 1-1/2″ models: 800 psig (55 bar) @ 250ºF (121ºC).
Accuracy: ±2% FS.
Repeatability: ±0.5% of indicated flow rate.
Process Connections: 3/4″ or 1-1/2″ female NPT.
Scale Length: 3/4″ models: 3.2″ (8 cm); 1-1/2″ models: 5.2″ (13 cm).
Weight: 3/4″ models: 5 lb (2.3 kg); 1-1/2″ models: 13 lb (5.9 kg).

MODEL CHART

316 SS Body	Range	Connection	Max. Pressure Loss
SSM-00	0.2 to 5.4 GPM water (0.75 to 21 LPM)	3/4″	17.2 in w.c.
SSM-01	0.2 to 10 GPM water (1 to 35 LPM)	3/4″	22.0 in w.c.
SSM-02	0.5 to 23 GPM water (0.5 to 90 LPM)	3/4″	75.0 in w.c.
SSM-03	0.5 to 35 GPM water (2 to 130 LPM)	1-1/2″	18.5 in w.c.
SSM-04	1 to 50 GPM water (8 to 200 LPM)	1-1/2″	26.0 in w.c.
SSM-05	2 to 70 GPM water (2 to 265 LPM)	1-1/2″	80.0 in w.c.
SSM-06	4 to 120 GPM water (15 to 450 LPM)	1-1/2″	130.0 in w.c.
SSM-07	2 to 50 SCFM air (4 to 85 m^3/hr)	3/4″	4.5 in w.c.
SSM-08	6 to 125 SCFM air (10 to 210 m^3/hr)	3/4″	11.8 in w.c.
SSM-09	4 to 260 SCFM air (10 to 440 m^3/hr)	3/4″	93.0 in w.c.
SSM-10	2 to 310 SCFM air (10 to 530 m^3/hr)	1-1/2″	12.0 in w.c.
SSM-11	10 to 515 SCFM air (20 to 880 m^3/hr)	1-1/2″	40.0 in w.c.
SSM-12	35 to 750 SCFM air (40 to 1300 m^3/hr)	1-1/2″	70.0 in w.c.
SSM-13	20 to 1000 SCFM air (40 to 1700 m^3/hr)	1-1/2″	90.0 in w.c.

Dwyer

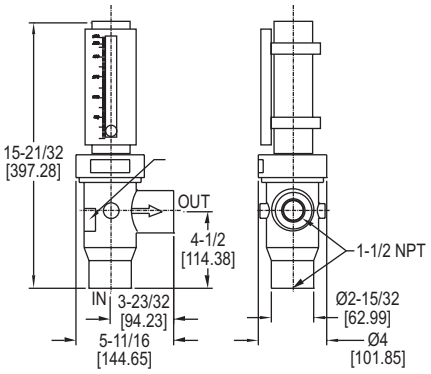
SERIES STFLO

STAINLESS STEEL FLOWMETERS

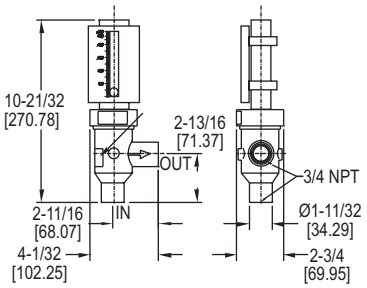
Ideal for Steam Applications

1-1/2″ NPT Connection

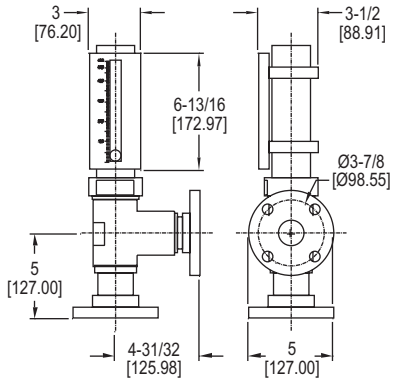
3/4″ NPT Connection



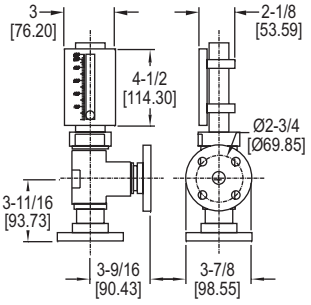
3/4″ NPT Connection



1-1/2″ NPT Connection



3/4″ Flange Connection



1-1/2″ Flange Connection

The **SERIES STFLO** Steam Flowmeters are heavy duty, industrial flowmeters with high temperature and pressure limits. These units include a geothermal PTFE O-ring with direct reading scale and ±2% accuracy. These meters are of T316SS construction and offered in 3/4″and 1-1/2″ process connections.

FEATURES/BENEFITS

- Easily disassembled without the meter being removed from the pipeline for easy cleaning
- Rugged construction allows for high pressure and temperature rating for long operation life

APPLICATIONS

- Monitoring steam flow
- High temperature & pressure industrial flow
- Harsh environments

SPECIFICATIONS

Service: Compatible with liquids and gases.
Wetted Material: T316 SS, Alnico magnet, geothermal PTFE O-ring.
Temperature Limits: See chart.
Pressure Limits: See chart.
Accuracy: ±2% FS.
Repeatability: ±0.5% of indicated flow rate.
Process Connections: 3/4″ or 1-1/2″ female NPT, optional flange connections.
Scale Length: 3/4″ models: 3.2″ (8 cm); 1-1/2″ models: 5.2″ (13 cm).
Weight: 3/4″ NPT models: 5.75 lb (2.6 kg); 1-1/2″ NPT models: 14 lb (6.4 kg). 3/4″ flange models: 9.75 lb (4.4 kg); 1-1/2″ flange models: 22 lb (10 kg).

OPTIONS

To order add suffix:	Description
F1	3/4″ 150 # ANSI flange connection
F2	1-1/2″ 150 # ANSI flange connection

MODEL CHART

Model	Range lb/hr. steam	Connection NPT*	Model	Range lb/hr. steam	Connection NPT*
STFLO-00	2.3 to 50	3/4″	STFLO-08	7 to 100	1-1/2″
STFLO-01	5 to 100	3/4″	STFLO-09	7 to 150	1-1/2″
STFLO-02	5 to 150	3/4″	STFLO-10	14.5 to 335	1-1/2″
STFLO-03	9.5 to 240	3/4″	STFLO-11	24 to 800	1-1/2″
STFLO-04	14 to 335	3/4″	STFLO-12	28.5 to 1200	1-1/2″
STFLO-05	18.5 to 405	3/4″	STFLO-13	14.5 to 1480	1-1/2″
STFLO-06	28.5 to 770	3/4″	STFLO-14	35 to 1825	1-1/2″
STFLO-07	28.5 to 1230	3/4″			

Note: For ranges calibrated for water or air contact the factory. *For flanged connection, see Options.

OPERATING LIMITS

Maximum Non-Shock Working Pressure, psig (bar)

Connection	0°F (-18°C)	70°F (21°C)	300°F (148°C)	350°F 176°C)	400°F (204°C)	450°F (232°C)	500°F* (260°C)	600°F* (315°C)
3/4″	1000 (68.9)	1000 (68.9)	1000 (68.9)	990 (68.2)	970 (66.8)	950 (65.5)	930 (64.1)	900 (62)
1-1/2″	800 (55)	800 (55)	800 (55)	790 (54.4)	780 (53.7)	770 (53)	760 (52.4)	750 (51.7)

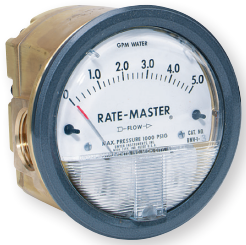
*Consult factory for high temperature option. 450°F (232°C) max standard with PTFE O-ring.

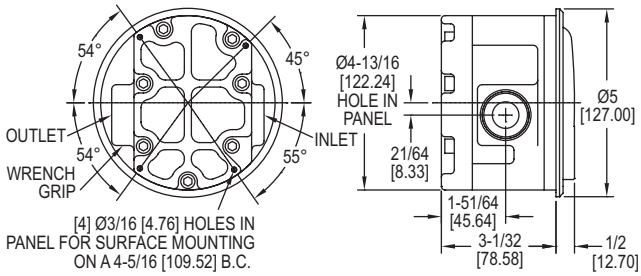
Dwyer

SERIES RMV

RATE-MASTER® DIAL-TYPE FLOWMETERS

Brass Body, Three Ranges to 20 GPM Water, Shatterproof Construction





The **SERIES RMV** Rate-Master® Flowmeters measure higher water flow rates with ±2% of full scale accuracy at an affordable price. Stocked models are fitted with 1″ female NPT inlet and outlet; 3/4″ and 1/2″ sizes are also available. Install in line, supported by piping or flush panel mount with complete hardware package included.

FEATURES/BENEFITS
- Rugged forged brass housing yields great compatibility and strength, allowing the unit to withstand system pressures to 1000 psig (68.9 bar)
- Shatter proof construction, unlike glass tube variable area flowmeters, yields long operation life

APPLICATIONS
- Monitor coolant flow through ingot heaters, high-amp switchgear, resistance welders, heat exchangers, compressors, scrubbers
- Monitor water consumption to different processes and operations for more efficient operations
- Calculate required fill or drain times for tanks, water towers

OPTIONSS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: RMV-1-3-NIST	

SPECIFICATIONS	
Service: Compatible liquids. **Wetted Materials:** Brass, copper, 302 SS, sintered barium ferrite. **Temperature Limits:** 20 to 200°F (-6.7 to 93°C). **Pressure Limit:** 1000 psig (68.9 bar).	**Pressure Drop:** 0 to 5 GPM: 3.2 psid; 0 to 10 GPM: 5.3 psid; 0 to 20 GPM: 10.4 psid. **Accuracy:** ±2% of FS. **Size:** Diameter dial face 4″ (101.6 mm). **Process Connections:** See chart. **Maximum Flow:** 1.5 x full-scale reading. **Weight:** 9 lb (4.08 kg).

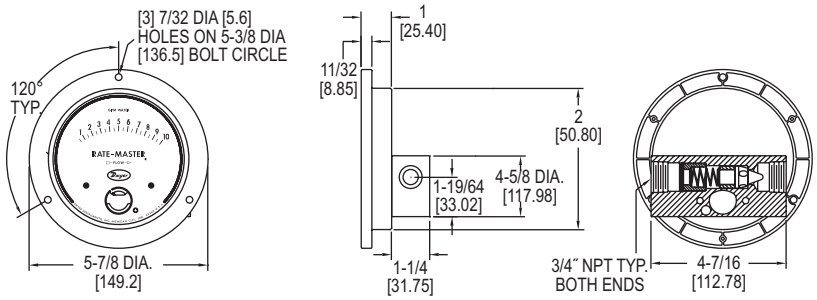
MODEL CHART		
Model	**Range, GPM Water**	**Connection Size**
RMV-1-3	0 to 5	1″ female NPT
RMV-2-3	0 to 10	1″ female NPT
RMV-3-3	0 to 20	1″ female NPT
RMV-1-2	0 to 5	3/4″ female NPT
RMV-2-2	0 to 10	3/4″ female NPT
RMV-3-2	0 to 20	3/4″ female NPT
RMV-1-1	0 to 5	1/2″ female NPT
RMV-2-1	0 to 10	1/2″ female NPT
RMV-3-1	0 to 20	1/2″ female NPT

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

SERIES RMVII

RATE-MASTER® DIAL-TYPE FLOWMETERS

For Panel Mounting, Three Ranges to 10 GPM Water, High Pressure Limits



*FITS IN ANSI STANDARD 4.940 [125.5] PANEL CUTOUT

The **SERIES RMVII** Rate-Master® Flowmeters consists of a machined brass meter body which is ideally suited for water flows with ±5% of full scale accuracy. Body design fits standard 4-1/2″ mounting hole layouts per ANSI B40.1. Inlet and outlet threads are standard 3/4″ female NPT.

FEATURES/BENEFITS
- Unique construction fully isolates flowing media from gage front for leak-proof operation at pressures up to 3000 psig (206.7 bar)
- Target-type design combined with a damage resistant magnetic linkage, drive a pointer over easy-to-read litho scale
- Shatter proof construction, unlike glass tube variable area flowmeters, yields long operation life

APPLICATIONS
- Monitor coolant flow through ingot heaters, high-amp switchgear, resistance welders, heat exchangers, compressors, scrubbers
- Monitor water consumption to different processes and operations for more efficient operations
- Calculate required fill or drain times for tanks, water towers

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: RMVII-1-NIST	

SPECIFICATIONS	
Service: Compatible gases & liquids & oils. **Wetted Materials:** Brass, 302 SS, sintered barium ferrite, polyacetyl. **Temperature Limit:** 200°F (93°C). **Pressure Limit:** 3000 psig (206 bar).	**Pressure Drop:** 0 to 5 GPM: 3.2 psid; 0 to 10 GPM: 5.3 psid; 0 to 20 GPM: 10.4 psid. **Accuracy:** ±5% of FS. **Size:** Diameter dial face 4.5″ (114.3 mm). **Process Connections:** 3/4″ female NPT. **Weight:** 2 lb, 14 oz (1.3 kg).

MODEL CHART					
Model	**Range GPM Water**	**Range SCFM**	**Range LPM Air**	**Range GPM Oil**	**Range LPM Oil**
RMVII-1	0 to 3	-	-	-	-
RMVII-3	0 to 5	-	-	-	-
RMVII-6	0 to 10	-	-	-	-
RMVII-10	-	0 to 10	0 to 280	-	-
RMVII-12	-	0 to 30	0 to 850	-	-
RMVII-14	-	0 to 50	0 to 1400	-	-
RMVII-20	-	-	-	0 to 2.2	0 to 8
RMVII-21	-	-	-	0 to 4.0	0 to 15
RMVII-22	-	-	-	0 to 8.5	0 to 32

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

Dwyer

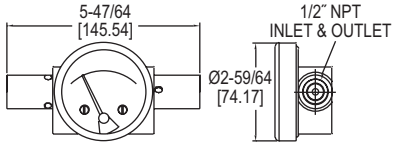
SERIES DTFW, DTFO & DTFA

VARIABLE-AREA FLOWMETERS

In-Line Mounting, Gas, Liquids and Oils

DTFW

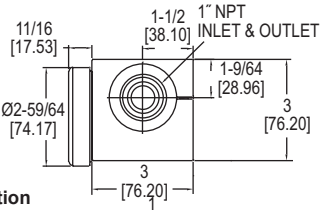
1/4″ NPT Connection



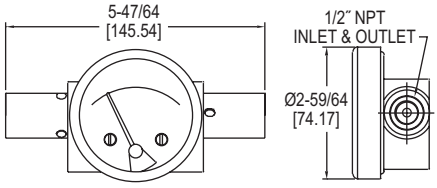
1/2″ NPT Connection

DTFO

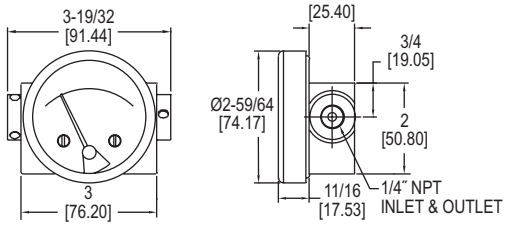
1″ NPT Connection



DTFA



1/2″ NPT Process Connection



1/4″ NPT Connection

The **SERIES DTFW & DTFO** Variable-Area Flowmeters for Liquids and Oils measure water or oil flow rates with ± 2% of full scale accuracy at a competitive price. Available in 1/4″, 1/2″ and 1″ connections for a wide variety of applications and comes calibrated for horizontal in line mounting.

The **SERIES DTFA** Variable-Area Flowmeters for Gases measures gas flow rates with ±5% of full scale accuracy at an affordable price. Available in either 1/4″ or 1/2″ NPT connections and comes pre-calibrated for horizontal in-line mounting.

FEATURES/BENEFITS

- Durable metal construction ensures great reliability and the strength to withstand system pressures of up to 3000 psig (200 bar).
- Shatter proof construction, unlike glass tube variable area flowmeters, yields long operation life
- Preform precisely in high temperature, high vibration, shock-prone environments

APPLICATIONS

- Monitoring pressure drop across filters or strainers
- Flow scale based on differential pressure
- Liquid level given pressure differential between bottom and top of tank
- Hydraulic equipment
- Oil & gas equipment
- Heat exchangers
- Backflow prevention

SPECIFICATIONS

Service: DTFW: Compatible liquids; DTFO: Compatible oils; DTFA: Compatible gases.
Wetted Materials: Body: 316 SS, brass or aluminum; Spring: 302 SS or PTFE-coated; Range spring: 302 SS; Magnet: PTFE-coated; Metering cone: Acetal or PTFE; Seals: Buna.
Temperature Limits: -40 to 200°F (-40 to 93°C).
Pressure Limit: DTFW-3S: 1500 psig (100 bar); All other DTFW models: 3000 psig (200 bar); DTFO-1B and DTFO-2B: 3000 psig (200 bar); DTFO-3S: 1500 psig (100 bar); DTFA: 3000 psig (200 bar).

Accuracy: Liquid/oil calibration: ±2% FS; Air calibration: ±5% FS.
Repeatability: ±1% FS.
Size: Diameter dial face 2.5″ (63.5 mm).
Process Connection: See model chart.
Weight: DTFW-1B and 1S: 3 lb (1.36 kg); DTFW-2B and 2S: 5 lb (2.27 kg); DTFW-3S: 10 lb (4.54 kg); DTFO-1B: 3 lb (1.36 kg); DTFO-2B: 5 lb (2.27 kg); DTFO-3S: 10 lb (4.54 kg); DTFA-1A: 3 lb (1.36 kg); DTFA-2A: 5 lb (2.27 kg).

MODEL CHART

Model	Range, SCFM	Body	Connection
DTFA-1A-10A	1.5 to 10	Aluminum	1/4″ NPT
DTFA-1A-15A	2.0 to 15	Aluminum	1/4″ NPT
DTFA-1A-20A	3.0 to 20	Aluminum	1/4″ NPT
DTFA-1A-25A	3.0 to 25	Aluminum	1/4″ NPT
DTFA-2A-30A	3.0 to 30	Aluminum	1/2″ NPT
DTFA-2A-40A	4.0 to 40	Aluminum	1/2″ NPT
DTFA-2A-50A	4.0 to 50	Aluminum	1/2″ NPT
DTFA-2A-75A	5.0 to 75	Aluminum	1/2″ NPT
DTFA-2A-100A	10.0 to 100	Aluminum	1/2″ NPT

MODEL CHART

Model	Range GPM Water	Connection NPT	Body	Metering Cone	Model	Range GPM Water	Connection NPT	Body	Metering Cone
DTFW-1B-1W	0 to 1	1/4″	Brass	Acetal	**DTFW-2B-8W**	0 to 8	1/2″	Brass	Acetal
DTFW-1B-2W	0 to 2	1/4″	Brass	Acetal	**DTFW-2B-10W**	0 to 10	1/2″	Brass	Acetal
DTFW-1B-3W	0 to 3	1/4″	Brass	Acetal	**DTFW-2S-1W**	0 to 1	1/2″	SS	Acetal
DTFW-1B-4W	0 to 4	1/4″	Brass	Acetal	**DTFW-2S-2W**	0 to 2	1/2″	SS	Acetal
DTFW-1B-5W	0 to 5	1/4″	Brass	Acetal	**DTFW-2S-3W**	0 to 3	1/2″	SS	Acetal
DTFW-1S-1W	0 to 1	1/4″	SS	Acetal	**DTFW-2S-4W**	0 to 4	1/2″	SS	Acetal
DTFW-1S-2W	0 to 2	1/4″	SS	Acetal	**DTFW-2S-5W**	0 to 5	1/2″	SS	Acetal
DTFW-1S-3W	0 to 3	1/4″	SS	Acetal	**DTFW-2S-8W**	0 to 8	1/2″	SS	Acetal
DTFW-1S-4W	0 to 4	1/4″	SS	Acetal	**DTFW-2S-10W**	0 to 10	1/2″	SS	Acetal
DTFW-1S-5W	0 to 5	1/4″	SS	Acetal	**DTFW-3S-10W**	0 to 10	1″	SS	PTFE
DTFW-2B-1W	0 to 1	1/2″	Brass	Acetal	**DTFW-3S-15W**	0 to 15	1″	SS	PTFE
DTFW-2B-2W	0 to 2	1/2″	Brass	Acetal	**DTFW-3S-20W**	0 to 20	1″	SS	PTFE
DTFW-2B-3W	0 to 3	1/2″	Brass	Acetal	**DTFW-3S-25W**	0 to 25	1″	SS	PTFE
DTFW-2B-4W	0 to 4	1/2″	Brass	Acetal	**DTFW-3S-30W**	0 to 30	1″	SS	PTFE
DTFW-2B-5W	0 to 5	1/2″	Brass	Acetal					

Note: For oil compatible models, change all W's to O's in model number. **Example:** DTFO-1B-1O
Note: Not available in 1/4″ or 1/2″ SS.

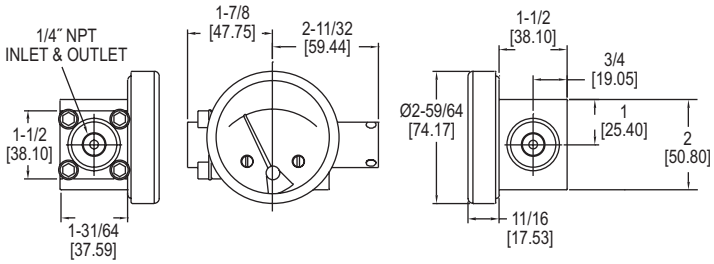
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES DTFF

FIXED-ORIFICE FLOWMETER FOR LOW FLOW RATES

316 SS Body, Oil/Gas/Water Calibration



1/4" NPT Process Connection

The **SERIES DTFF** Variable-Area Flowmeters for Low Flow Rates measures water, oil, or air flow rates with great accuracy at a competitive price. This Series is available in a wide range of flow rates for each calibration, with stainless steel construction as standard and is pre calibrated for horizontal in-line mounting.

FEATURES/BENEFITS

- Rugged stainless steel construction ensures great compatibility and is an excellent choice for high line pressure applications, with a maximum pressure of 3000 psig (200 bar)
- High sensitivity for low flow measurement
- Shatter proof construction, unlike glass tube variable area flowmeters, yields long operation life

APPLICATIONS

- Monitoring low pressure drop across filters or strainers
- Low flow monitoring based on differential pressure
- Oil & gas equipment
- Heat exchangers
- Backflow prevention

SPECIFICATIONS

Service: Compatible gases & liquids & oils.
Wetted Materials: Body: 316 SS; Spring: 302 SS; Range spring: 302 SS; Magnet: PTFE-coated; Orifice piston: Acetal; Diaphragm: Fluoroelastomer.
Temperature Limit: -22 to 200°F (30 to 93°C).
Pressure Limit: 3000 psig (200 bar).
Accuracy: Liquid/oil calibration: ±2% FS; Air calibration: ±5% FS.
Repeatability: ±1% FS.
Size: Diameter dial face 2.5" (63.5 mm).
Process Connections: 1/4" female NPT.
Weight: 4 lb (1.81 kg).

MODEL CHART

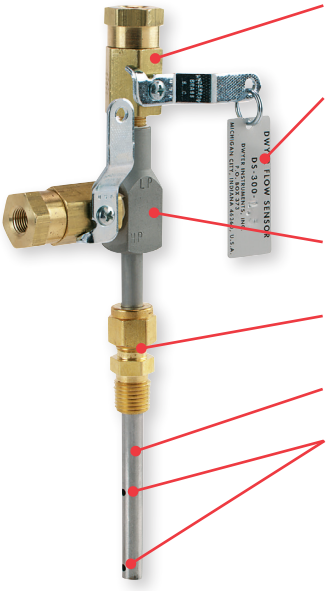
Model	Range	Calibration	Model	Range	Calibration
DTFF-1S-4W	0 to 4 GPH	Water	**DTFF-1S-10O**	0 to 10 GPH	Oil
DTFF-1S-5W	0 to 5 GPH	Water	**DTFF-1S-15O**	0 to 15 GPH	Oil
DTFF-1S-8W	0 to 8 GPH	Water	**DTFF-1S-20O**	0 to 20 GPH	Oil
DTFF-1S-10W	0 to 10 GPH	Water	**DTFF-1S-25O**	0 to 25 GPH	Oil
DTFF-1S-15W	0 to 15 GPH	Water	**DTFF-1S-40O**	0 to 40 GPH	Oil
DTFF-1S-20W	0 to 20 GPH	Water	**DTFF-1S-5A**	1.5 to 5 SCFM	Air
DTFF-1S-25W	0 to 25 GPH	Water			
DTFF-1S-40W	0 to 40 GPH	Water			

Dwyer

SERIES DS

IN-LINE FLOW SENSORS

Use with the Dwyer® Differential Pressure Gages or Transmitters



Valves — Standard, brass with TFE seat and Buna-N O-ring.

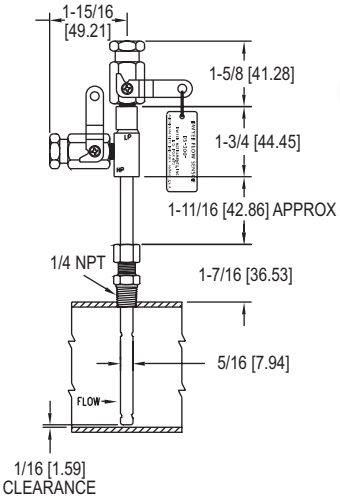
Nameplate — Stainless steel permanently attached with split ring. Includes complete size and model information.

Head — Machined stainless steel.

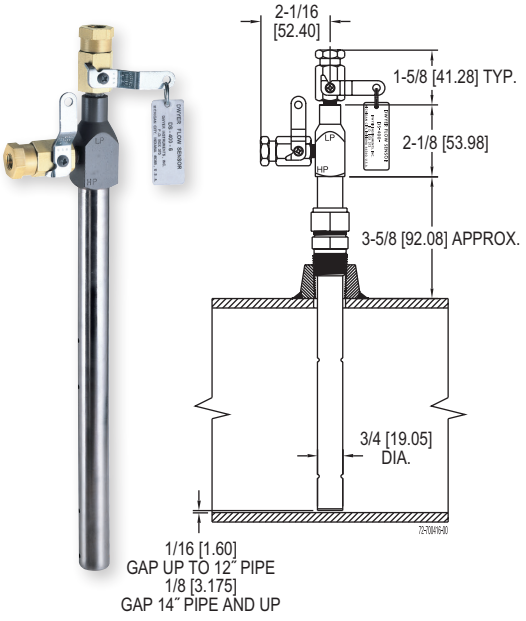
Packing gland — Brass compression fitting.

Sensor tube — 304 SS.

Sensing ports — Multiple upstream and downstream ports sized and positioned to provide effective accurate pressure averaging, even at lower velocities.



Series DS-300



Large 3/4 Inch Diameter for Extra Strength in Lengths to 24 Inches

Series DS-400

The **SERIES DS** In-Line Flow Sensors are two Series of averaging Pitot tubes for compatible gases and liquids that provide accurate and convenient flow rate sensing, for schedule 40 pipe, when purchased with suitable differential pressure gage with appropriate range. The Series DS-300 Averaging Flow Sensors are designed to be inserted in the pipeline through a compression fitting and available for pipe sizes from 1 to 10″ (2.5 to 25.4 cm). Accessories include adapters with 1/4″ SAE 45° flared ends compatible with hoses supplied with the Model A-471 Portable Capsuhelic® Gage Kit. The Series DS-400 Averaging Flow Sensors are designed for insertion lengths up to 24″ (61 cm) and include a pair of 1/8″ NPT x 1/4″ SAE 45° flared adapters which are compatible with hoses used in the Model A-471 Portable Capsuhelic® Gage Kit. The supplied solid brass mounting adapter has a 3/4″ dia. compression fitting to lock in required insertion length and a 3/4″ male NPT thread for mounting in a threaded branch connection (not included).

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Sensor tube: 304 SS; Compression fitting: brass.
Temperature Limit: 200°F (93.3°C).
Pressure Limit: 200 psig (13.78 bar) at 200°F (93.3°C).
Pipe Sizes: DS-300: 1 to 10″ (2.5 to 25.4 cm); DS-400: 6 to 24″ (15.2 to 61 cm).
Process Connections: DS-300: 1/4″ male NPT compression fitting included; DS-400: 3/4″ male NPT compression fitting included.
Piping Connections: DS-300: 1/8″ female NPT; optional 1/8″ female NPT x 1/4″ SAE 45 flared adapter sold separately; DS-400: 1/8″ female NPT with 1/8″ female NPT x 1/4″ SAE 45 flared adapters include.
Weights: Consult factory.

FEATURES/BENEFITS

- Multiple sensing point measurement and built-in averaging capability eliminates the need for “traversing” the flowing stream with single point velocity pressure measurement saving time
- Extremely reliable, proven technology, Pitot tubes, have been used in flow measurement for years
- All models include convenient and quick-acting quarter-turn ball valves to isolate the sensor for zeroing with 1/8″ female NPT valve assembly process connections.
- Furnished with instrument shut-off valves on both pressure connections with 1/8″ female NPT connections rated at 200 psig (13.7 bar) and 200°F (93.3°C)
- Where valves are not required, they can be omitted at reduced cost
- The Series DS-400 Averaging Flow Sensors are quality constructed from extra strong 3/4″ dia. stainless steel to resist increased forces encountered at higher flow rates with both air and water
- Economical flow indication when used with appropriate differential pressure gage
- Rugged construction yields, non-clogging, stable design

APPLICATIONS

- Remediation
- Natural, flare, flue, stack gas
- Boiler feedwater
- Cooling water
- Superheated, saturated, or geothermal steam
- Combustion or compressed air
- Oil flow monitoring

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

Dwyer

SERIES DS

IN-LINE FLOW SENSORS

Use with the Dwyer® Differential Pressure Gages or Transmitters

HOW TO ORDER

Merely determine the pipe size into which the flow sensor will be mounted and designate the size as a suffix to Model DS-300. For example, a flow sensor to be mounted in a 2″ pipe would be a Model No. DS-300-2″.

For non-critical water and air flow monitoring applications, the chart below can be utilized for ordering a stock Capsuhelic® differential pressure gage for use with the DS-300 flow sensor. Simply locate the maximum flow rate for the media being measured under the appropriate pipe size and read the Capsuhelic® gage range in inches of water column to the left. The DS-300 sensor is supplied with installation and operating instructions, Bulletin F-50. It also includes complete flow conversion information for the three media conditions shown in the chart below. This information enables the user to create a complete differential pressure to flow rate conversion table for the sensor and differential pressure gage employed. Both the Dwyer® Capsuhelic® gage and flow sensor feature excellent repeatability so, once the desired flow rate is determined, deviation from that flow in quantitative measure can be easily determined. You may wish to order the adjustable signal flag option for the Capsuhelic® gage to provide an easily identified reference point for the proper flow.

Capsuhelic® gages with special ranges and/or direct reading scales in appropriate flow units are available on special order for more critical applications. Customer supplied data for the full scale flow (quantity and units) is required along with the differential pressure reading at that full flow figure. Prior to ordering a special Capsuhelic® differential pressure gage for flow read-out, we recommend you request Bulletin F-50 to obtain complete data on converting flow rates of various media to the sensor differential pressure output. With this bulletin and after making a few simple calculations, the exact range gage required can easily be determined.

MODEL CHART

Model	Description	Model	Description
DS-300-1″	1″ pipe size	**DS-400-6″**	6″ pipe size
DS-300-1-1/4″	1-1/4″ pipe size	**DS-400-8″**	8″ pipe size
DS-300-1-1/2″	1-1/2″ pipe size	**DS-400-10″**	10″ pipe size
DS-300-2″	2″ pipe size	**DS-400-12″**	12″ pipe size
DS-300-2-1/2″	2-1/2″ pipe size	**DS-400-14″**	14″ pipe size
DS-300-3″	3″ pipe size	**DS-400-16″**	16″ pipe size
DS-300-4″	4″ pipe size	**DS-400-18″**	18″ pipe size
DS-300-6″	6″ pipe size	**DS-400-20″**	20″ pipe size
DS-300-8″	8″ pipe size	**DS-400-24″**	24″ pipe size
DS-300-10″	10″ pipe size		

OPTIONS

To order add suffix:	Description
-LV	DS-300 or DS-400 Less Valves

RANGE CHART

Gage Range (in w.c.)	Media @ 70°F	Full Range Flows by Pipe Size (Approximate)									
		1″	1-1/4″	1-1/2″	2″	2-1/2″	3″	4″	6″	8″	10″
2	Water (GPM)	4.8	8.3	11.5	20.5	30	49	86	205	350	560
2	Air @ 14.7 PSIA (SCFM)	19.0	33.0	42.0	65.0	113	183	330	760	1340	2130
2	Air @ 100 PSIG (SCFM)	50.0	90.5	120.0	210.0	325	510	920	2050	3600	6000
5	Water (GPM)	7.7	14.0	18.0	34.0	47	78	138	320	560	890
5	Air @ 14.7 PSIA (SCFM)	30.0	51.0	66.0	118.0	178	289	510	1200	2150	3400
5	Air @ 100 PSIG (SCFM)	83.0	142.0	190.0	340.0	610	820	1600	3300	5700	10000
10	Water (GPM)	11.0	19.0	25.5	45.5	67	110	195	450	800	1260
10	Air @ 14.7 PSIA (SCFM)	41.0	72.0	93.0	163.0	250	410	725	1690	3040	4860
10	Air @ 100 PSIG (SCFM)	120.0	205.0	275.0	470.0	740	1100	2000	4600	8100	15000
25	Water (GPM)	18.0	32.0	40.5	72.0	108	173	310	720	1250	2000
25	Air @ 14.7 PSIA (SCFM)	63.0	112.0	155.0	255.0	390	640	1130	2630	4860	7700
25	Air @ 100 PSIG (SCFM)	185.0	325.0	430.0	760.0	1200	1800	3300	7200	13000	22000
50	Water (GPM)	25.0	44.0	57.5	100.0	152	247	435	1000	1800	
50	Air @ 14.7 PSIA (SCFM)	90.0	161.0	205.0	360.0	560	900	1600	3700	6400	
50	Air @ 100 PSIG (SCFM)	260.0	460.0	620.0	1050.0	1700	2600	4600	10000	18500	
100	Water (GPM)	36.5	62.0	82.0	142.0	220	350	620	1500		
100	Air @ 14.7 PSIA (SCFM)	135.0	230.0	300.0	505.0	800	1290	2290	5000		
100	Air @ 100 PSIG (SCFM)	370.0	660.0	870.0	1500.0	2300	3600	6500	15000		

ACCESSORIES

Model	Description
A-160	Threaded branch connection, 3/8″ NPT, forged steel, 3000 psi
A-161	Brass bushing, 1/4″ x 3/8″
A-471	Portable Kit. For portable operation, the A-471 Capsuhelic® Portable Gage Kit is available complete with tough polypropylene carrying case, mounting bracket, 3-way manifold valve, two 10' high pressure hoses, and all necessary fittings.❶
631B	Capsuhelic® Wet/Wet Differential Pressure Transmitter. Low pressure transmitter for use with DS-300/400 flow sensors. Use Series 631B Capsuhelic® Wet/Wet Differential Pressure Transmitter.❷

Capsuhelic® Gage Shown Installed In A-471 Portable Kit

Series 631B

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

❶See page 31 (Series 4000)
❷See page 78 (Series 631B)

Dwyer

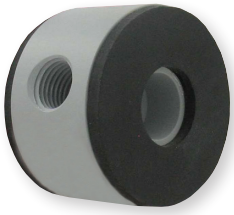
SERIES OP, PE & TE

ORIFICE PLATE FLOWMETER

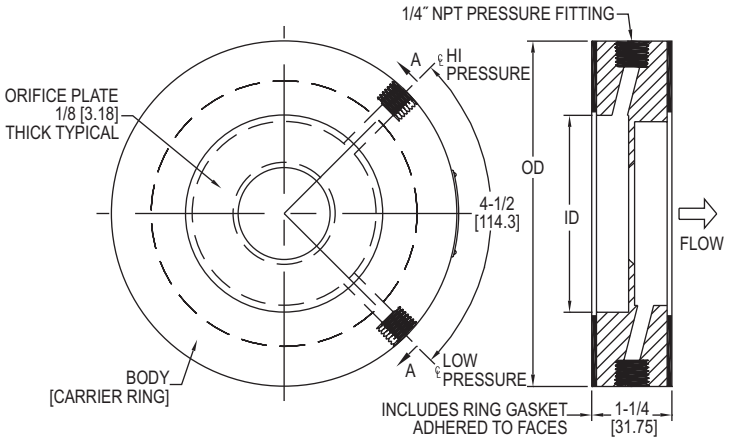
PVC or PTFE, Liquid and Gas use Options

OP

TE



PE



The **SERIES OP** Orifice Plate Flowmeter is a complete orifice plate flow metering package. It incorporates a stainless steel orifice plate with a unique holder or carrier ring containing metering taps and integral gaskets. The Series OP is available in line sizes from 1/2″ to 24″ and can be used with compatible liquids and gases.

FEATURES/BENEFITS
- Mounted with standard flanges with no need of specialty flanges
- Reduced installation costs with simple installation by slipping the unit between standard flanges
- Easy access with corner type metering taps
- Long operation life with corrosion free material
- Stainless steel wetted parts assures long term reliability and accuracy
- Proven through a wide range of applications for energy efficiency

APPLICATIONS
- Fluid flow rates in building water lines
- Boiler feedwater
- Cooling water
- Combustion or compressed air
- Steam flow

The **SERIES PE & TE** Orifice Plate Flowmeters are two series of plastic orifice plate flow metering packages incorporating a unique holder or carrier ring containing metering taps and integral gaskets. They can be used in place of other primary differential products for efficiency and cost effectiveness.
The Series PE orifice plate flowmeter is of PVC construction and is available in line sizes from 1/2 to 24″. This series can be used for air and most gases and meets or exceeds ASME, AGA & ISO standards.
The Series TE orifice plate flowmeter is of PTFE construction and is available in line sizes from 1/2 to 24″. This Series can be used with gases, liquids, corrosive and high temperature fluids.

FEATURES/BENEFITS
- Mounted with standard flanges with no need of specialty flanges
- Reduced installation costs with simple installation by slipping the unit between standard flanges
- Easy access with corner type metering taps
- Long operation life with corrosion free material
- Proven through a wide range of applications for energy efficiency
- PTFE construction yields excellent chemical and weather resistance
- TE models are flame retardant without factory gaskets
- Low friction leading to minimum wear and long operation life

APPLICATIONS
- Fluid flow rates in building water lines
- Boiler feedwater
- Cooling water
- Combustion or compressed air
- Steam flow

SPECIFICATIONS

Service: OP & TE: Compatible liquids and gases; PE: Clean air and compatible gases.
Wetted Material: OP: 304 SS, Buna-N gaskets; PE: Gray PVC, Buna-N gaskets; TE: PTFE, Buna-N gaskets.
Accuracy: 0.6% FS. (Beta = .2-.6) ±0.7% for Beta greater than .6.
Temperature Limits: OP: -50 to 200°F (-45 to 93°C); PE: 140°F (60°C) max; TE: -40 to 200°F (-40 to 93.3°C).
Pressure Limits: OP: Limited only by pipe and flange rating restrictions.
Head Loss: 1-Beta ratio2 eg: 1-0.72 = 1-0.49 = 51% of the d.p.
Line Sizes: 1/2″ to 24″.
Process Connection: 1/4″ female NPT.
Installation: Standard flange. OP: Any rating (orifice flanges not required); PE & TE: 125#/150# rating.
Pipe Requirements: General requirements 10 diameter upstream and 5 diameter downstream of orifice plate.
Weight: Varies with line size. See chart.

Dwyer

SERIES OP, PE & TE

ORIFICE PLATE FLOWMETER

PVC or PTFE, Liquid and Gas use Options

SERIES OP ORIFICE PLATE FLOWMETER – CAPACITY STRUCTURE
- Material 304/304 L, Gaskets Buna-N
- Based on 70°F, 14.7 psia (base conditions)
- Beta value based on std sch pipe I.D.
- 1.25″ overall thickness
- Orifice plate thickness is 0.125″

SERIES PE ORIFICE PLATE FLOWMETER – AIR CAPACITY STRUCTURE
- Material PVC, Gaskets Buna-N
- Based on 70°F, 14.7 psia (base conditions)
- Beta value based on std sch pipe I.D.
- 1.25″ overall thickness
- Orifice plate thickness is 0.125″

SERIES TE ORIFICE PLATE FLOWMETER – CAPACITY STRUCTURE
- Material PTFE, Gaskets Buna-N
- Based on 70°F, 14.7 psia (base conditions)
- Beta value based on std sch pipe I.D.
- 1.25″ overall thickness
- Orifice plate thickness is 0.250″

MODEL CHART

									Water Capacity		Air Capacity - Flow in SCFM			
OP Model	OP Weight (lb)	PE Model	PE Weight (lb)	TE Model	TE Weight (lb)	Line Size	Bore	Beta	in d.p. w.c.	Flow in GPM	in d.p. w.c.	at 14.7 psia (0 psig)	at 20 psig	at 100 psig
OP-A-1	1.00	PE-A-1	1.00	TE-A-1	1.00	1/2″	0.200″	0.32	20	0.62	20	2.35	3.63	6.61
OP-A-2	1.00	PE-A-2	1.00	TE-A-2	1.00	1/2″	0.310″	0.50	100	3.44	100	12.21	19.58	36.37
OP-A-3	1.00	PE-A-3	1.00	TE-A-3	1.00	1/2″	0.430″	0.69	320	13.00	200	32.77	56.15	107.47
OP-B-1	1.00	PE-B-1	1.00	TE-B-1	1.00	3/4″	0.250″	0.30	20	0.97	20	3.65	5.66	10.3
OP-B-2	1.00	PE-B-2	1.00	TE-B-2	1.00	3/4″	0.400″	0.49	100	5.69	100	20.21	32.44	60.26
OP-B-3	1.00	PE-B-3	1.00	TE-B-3	1.00	3/4″	0.580″	0.70	320	23.82	200	59.92	102.91	197.2
OP-C-1	2.00	PE-C-1	1.00	TE-C-1	1.00	1″	0.300″	0.29	20	1.38	20	5.24	8.11	14.8
OP-C-2	2.00	PE-C-2	1.00	TE-C-2	1.00	1″	0.520″	0.49	100	9.63	100	34.2	54.92	102.09
OP-C-3	2.00	PE-C-3	1.00	TE-C-3	1.00	1″	0.720″	0.69	320	36.15	200	91.28	156.51	300
OP-D-1	2.00	PE-D-1	1.00	TE-D-1	1.00	1.25″	0.400″	0.29	20	2.46	20	9.31	14.41	26.3
OP-D-2	2.00	PE-D-2	1.00	TE-D-2	1.00	1.25″	0.700″	0.51	100	17.48	100	62.09	99.75	185.5
OP-D-3	2.00	PE-D-3	1.00	TE-D-3	1.00	1.25″	1.00″	0.72	320	71.77	200	180	309.97	595.2
OP-E-1	2.00	PE-E-1	2.00	TE-E-1	2.00	1.5″	0.500″	0.31	20	3.85	20	14.57	22.55	41.16
OP-E-2	2.00	PE-E-2	2.00	TE-E-2	2.00	1.5″	0.800″	0.50	100	22.73	100	80.82	129.68	241.5
OP-E-3	2.00	PE-E-3	2.00	TE-E-3	2.00	1.5″	1.100″	0.68	320	83.95	200	212.18	363.93	697.39
OP-F-1	3.00	PE-F-1	2.00	TE-F-1	2.00	2″	0.600″	0.29	20	5.52	20	20.92	32.38	59.13
OP-F-2	3.00	PE-F-2	2.00	TE-F-2	2.00	2″	1.000″	0.48	100	35.34	100	125.74	202.03	375.8
OP-F-3	3.00	PE-F-3	2.00	TE-F-3	2.00	2″	1.450″	0.70	320	147.74	200	372.09	639.87	1227.63
OP-G-1	4.00	PE-G-1	2.00	TE-G-1	2.00	2.5″	0.750″	0.30	20	8.63	20	32.71	50.64	92.48
OP-G-2	4.00	PE-G-2	2.00	TE-G-2	2.00	2.5″	1.250″	0.50	100	55.54	100	197.54	317.58	590.91
OP-G-3	4.00	PE-G-3	2.00	TE-G-3	2.00	2.5″	1.750″	0.70	320	216.30	200	543.99	936.56	1798.86
OP-H-1	5.00	PE-H-1	2.00	TE-H-1	2.00	3″	0.920″	0.30	20	12.97	20	49.17	76.13	139.06
OP-H-2	5.00	PE-H-2	2.00	TE-H-2	2.00	3″	1.500″	0.49	100	79.94	100	282.9	454.77	846.21
OP-H-3	5.00	PE-H-3	2.00	TE-H-3	2.00	3″	2.150″	0.70	320	324.16	200	816.7	1404.95	2696.28
OP-J-1	7.00	PE-J-1	3.00	TE-J-1	3.00	4″	1.200″	0.30	20	22.03	20	83.58	129.44	236.48
OP-J-2	7.00	PE-J-2	3.00	TE-J-2	3.00	4″	2.000″	0.50	100	141.51	100	503.76	810.06	1507.64
OP-J-3	7.00	PE-J-3	3.00	TE-J-3	3.00	4″	2.800″	0.70	320	547.11	200	1380.03	2373.02	4553.68
OP-K-1	8.00	PE-K-1	3.00	TE-K-1	4.00	5″	1.500″	0.30	20	34.39	20	130.48	202.11	369.29
OP-K-2	8.00	PE-K-2	3.00	TE-K-2	4.00	5″	2.500″	0.50	100	220.80	100	786.23	1264.42	2353.51
OP-K-3	8.00	PE-K-3	3.00	TE-K-3	4.00	5″	3.500″	0.69	320	853.09	200	2152.83	3701.57	7103.22
OP-L-1	10.00	PE-L-1	4.00	TE-L-1	4.00	6″	1.800″	0.30	20	49.46	20	187.86	291	531.75
OP-L-2	10.00	PE-L-2	4.00	TE-L-2	4.00	6″	3.000″	0.49	100	317.74	100	1331.63	1820.05	3387.93
OP-L-3	10.00	PE-L-3	4.00	TE-L-3	4.00	6″	4.200″	0.69	320	1226.98	200	3097.20	5325.20	10219.28
OP-M-1	14.00	PE-M-1	5.00	TE-M-1	6.00	8″	2.400″	0.30	20	87.95	20	333.87	517.25	945.28
OP-M-2	14.00	PE-M-2	5.00	TE-M-2	6.00	8″	4.000″	0.50	100	565.77	100	2014.95	3241.45	6034.85
OP-M-3	14.00	PE-M-3	5.00	TE-M-3	6.00	8″	5.600″	0.70	320	2195.86	200	5532.00	9525.43	18290.00
OP-N-1	20.00	PE-N-1	6.00	TE-N-1	8.00	10″	3.000″	0.30	20	137.35	20	521.58	808	1476.77
OP-N-2	20.00	PE-N-2	6.00	TE-N-2	8.00	10″	5.000″	0.50	100	883.04	100	3145.50	5060.38	9421.74
OP-N-3	20.00	PE-N-3	6.00	TE-N-3	8.00	10″	7.000″	0.70	320	3421.26	200	8626.42	14846.80	28506.17
OP-O-1	30.00	PE-O-1	7.00	TE-O-1	10.00	12″	3.600″	0.30	20	197.73	20	750.9	1163.44	2126.47
OP-O-2	30.00	PE-O-2	7.00	TE-O-2	10.00	12″	6.000″	0.50	100	1271.62	100	4530	7288.16	13570.33
OP-O-3	30.00	PE-O-3	7.00	TE-O-3	10.00	12″	8.400″	0.70	320	4930.86	200	12430.00	21397.00	41089.02
OP-P-1	40.00	PE-P-1	9.00	TE-P-1	15.00	14″	4.000″	0.30	20	244.14	20	927.14	1436.59	2625.81
OP-P-2	40.00	PE-P-2	9.00	TE-P-2	15.00	14″	6.600″	0.50	100	1537.49	100	6477.67	8812.87	16409.42
OP-P-3	40.00	PE-P-3	9.00	TE-P-3	15.00	14″	9.300″	0.70	320	6052.57	200	15251.50	28262.66	50427.78
OP-Q-1	48.00	PE-Q-1	10.00	TE-Q-1	18.00	16″	4.500″	0.30	20	308.76	20	1172.63	1817.05	3321.32
OP-Q-2	48.00	PE-Q-2	10.00	TE-Q-2	18.00	16″	7.600″	0.50	100	2038.95	100	7264.58	11688.26	21764.08
OP-Q-3	48.00	PE-Q-3	10.00	TE-Q-3	18.00	16″	10.700″	0.70	320	8007.74	200	20179.85	34749.32	66737.64

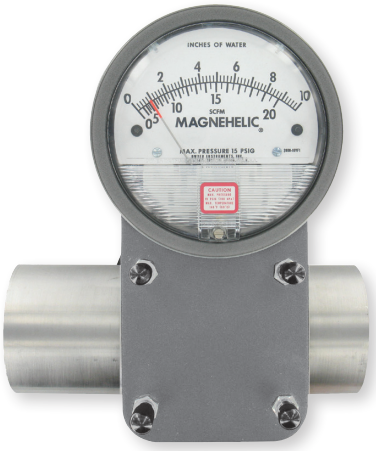
Note: Differential pressure values should be less than 50% of the inlet absolute pressure.

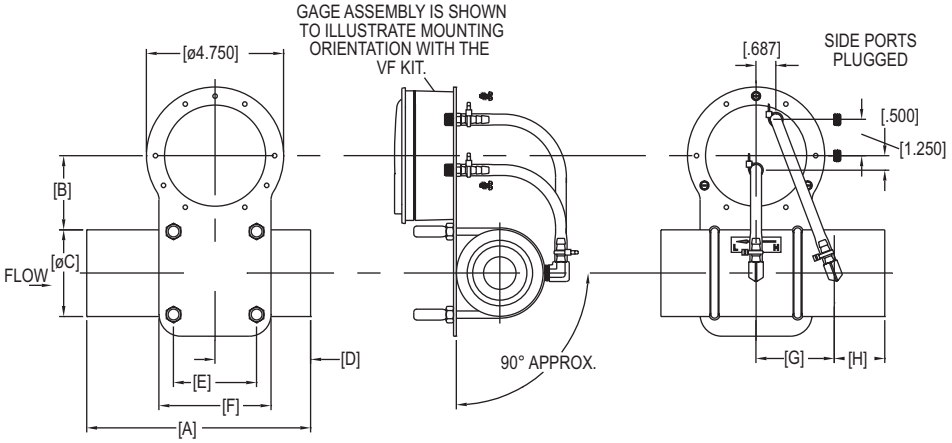
Dwyer

SERIES VFLO

VENTURI FLOWMETER WITH MAGNEHELIC® GAGE

±2.5% Accuracy, Dual Scale in SCFM & in w.c.





VFLO Kit	Line Size	A	B	ØC	D	E	F	G	H	J	K
VF1	1″ FNPT	4.500	2.687	2	2.015	2.125	3.125	1.359	1.125	4.625	6.375
VF2	1.5″ FNPT	6	2.562	2.500	2.625	2.375	3.375	2	1.375	5.250	7.125
VF3	2″ FNPT	7.750	2.562	3	3.312	2.875	3.875	2.703	1.750	5.750	7.875
VF4	3″ FNPT	11	2.734	4	4.625	4	5.500	4	2.375	7	9.625
VF5	4″ FNPT	14.500	2.734	5.000	5.172	5.000	6.500	5.328	3.000	9.250	11.500

The **SERIES VFLO** Venturi Flowmeter with Magnehelic® Gage is fabricated from aluminum and has a gradual Venturi profile to reduce pressure losses through the meter. Flexible connections enable the meter to be used in vertical or horizontal applications. The Magnehelic® gage provides a large, clear and accurate display of your differential pressure reading. Each meter is calibrated at standard atmospheric conditions. The dual scale reads in SCFM and in w.c. The meter is supplied with easy to read reference charts for various flow conditions. It is available in line sizes from 1″ to 4″ and can handle vacuum and pressure applications.

FEATURES/BENEFITS

- Gradual Venturi profile reduces pressure losses through meter helping to insure a more accurate measurement to meet measurement specifications
- Easy to read gage through undistorted plastic face permits viewing from far away
- Patented design provides quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time

APPLICATIONS

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

Series 2000, Magnehelic® Differential Pressure Gage
To Create Venturi Model, add option from chart to end of 2000.
Example: 2000-10VF1 for 10 in w.c. & 20 SCFM of Air Scale with 1″ Venturi Flow Tube

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural gas option available).
Wetted Materials: Aluminum, silicone, acrylic, polycarbonate, high carbon steel, low carbon steel, brass, paper, acrylic paint, enamel paint, alkyd coating, nickel plate, zinc plate, helsel FC, 300 series stainless steel, PTFE, Loctite® AV sealant, commercial black rubber, neoprene, samarium cobalt, nickel alloy steel cover, beryllium copper.
Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy: ±2.5% FS.
Pressure Limits: -20″ Hg to 15 psig (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar). For applications with high cycle rate within gage total pressure rating, next higher rating is recommended.
Overpressure: Relief plug opens at approximately 25 psig (1.72 kPa).
Temperature Limits: 20 to 140°F (-6.67 to 60°C).
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connection: Female NPT of nominal line size. (See chart).
Weight: Gage only: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g); Venturi: see chart.

OPTIONS

Option	Range	Line Size	Weight (Not Including Gage) lb (kg)
2000-10VF1	0 to 10 in w.c. & 0 to 20 SCFM air	1″	3 (1.36)
2000-20VF1	0 to 20 in w.c. & 0 to 30 SCFM air	1″	3 (1.36)
2000-40VF1	0 to 40 in w.c. & 0 to 40 SCFM air	1″	3 (1.36)
2000-10VF2	0 to 10 in w.c. & 0 to 50 SCFM air	1-1/2″	4.5 (2.04)
2000-20VF2	0 to 20 in w.c. & 0 to 70 SCFM air	1-1/2″	4.5 (2.04)
2000-40VF2	0 to 40 in w.c. & 0 to 100 SCFM air	1-1/2″	4.5 (2.04)
2000-10VF3	0 to 10 in w.c. & 0 to 85 SCFM air	2″	6 (2.72)
2000-20VF3	0 to 20 in w.c. & 0 to 120 SCFM air	2″	6 (2.72)
2000-40VF3	0 to 40 in w.c. & 0 to 160 SCFM air	2″	6 (2.72)
2000-10VF4	0 to 10 in w.c. & 0 to 200 SCFM air	3″	11 (4.99)
2000-20VF4	0 to 20 in w.c. & 0 to 290 SCFM air	3″	11 (4.99)
2000-40VF4	0 to 40 in w.c. & 0 to 395 SCFM air	3″	11 (4.99)
2000-10VF5	0 to 10 in w.c. & 0 to 350 SCFM air	4″	18 (8.16)
2000-20VF5	0 to 20 in w.c. & 0 to 500 SCFM air	4″	18 (8.16)
2000-40VF5	0 to 40 in w.c. & 0 to 675 SCFM air	4″	18 (8.16)

**Venturi price must be added to Series 2000 Magnehelic® gage price

ACCESSORIES

Model	Description
MVB-LM1	Mini brass ball valve with lever handle. 1/8″ F X 1/8″ MNPT
MVB-TM1	Mini brass valve with tee handle. 1/8″ M X 1/8″ FNPT
MVB-WM1	Mini brass ball valve with wedge handle. 1/8″ M X 1/8″ FNPT

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

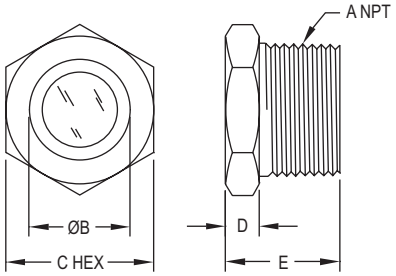
Dwyer

SERIES 500 | W. E. ANDERSON® BY DWYER

SIGHT WINDOW

Shows Level or Contents of Tanks, Pipelines; Tempered, Replaceable Glass Window

REPLACEABLE WINDOW!



Model	Dimensions — Inches (mm)				
	A	B	C	D	E
SFI-500-3/4	3/4	3/4 [19]	1-3/8 [35]	45/64 [18]	1-3/8 [35]
SFI-500-1	1	15/16 [24]	1-3/8 [35]	45/64 [18]	1-3/8 [35]
SFI-500-1-1/4	1-1/4	1-1/4 [32]	2-1/8 [54]	27/32 [22]	1-9/16 [40]
SFI-500-1-1/2	1-1/2	1-27/64 [37]	2-1/8 [54]	27/32 [22]	1-9/16 [40]
SFI-500-2	2	1-1/4 [32]	2-1/2 [64]	15/32 [12]	1-21/32 [42]

The **SERIES 500** Sight Windows is a Series of standard tempered glass with brass body sight windows which display level or contents of tanks or pipelines. In addition to the standard brass body, the Series 500 Sight windows are also available in carbon steel or 316 SS.

FEATURES/BENEFITS

- Tough, tempered glass window resists chemical attach and abrasion
- Seamless, replaceable gasket assures perfect seal
- Field replaceable glass window
- Range of wetted materials to suit a wide range of chemical compatibility

APPLICATIONS

- Hydraulic tanks
- Pressure vessels
- Coolant tanks
- Hydraulic lines
- Oil reservoirs

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Window: Tempered glass; Body: Brass, carbon steel, or 316 SS; Gasket: Buna-N on brass and carbon steel body, PTFE on 316 SS body.
Temperature Limit: 200°F (93°C).
Pressure Limit: 125 psig (8.6 bar).
Connections: 3/4″ to 2″ male NPT.
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART

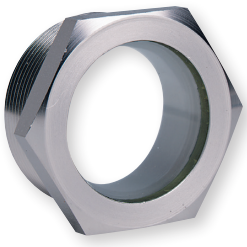
316 SS Model	Brass Model	Carbon Steel Model
SFI-500SS-3/4	SFI-500B-3/4	SFI-500CS-3/4
SFI-500SS-1	SFI-500B-1	SFI-500CS-1
SFI-500SS-1-1/4	SFI-500B-1-1/4	SFI-500CS-1-1/4
SFI-500SS-1-1/2	SFI-500B-1-1/2	SFI-500CS-1-1/2
SFI-500SS-2	SFI-500B-2	SFI-500CS-2

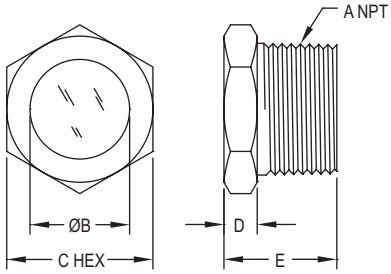
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES 550 | W. E. ANDERSON® BY DWYER

SIGHT WINDOW

Shows Level or Contents of Tanks, Pipelines; Fused Glass and Steel Construction





Model	Dimensions — Inches (mm)				
	A	B	C	D	E
SFI-550-1/4	1/4	11/32 [8.73]	5/8]15.95]	3/16 [4.76]	5/8 [15.95]
SFI-550-3/8	3/8	7/16 [11.11]	3/4 [19.05]	7/32 [5.56]	23/32 [18.26]
SFI-550-1/2	1/2	9/16 [14.29]	15/16 [23.81]	7/32 [5.56]	25/32 [19.84]
SFI-550-3/4	3/4	3/4 [19.05]	1-1/16 [26.99]	5/16 [7.94]	15/16 [23.81]
SFI-550-1	1	15/16 [23.81]	1-3/8 [34.93]	5/16 [7.94]	1-1/16 [26.99]
SFI-550-1-1/4	1-1/4	1-3/16 [30.18]	1-3/4 [44.45]	13/32 [10.32]	1-7/32 [30.96]
SFI-550-1-1/2	1-1/2	1-7/16 [36.53]	2 [50.80]	13/32 [10.32]	1-7/32 [30.96]
SFI-550-2	2	1-7/8 [47.63]	2-1/2 [63.50]	13/32 [10.32]	1-9/32 [32.54]

The **SERIES 550** Sight Windows is a range of glass with plated steel body sight windows which display level or contents of tanks or pipelines. Connections are standard NPT in sizes ranging from 1/4 to 2″.

FEATURES/BENEFITS

- Glass to metal bond for utmost reliability
- Plated steel bodies have convenient hex wrench surfaces for easy installation
- Windows are clear, ripple free, and flush with the front face, with no recess on which dirt might collect

APPLICATIONS

- Hydraulic tanks
- Pressure vessels
- Coolant tanks
- Hydraulic lines
- Oil reservoirs

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Window: Glass; Body: Plated steel.
Temperature Limit: 200°F (93°C).
Pressure Limit: 125 psig (8.6 bar).
Connections: 1/4″ to 2″ male NPT.

MODEL CHART

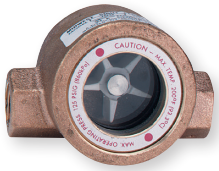
Model	Model
SFI-550-1/4	SFI-550-1
SFI-550-3/8	SFI-550-1-1/4
SFI-550-1/2	SFI-550-1-1/2
SFI-550-3/4	SFI-550-2

Dwyer

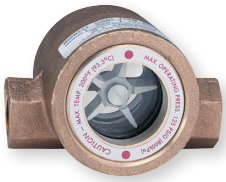
SERIES SFI-100, SFI-300, SFI-300F, SFI-400 & SFI-700 | W. E. ANDERSON™ BY DWYER

MIDWEST SIGHT FLOW INDICATORS

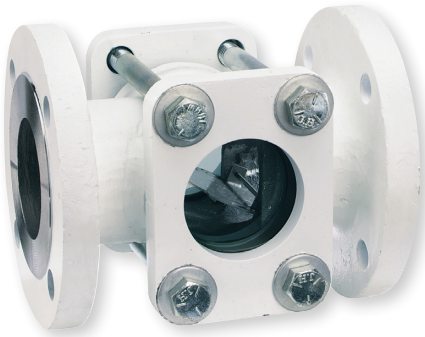
Inexpensive Protection for Expensive Equipment and Systems



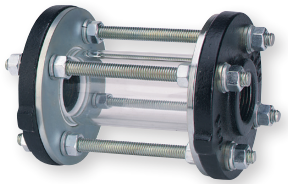
Model 100, 100MP ++



Model 300, 300MP ++



Model 360F



Model 400

Model 700 ++

The **SERIES SFI** Sight Flow Indicators is a Series of sight indicators which display flow or contents of pipelines. Available in window viewing style in the SFI-100 and SFI-300 Series and tube viewing style in the SFI-400 and SFI-700 Series with connection choices of female NPT, BSPP or BSPT threaded and flanged.

SERIES SFI-100 & SFI-300 Sight Flow Indicators offer threaded process connections, viewing windows, and bodies of brass or 316 SS. The SFI-100 type has a single window with a rotating impeller, the 300 type has a double window with a rotating impeller, the SFI-350 type has a double window with no moving indicator, and the SFI-360 type has a double window with a flapper.

SERIES SFI-300F Sight Flow Indicators offer ANSI flange process connections, double viewing windows, and bodies of carbon steel or 316 SS. The SFI-350F type has a double window with no moving indicator and the SFI-360F type has a double window with a flapper.

SERIES SFI-400 Sight Flow Indicators offer threaded or ANSI flanged process connections, tube style viewing, and bodies of cast iron or 316 SS.

SERIES SFI-700 Sight Flow Indicators offer threaded process connections, tube style viewing, and bodies of brass or 316 SS.

FEATURES/BENEFITS

- Manufactured of quality materials and safety tested to assure long, dependable service at economical prices
- All Series SFI-100, SFI-300 and SFI-300F feature a removable window for easy service and replacement of wearing parts
- The Series SFI-400 features glass tube construction offering easy flow viewing from any angle
- Series SFI-700 offers an easy to see bright red Acetal rotating impeller that is easy to view from any angle with the glass tube construction
- Maintenance is simple for the Series SFI-700 with internal wipers which restore full 360° visibility by simply rotating the glass tube without disrupting the flow

SPECIFICATIONS

SFI-100 & SFI-300 SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Window: Tempered glass; Body: Bronze or 316 SS; Gasket: Buna-N, fluoroelastomer or PTFE; Indicator: ABS or 316 SS impeller (100 and 300), 304 SS or 316 SS flapper (360).
Temperature Limit: 200°F (93°C); 120°F (48°C) on W2 option.
Pressure Limit: 125 psig (8.62 bar), 150 psig (10.34 bar) on "MP" models.
Connections: Threaded.
Mounting Orientation: Horizontal or vertical; 360: Horizontal only.

SFI-300F SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Window: Tempered glass; Body: Carbon steel or 316 SS; Gasket: Buna-N, fluoroelastomer or PTFE; Indicator: 316 SS flapper (360).
Temperature Limit: 200°F (93°C).
Pressure Limit: 150 psig (10.34 bar).
Connections: Flanged.
Mounting Orientation: Horizontal or vertical; 360: Horizontal only.

SFI-400 SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Tube: Borosilicate; Body: Cast iron or 316 SS; Gasket: PTFE.
Temperature Limit: 200°F (93°C).
Pressure Limit: 50 psig (3.45 bar).
Connections: Threaded or flanged.

SFI-700 SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Tube: Tempered borosilicate; Body: Brass or 316 SS; Gasket: Fluoroelastomer; Indicator: Acetal.
Temperature Limit: 212°F (100°C).
Pressure Limit: 230 psig (15.86 bar).
Connections: Threaded.

APPLICATIONS

- Hydraulic tanks
- Pressure vessels
- Coolant tanks
- Hydraulic lines
- Oil reservoirs

MODEL CHART

Model	Description
SFI-100	Single window with impeller
SFI-300	Double window with impeller
SFI-350	Double window with no indicator
SFI-360	Double window with flapper
SFI-400	Tube type with no indicator
SFI-700	Tube type with impeller and internal wipers to clean glass tube

DIMENSIONS AND WEIGHT

Model	Body Size	Length	Depth	Height	Flange Diameter	Viewing Area Diameter	Weight lb (kg)
SFI-100	1/4, 3/8 1/2, 3/4 1, 1-1/4 1-1/2, 2	3.000 (76) 4.000 (102) 4.375 (111) 5.688 (144)	1.813 (46) 2.250 (57) 2.563 (65) 3.250 (83)	2.125 (54) 2.563 (65) 2.625 (67) 3.625 (83)	- - - -	- - - -	1.1 (0.5) 1.5 (0.7) 2.7 (1.2) 5.5 (2.5)
SFI-300	1/4, 3/8 1/2, 3/4 1, 1-1/4 1-1/2, 2	3.063 (78) 4.063 (103) 4.375 (111) 5.500 (140)	2.250 (57) 2.750 (70) 3.125 (79) 3.688 (93)	2.125 (54) 2.563 (65) 2.563 (65) 4.063 (103)	- - - -	- - - -	1.7 (0.8) 2.6 (1.2) 3.0 (1.4) 7.0 (3.2)
SFI-700	1/4, 3/8 1/2, 3/4 1, 1-1/4, 1-1/2	2.750 (70) 3.688 (94) 4.875 (124)	- - -	1.500 (38) 2.250 (57) 2.750 (70) (across flats)	- - -	- - -	0.9 (0.4) 2.4 (1.1) 5.1 (2.3)
SFI-400	1/2 3/4 1 1-1/4 1-1/2 2 3 4	4.500 (144) 5.125 (130) 5.625 (143) 5.750 (146) 5.875 (149) 6.125 (156) 6.250 (159) 6.250 (159)	- - - - - - - -	- - - - - - - -	3.500 (89) 3.875 (98) 4.250 (108) 4.625 (117) 5.000 (127) 6.000 (152) 7.500 (191) 9.00 (229)	1.500 (38) 1.750 (44) 2.000 (51) 2.000 (51) 2.500 (64) 3.000 (76) 4.000 (102) 5.000 (127)	3.8 (1.7) 4.8 (2.2) 6.2 (2.8) 7.6 (3.5) 8.7 (4.0) 13 (6.0) 17 (7.7) 25 (11.0)
SFI-400F	1 1-1/4 1-1/2 2 3 4	5.000 (127) 5.125 (130) 5.250 (133) 5.370 (137) 5.750 (146) 5.750 (146)	- - - - - -	- - - - - -	4.250 (108) 4.625 (117) 5.000 (127) 6.000 (152) 7.500 (191) 9.000 (229)	2.000 (51) 2.000 (51) 2.500 (64) 3.000 (76) 4.000 (102) 5.000 (127)	7 (3.2) 8 (3.6) 12 (5.5) 14 (6.4) 23 (10.4) 31 (14.1)
SFI-300F	1-1/2 2 3 4 6	6.375 (162) 6.500 (165) 8.875 (225) 10.250 (260) 12.500 (318)	- - - - -	- - - - -	5.000 (127) 6.000 (152) 7.500 (191) 9.000 (229) 11.000 (279)	2.313 (58) 2.313 (58) 3.000 (76) 4.000 (102) 6.000 (152)	12 (5.5) 16 (7.5) 38 (17) 56 (25) 120 (55)

Dimensions are in inches (mm)

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

MIDWEST SIGHT FLOW INDICATORS

Inexpensive Protection for Expensive Equipment and Systems

MODEL CHART						
SFI-100 & SFI-300 - WINDOW STYLE WITH THREADED CONNECTIONS						
Example	**SFI**	**-300**	**SS**	**-2**	**-G2**	**SFI-300SS-2-G2**
Model Designator	SFI					Sight flow indicator
Body Style		100 300 350 360				Single window, bronze body, ABS impeller Double window, bronze body, ABS impeller Double window, bronze body, no moving indicator Double window, bronze body, 304SS flapper
Body Options			SS MP			316SS body option for 300, 350, 360 150 psig maximum pressure option, includes fluoroelastomer gaskets
Body Size				1/4 3/8 1/2 3/4 1 1-1/4 1-1/2 2		1/4 inch connection size 3/8 inch connection size 1/2 inch connection size 3/4 inch connection size 1 inch connection size 1-1/4 inch connection size 1-1/2 inch connection size 2 inch connection size
Options					W2 G1 G2 S2 S3 I1 I2 I3 F1 BSPT BSPP	Plexiglass window PTFE gasket Fluoroelastomer gasket 316SS shaft (not on 350 model) Monel shaft (not on 350 model) ABS impeller with bronze bushing (not on 350, 360) 316SS impeller (not on 350, 360) No impeller (100 only) 316SS flapper (360 only) BSPT threads BSPP threads
Note: Maximum flow on impeller models: 5 FPS with liquids, 5000 FPM with gases						

MODEL CHART					
SFI-300F - WINDOW STYLE WITH FLANGED CONNECTIONS					
Example	**SFI**	**-360FSS**	**-1-1/2**	**-G1**	**SFI-360FSS-1-1/2-G1**
Model Designator	SFI				Sight flow indicator
Body Style		350FCS 350FSS 360FCS 360FSS			Carbon steel body, no moving indicator 316SS body, no moving 316SS indicator Carbon steel body, 316SS flapper 316SS body, 316SS flapper
Body Size			1-1/2 2 3 4 6		1-1/2 inch raised face flange connection size 2 inch raised face flange connection size 3 inch raised face flange connection size 4 inch raised face flange connection size 6 inch raised face flange connection size
Options				G1 G2	PTFE gasket Fluoroelastomer gasket

MODEL CHART					
SFI-700 - TUBE STYLE WITH THREADED CONNECTIONS					
Example	**SFI**	**-700SS**	**-1-1/2**	**-BSPT**	**SFI-700SS-1-1/2-BSPT**
Model Designator	SFI				Sight flow indicator
Body Style		700 700SS			Brass body 316SS body
Body Size			1/4 3/8 1/2 3/4 1 1-1/4 1-1/2		1/4 inch female NPT connection size 3/8 inch female NPT connection size 1/2 inch female NPT connection size 3/4 inch female NPT connection size 1 inch female NPT connection size 1-1/4 inch female NPT connection size 1-1/2 inch female NPT connection size
Options				BSPT BSPP	BSPT threads BSPP threads

MODEL CHART					
SFI-400 - TUBE STYLE WITH THREADED OR FLANGED CONNECTIONS					
Example	**SFI**	**-400SS**	**-1-1/2**	**SFI-400SS-1-1/2**	
Model Designator	SFI			Sight flow indicator	
Body Style		400CI 400SS 400F		Female NPT connections, cast iron body (only for 1 through 2 inch sizes) Female NPT connections, 316SS body Raised face flange connection, 316SS body (only for 1 inch and up sizes)	
Body Size			1/2 3/4 1 1-1/4 1-1/2 2 3 4	1/2 inch connection size 3/4 inch connection size 1 inch connection size 1-1/4 inch connection size 1-1/2 inch connection size 2 inch connection size 3 inch connection size 4 inch connection size	
Note: Best for use in vertical pipelines where there are no mechanical strains					

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

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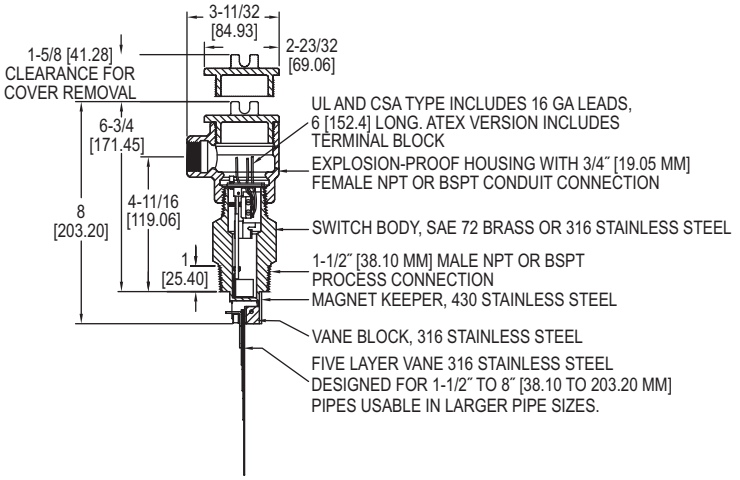
SERIES V4 | W. E. ANDERSON™ BY DWYER

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® Flow Switches 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 0344 Ex II 2 G Ex d IIB T6 Gb
-20°C≤Tamb≤73°C.
-20°C≤Process Temp≤73°C.
EC-Type Certificate No.: KEMA 03 ATEX 2383.
ATEX Standards: EN60079-0: 2009; EN60079-1: 2007.
IECEx Certified: For Ex d 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: 2007; IEC 60079-1: 2007.
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	316SS* body, universal vane	NPT
V4-2-U-NH**	Brass body, universal vane, no housing	NPT
V4	Brass body, custom vane	NPT
V4-SS	316SS* body, custom vane	NPT
V4-NH**	Brass body, custom vane, no housing	NPT
V4-2-U-BSPT	Brass body, universal vane, no housing	BSPT
V4-SS-2-U-BSPT	316SS* body, universal vane	BSPT
V4-BSPT	Brass body, custom vane	BSPT
V4-SS-BSPT	316SS* 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.

*316SS body with 430SS 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

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

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&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,&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,&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,&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)

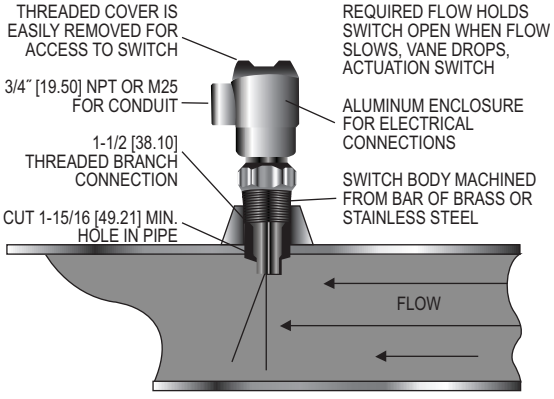
Actuation rates are based on cold water at a specific gravity of 1.0.
For fluids of different specific gravity, actuation rates may be approximated by dividing the rate shown by the square root of the specific gravity.

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

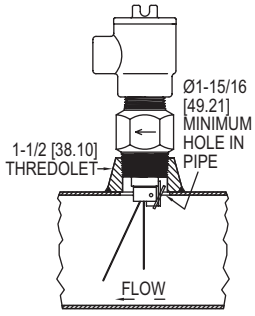
Vane Layers	1.5″ Pipe	2″ Pipe	3″ Pipe	4″ Pipe	6″ Pipe	8″ Pipe	10″ Pipe	12″ Pipe	14″ Pipe	16″ Pipe	18″ Pipe	20″ Pipe
1	32-17 (15-8)	65-32 (30-20)	210-105 (100-50)	400-200 (190-90)	950-475 (450-220)	1550-850 (730-400)	2400-1300 (1100-600)	3450-1900 (1600-900)	4700-2600 (2200-1200)	6400-3500 (3000-1700)	8000-4400 (3800-2100)	10000-5500 (4700-2600)
1&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,&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,&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,&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)

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

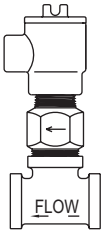
APPLICATION DRAWINGS
FOR FLOTECT® AUTOMATIC FLOW SWITCHES



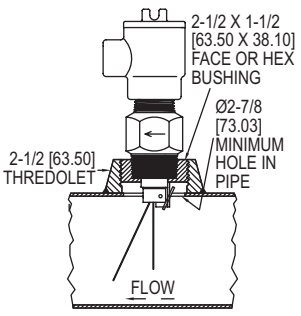
Threaded Branch Connection Installation.
May also be installed using tee, flange or coupling.



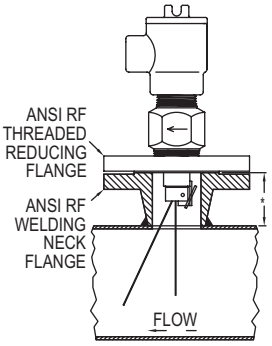
Standard Installation



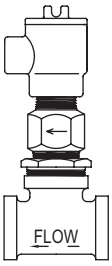
1-1/2″ x 1-1/2″x 1-1/2″
(38.10 x 38.10 x 38.10 mm)
Tee Installation



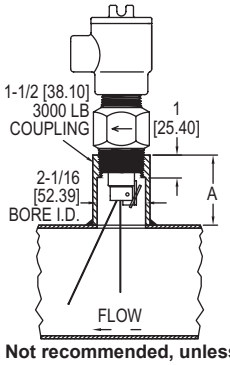
2-1/2″ (63.50 mm) Threaded
Branch Connection



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

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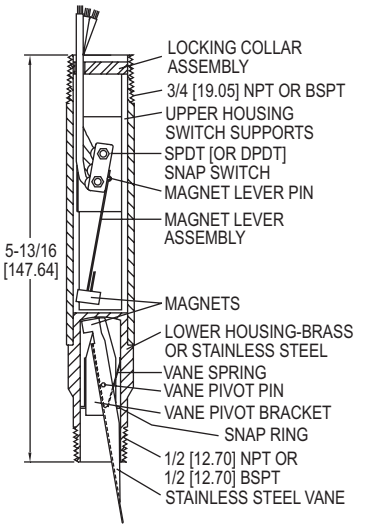
SERIES V6 | W. E. ANDERSON™ BY DWYER

FLOTECT® MINI-SIZE FLOW SWITCHES

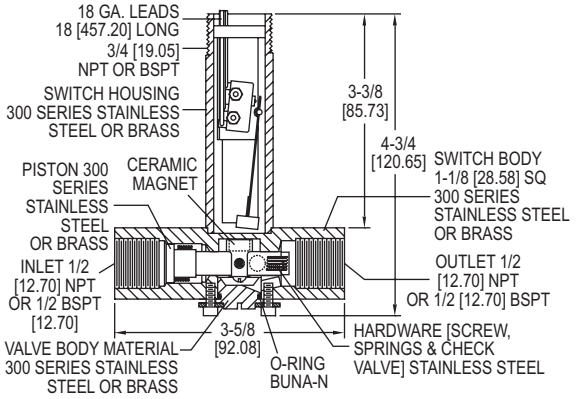
Monitor Flow in 1/2″ to 2″ (12.70 to 50.80 mm) Pipe, Explosion-Proof, Compact

V6 with Tee



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

V6 Low Flow



The **SERIES V6** Flotect® Flow Switches is 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 the brass body and 2000 psig (138 bar) with the 316 SS 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 stainless steel 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 0344 Ex II 2 G Ex d IIC T6 Gb Process Temp ≤75°C Alternate Temperature Class T5 Process Temp ≤90°C, 115°C (T4) Process Temp ≤105°C consult factory. EC-type Certificate No.: KEMA 04ATEX2128.
ATEX Standards: EN 60079-0: 2009; EN 60079-1: 2007.
IECEx Certified: For Ex d IIC T6 Gb Process Temps≤75°C Alternate Temperature Class T5 Process Temp ≤90°C, 115°C (T4) Process Temps≤105°C consult factory.
IECEx Certificate of Conformity: IECEx DEK 11.0039;
IECEx Standards: IEC 60079-0: 2007; IEC 60079-1: 2007;
Korean Certified (KC) for: Ex d IIC T6 Gb Process Temp ≤75°C;
KTL Certificate Number: 2012-2454-75.
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 stainless steel.
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 291 (Series V6)

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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

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								CSA AT IEC MV MT VIT	CSA approved construction with junction box* ATEX compliant construction with junction box IECEx certified construction with junction box Gold contacts on snap switch for dry circuits (see specifications for ratings) High temperature option rated 400°F (205°C) (see specifications for ratings)* Fluoroelastomer O-rings in place of Buna-N on low flow models

+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

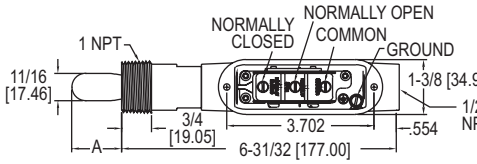
Dwyer

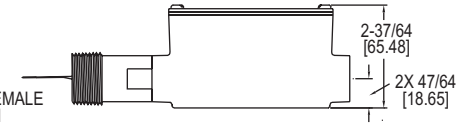
SERIES V7 | W. E. ANDERSON™ BY DWYER

FLOTECT® VANE OPERATED FLOW SWITCH

Magnetic Linkage, UL Approved

Pipe Size	Dim. A	Pipe Size	Dim. A
1	1-17/64 [32.15]	2	2-11/64 [55.17]
1-1/4	1-19/32 [40.48]	3	2-11/64 [55.17]
1-1/2	1-53/64 [46.43]	4	2-11/64 [55.17]





The **SERIES V7** Flotect® Flow Switch is an inexpensive range switch for use with compatible liquids to start or stop electronic operated equipment when flow or no-flow conditions occur. Design is standard weatherproof, meeting NEMA 4X.

FEATURES/BENEFITS

- 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
- Lower body is machined solid metal bar stock assuring no leak points, no matter how long the unit is in service
- Robust vane design is rigid and field trimmable for set point adjustment

APPLICATIONS

- Proof of boiler flow
- Shuts down burner when air flow through heating coil fails
- Protects pumps, motors and other equipment against low or no flow
- Stops liquid cooled engines, machines and processing when coolant flow is interrupted

APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR COLD WATER; GPM (LPM)		
Pipe Size	**Actuate**	**Deactuate**
1″	7.5 (28.4)	6.8 (25.7)
1-1/4″	8.1 (30.8)	7.6 (28.9)
1-1/2″	11.7 (44.1)	10.9 (41.3)
2″	16.9 (64.0)	15.6 (59.1)
2-1/2″	19.6 (74.2)	18.1 (68.5)
3″	31.6 (120)	29.6 (112)
4″	58.0 (218)	52.0 (197)
Contact the factory for different actuation-deactuation rates.		

SPECIFICATIONS

Service: Liquids compatible with wetted materials that are non-coating and non-crystallizing.
Wetted Materials: Vane: 301 SS; Process connection: Brass or 316 SS; Magnet: Ceramic; Other: 301, 302 SS.
Upper Body Material: Die cast aluminum.
Temperature Limits: -40 to 250°F (-40 to 121°C).
Pressure Limits: 250 psi (17.2 bar).
Enclosure Rating: Weatherproof, meets NEMA 4X (IP66).
Switch Type: SPDT snap switch.
Electrical Rating: 10 A @ 125, 250, 480 VAC; 1/8 hp @ 125 VAC, 1/4 hp @ 250 VAC.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Conduit Connection: 1/2″ NPSM.
Process Connection: 1″ male NPT. Contact factory for optional tees.
Pipe Size: 1″ to 4″.
Mounting Orientation: Horizontal or vertical (actuation flow rates are based on horizontal pipe runs in the vertical position). Will not work in vertical pipe with down flow.
Set Point Adjustment: Vane is trimmable, see set point chart.
Weight: 1 lb 2 oz (500 g).
Agency Approvals: CE, UL.

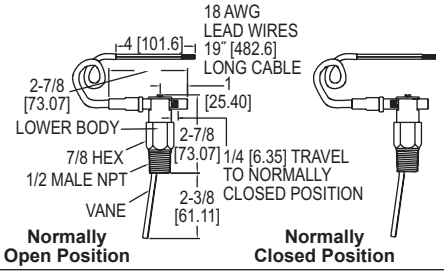
MODEL CHART	
Model	**Body Material**
V7-WBS-30N	Brass
V7-WSS-30N	316 SS

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

SERIES V10 | W. E. ANDERSON™ BY DWYER

FLOTECT® MINI-SIZE FLOW SWITCH

Proof of Flow or No Flow in 1/2 to 2″ Pipe, Cost Effective, Leak Proof Body, Weatherproof



The **SERIES V10** Flotect® Mini-Size Flow Switches is designed to provide inexpensive, reliable monitoring of the presence or absence of flow in a system. This series is available for field installation in pipelines from 1/2 to 2″ diameter and available in brass or 303 SS body.

FEATURES/BENEFITS

- Magnetically actuated switching design gives superior performance with rugged, hermetically sealed reed switch
- Simple field switch adjustment allows user to toggle between Normally Open (NO) or Normally Closed (NC) with no change in the electrical connection
- Switch housing is located outside the process media, allowing simple switch change-over or maintenance without interruption of process flow
- Full size, field trimmable stainless steel vane provided with removable template calibrated for brass or ductile iron reducing tees with forged steel straight tee/bushing combinations

APPLICATIONS

- Proving flow in boilers, hot water heaters, and chillers
- Protects pumps, motors and other equipment against low or no flow
- Automatically starts auxiliary pumps and engines

APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR COLD WATER; GPM (LPM)				APPROXIMATE ACTUATION/DEACTUATION FLOW RATES FOR AIR; SCFM (LPM)			
Pipe Size	**Trim**	**N.O.**	**N.C.**	**Pipe Size**	**Trim**	**N.O.**	**N.C.**
1/2″	L	2.6/2.3 (9.8/8.7)	2.6/2.5 (9.8/9.5)	1/2″	L	10.3/8.8 (291.7/250)	10.2/9.2 (288/260)
3/4″	J	3.1/2.7 (11.7/10.2)	3.1/2.8 (11.7/10.6)	3/4″	J	13/11.6 (368.3/328)	12.9/11.6 (365/328)
1″	H	4.8/4.5 (18.2/17)	4.8/4.4 (18.2/16.7)	1″	H	19.2/17.6 (543.3/498)	18.9/17.6 (535/498)
1-1/4″	E	6.2/5.6 (23.5/21.2)	6.1/5.6 (23.1/21.2)	1-1/4″	E	24.8/22.2 (701.7/628)	24.5/22.5 (693/637)
1-1/2″	C	8.2/7.7 (31/29.1)	8.2/7.7 (31/29.1)	1-1/2″	C	33.4/31.2 (946.7/883)	33/30.6 (935/867)
2″	Full	9.5/9.1 (36/34.4)	9.5/9 (36/34.1)	2″	Full	50.2/48.4 (1422/1370)	50.2/47.7 (1422/1352)

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Vane: 301 SS; Body: Brass or 303 SS; Pin and Magnet: Ceramic 8.
Temperature Limit: 200°F (93°C).
Pressure Limit: Brass body: 1000 psig (69 bar); 303 SS body: 2000 psig (138 bar).
Enclosure Rating: Weatherproof, meets NEMA 4X (IP66).
Switch Type: SPST hermetically sealed reed switch. Field adjustable for normally open or normally closed.
Electrical Rating: 0.5 A @ 120 VAC; 1.5 A @ 24 VDC res.; 0.001 A @ 200 VDC res.
Electrical Connections: 18 AWG, 19″ (483 mm) long, PVC jacket. Rated 221°F (105°C).
Process Connection: 1/2″ male NPT or 1/2″ male BSPT.
Mounting Orientation: Switch can be installed in any position but the actuation/deactuation flow rates are based on horizontal pipe runs and are nominal values.
Set Point Adjustment: Vane is trimmable.
Weight: 5.5 oz (0.16 kg).
Agency Approvals: CE, CSA, UR.
Switch Enclosure: Nylon.

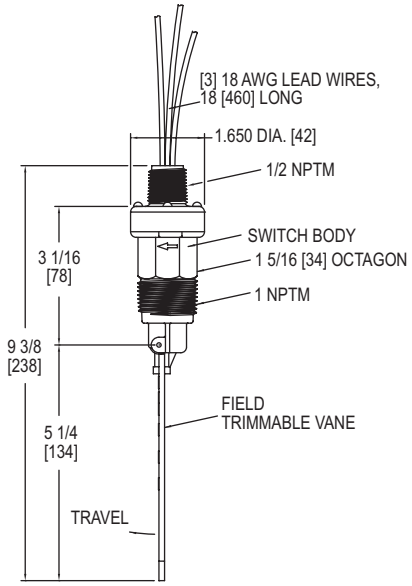
MODEL CHART			
Model	**Body Material**	**Connection Type**	**Switch Configuration**
V10	Brass	NPT	Normally open or closed
V10SS	303SS	NPT	Normally open or closed
V10-BSPT	Brass	BSPT	Normally open or closed
V10SS-BSPT	303SS	BSPT	Normally open or closed

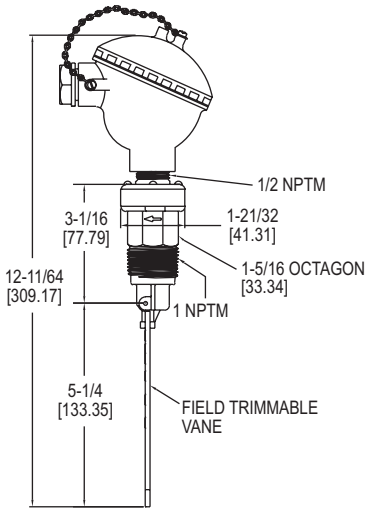
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

FLOTECT® VANE OPERATED FLOW SWITCH

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

V8





V8-WP2

The **SERIES V8** Flotect® Vane Operated Flow Switches is 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

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)

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

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	

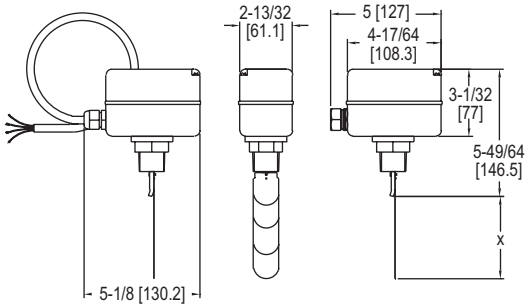
Inconel® is a registered trademark of Huntington Alloys Corporation

Dwyer

SERIES FS-2 | W. E. ANDERSON™ BY DWYER

VANE FLOW SWITCH

Low Cost, Field Adjustable Set Point and Paddle



Shown with conduit connection option

The **SERIES FS-2** Vane Flow Switches 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

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)

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Bellow: Tin-bronze; Vane: SS; Body: Forged brass.
Temperature Limit: 230ºF (110ºC).
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.

MODEL CHART

Model	Description
FS-2	Paddle flow switch

OPTIONS

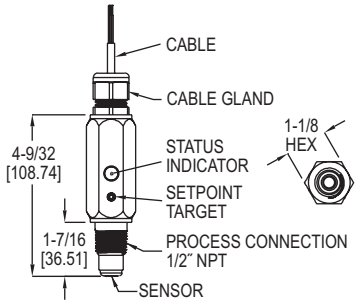
To order add suffix:	Description
-BSPT	Process connection
Example: FS-2-BSPT	
-CND	Conduit connection, 1″ NPT female conduit connection with no wire leads.
Example: FS-2-CND	

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

SERIES TDFS | W. E. ANDERSON™ BY DWYER

THERMAL DISPERSION FLOW SWITCH

Non-Mechanical, Low Pressure Drop



The **SERIES TDFS** Thermal Flow Switch uses impulse thermal dispersion measurement technique to indicate whether the flow rate is above or below a user set flow rate. It provides NO and NC NPN outputs and two LED, one green and one red for high and low set point indication.

FEATURES/BENEFITS
- Better long term reliability and life expectancy than mechanical flow switches with no paddles or vanes to wear or break, no jams in the paddle movement, and no seals on movement assembly to wear or leak
- Not affected by empty pipe detection and avoids overheating by actively heating above the process temperature and then cooling down to process temperature
- Set point is easily field set by taping the included magnet on the set point target three times at the desired flow rate
- LED status indicators provide visual switch indication of set point
- Low pressure drop, only needs to be 10% into the flow (e.g. 1/8″ for 3/4″ schedule 40 pipe)

APPLICATIONS
- Boiler flow proving
- Hot water heaters
- Chillers
- Liquid transfer systems

SPECIFICATIONS

Service: Compatible water-based fluids.
Wetted Materials: 316 SS, Polysulfone, and FKM.
Setpoint Range: 0.5 to 10 ft/s (0.15 to 3.0 m/s).
Repeatability: 0.07 ft/s +3% of setpoint.
Typical Deadband: 0.1 ft/s +15% of setpoint.
Temperature Limits: Process: 5 to 185°F (-15 to 85°C) (non-freezing); Ambient: 5 to 167°F (-15 to 75°C), Storage: -40 to 185°F (-40 to 85°C).
Pressure Limits: 300 psig (20.67 bar).
Response Time: Approximately 8 s.
Power Requirement: 9 to 24 VDC.
Switching Current: 400 mA, derate 5 mA/°C above 23°C.
Current Consumption: Average: 93 mA, Peak: 300 mA.
Electrical Connection: 4 conductor 22 AWG, 6′ (1.83 m) long with cable gland.
Process Connection: 1/2″NPT male.
Enclosure Rating: NEMA 4X (IP65).
Housing Materials: 316 SS, 416 SS, polycarbonate, neoprene, and acrylated urethane.
Switch Type: 1 NO NPN, 1 NC NPN.
Input Power and Protection: 0.5A fuse (resettable) reverse polarity protected.
Switched Output Protection: 0.5 A fuse (resettable) reverse polarity protected.
Agency Approvals: CE.

MODEL CHART

Model	Description
TDFS-1-P-06	Thermal flow switch, 6′ cable with cable gland
Note: Consult factory for longer cable lengths	

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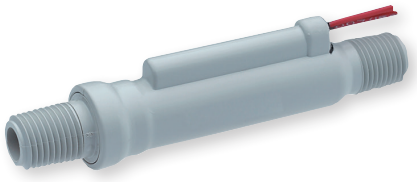
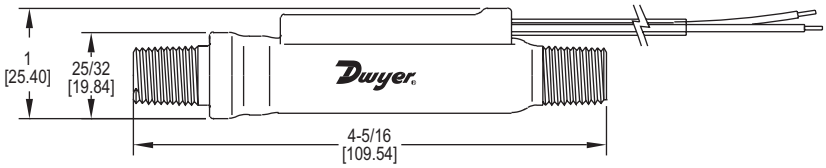
SERIES P2

FLOW SWITCH

Ideal for Air and Post-Filtered Water Applications, Fixed Set Point, FDA Compliant





The **SERIES P2** Flow Switches utilize a piston-type design for both air and pure water applications. The switches have preset actuation points from 0.05 to 1.0 GPM for water and 25 CFH to 5 CFM for air. The P2 is comprised of PPE & PS (polyphenylene ether and polystyrene) housing and piston and 316 SS spring and stop pin.

FEATURES/BENEFITS
- Piston design incorporates a hermetically sealed SPST magnetic reed switch
- All wetted parts are FDA compliant
- Economical design

APPLICATIONS
- Pure water equipment
- Filter life monitoring
- Heat exchangers
- Cooling applications

SPECIFICATIONS

Service: Compatible liquids or gases.
Wetted Materials: Housing: PPE & PS (polyphenylene ether and polystyrene); Piston: PPE & PS and epoxy; Spring and stop pin: 316 SS.
Temperature Limits: 0 to 212°F (-18 to 100°C).
Pressure Limits: 150 psig (10.3 bar) @ 70°F (21°C); 50 psig (3.4 bar) @ 212°F (100°C).
Switch Type: SPST, N.O.
Electrical Rating: .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC.
Electrical Connection: 22 AWG, 18″ (45.7 cm), PVC lead wires.
Process Connection: 1/4″ male NPT.
Mounting Orientation: Any position. Set points shown are based on vertical, inlet down position.
Required Filtration: 50 microns or better.
Weight: 2 oz (.06 kg).

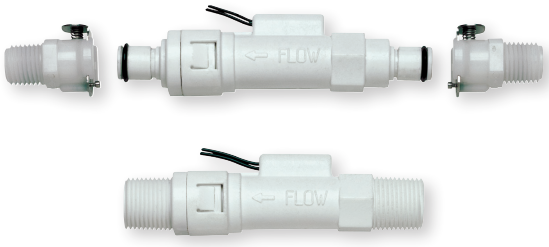
MODEL CHART

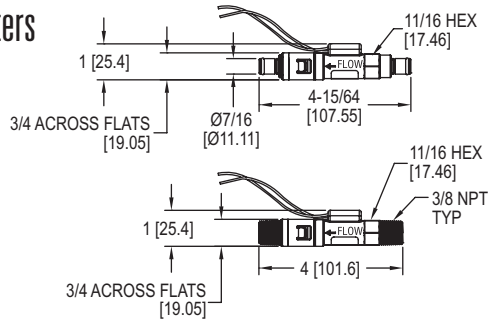
Model	Media	Actuation Set Point	Model	Media	Actuation Set Point
P2-11	Liquids	.05 GPM (.19 LPM)	**P2-15**	Gases @ 5 psi	.42 CFM (11.9 LPM)
P2-12	Liquids	.25 GPM (.95 LPM)	**P2-16**	Gases @ 5 psi	1.0 CFM (28.3 LPM)
P2-13	Liquids	.50 GPM (1.89 LPM)	**P2-17**	Gases @ 5 psi	2.5 CFM (70.8 LPM)
P2-14	Liquids	1.0 GPM (3.79 LPM)	**P2-18**	Gases @ 5 psi	5.0 CFM (141.6 LPM)

SERIES P3

POLYPROPYLENE FLOW SWITCH

Fixed Set Points from 0.25 to 2.0 GPM, 3/8″ NPT or "Quick Disconnect" Adapters





The **SERIES P3** Flow Switches fit almost any piping requirements with compatible liquids. Choose the inlet and outlet port to be 3/8″ male NPT or 1/4″ male "Quick Disconnect" then select a quick disconnect acetal adapter for straight through flow or with a shut off valve.

FEATURES/BENEFITS
- Piston design incorporates a hermetically sealed SPST magnetic reed switch
- Easy integration to existing piping with a variety of fitting options
- Selectable shut off valve will stop line flow when the adapter is removed from the switch
- Economical design

APPLICATIONS
- Pure water equipment
- Filter life monitoring
- Heat exchangers
- Cooling applications

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Housing: Polypropylene; Piston: PPS composite; Spring: 316SS; O-ring: Fluorocarbon.
Temperature Limits: 0 to 212°F (-18 to 100°C).
Pressure Limits: 125 psig (8.6 bar) @ 70°F (21°C), 50 psig (3.4 bar) @ 212°F (100°C).
Accuracy: 20% of set point.
Repeatability: ±1%.
Switch Type: SPST, NO.
Electrical Rating: .08 A @ 120 VAC.
Electrical Connection: 24″ (60.96 cm), polymeric wire leads, 22 AWG.
Process Connection: 3/8″ male NPT or 1/4″ quick disconnect.
Mounting Orientation: Any position. Set points shown are based on vertical, inlet down position.
Required Filtration: 100 microns or better.
Weight: 5 oz (0.14 kg).

MODEL CHART

Model	Connection	Actuation Set Point
P3-31	3/8″ NPT	0.25 GPM (.95 LPM)
P3-32	3/8″ NPT	0.50 GPM (1.89 LPM)
P3-33	3/8″ NPT	1.0 GPM (3.79 LPM)
P3-34	3/8″ NPT	1.5 GPM (5.68 LPM)
P3-35	3/8″ NPT	2.0 GPM (7.57 LPM)
P3-41	Quick disconnect	0.25 GPM (.95 LPM)
P3-42	Quick disconnect	0.50 GPM (1.89 LPM)
P3-43	Quick disconnect	1.0 GPM (3.79 LPM)
P3-44	Quick disconnect	1.5 GPM (5.68 LPM)
P3-45	Quick disconnect	2.0 GPM (7.57 LPM)

ADAPTERS

Model	Connection
P3-801	Quick disconnect straight through 1/4″ NPT
P3-802	Quick disconnect straight through 1/4″ BSPT
P3-804	Quick disconnect straight through 3/8″ BSPT
P3-807	Quick disconnect straight through 1/4″ ID tubing
P3-901	Quick disconnect straight through 1/4″ NPT w/shut-off valve
P3-902	Quick disconnect straight through 1/4″ BSPT w/shut-off valve
P3-907	Quick disconnect straight through 1/4″ ID tubing w/shut-off valve

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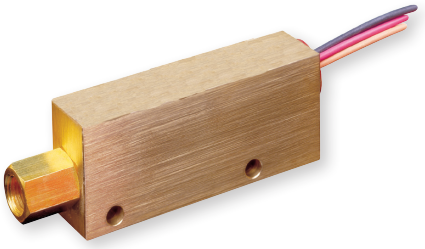
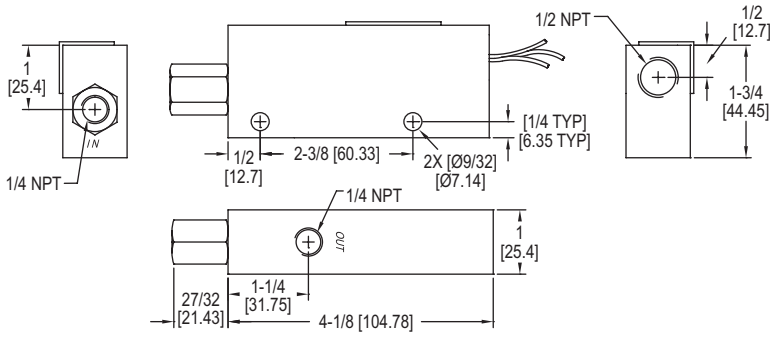
SERIES P1

BRASS FLOW SWITCH

Fixed Setpoints, Flow Rates from 0.10 to 1.5 GPM





The **SERIES P1** Brass Flow Switches utilizes a piston-type design for accurate detection of excessive or insufficient liquid flow rates. The switches have preset actuation points from 0.10 to 1.5 GPM for liquid flow.

FEATURES/BENEFITS
- Piston-type operation yields accurate detection of low flow rates
- The piston magnetically actuates a hermetically sealed SPST reed switch

APPLICATIONS
- Industrial cleaning equipment
- Detecting loss of fluid in hydraulic systems
- Assuring proper coolant flow in semiconductor processing

MODEL CHART	
Model	**Actuation Set Point* GPM (LPM)**
P1-011	0.10 (.38)
P1-012	0.25 (.95)
P1-013	0.50 (1.89)
P1-014	0.75 (2.84)
P1-015	1.00 (3.79)
P1-016	1.50 (5.68)
*Calibrated for water at standard conditions.	

SPECIFICATIONS

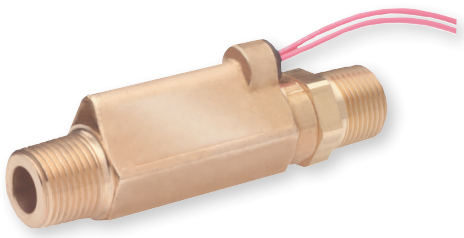
Service: Compatible liquids.
Wetted Materials: Housing: Brass; Piston: Polysulfone; Spring: 316SS; O-ring: Fluoroelastomer; Other: Epoxy.
Temperature Limits: -20 to 225°F (-29 to 107°C).
Pressure Limits: 1000 psig (68.9 bar).
Accuracy: ±10% of set point.
Repeatability: ±1%.
Switch Type: SPDT.
Electrical Rating: .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC.
Electrical Connection: 18 AWG, 24″ (60.96 cm), polymeric lead wires.
Process Connection: 1/4″ female NPT.
Mounting Orientation: Any position. Set points shown are based on vertical, inlet down position.
Required Filtration: 50 microns or better.
Weight: 0.66 lb (301 g).
Agency Approvals: CE.

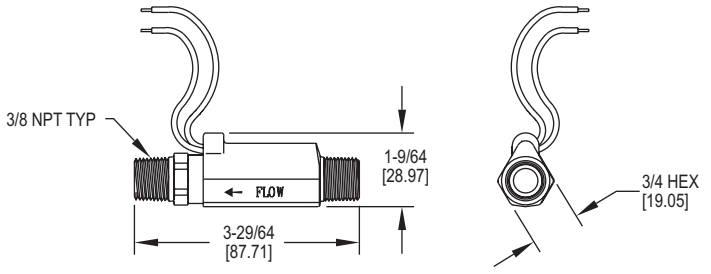
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES P8

HIGH PRESSURE BRASS FLOW SWITCH

Up to 1500 psi, Fixed Setpoint, Up to 2.0 GPM, Rugged Brass Body





The **SERIES P8** High Pressure Brass Flow Switches are ideal for high in-line pressures. Set points range from 0.25 to 2.0 GPM for liquid flow.

FEATURES/BENEFITS
- Integrates a one-piece magnetic PPS composite piston to handle pressure up to 1500 psi
- Less susceptible to clogging than other high in-line pressure switches with 100 micron filtration

APPLICATIONS
- Industrial cleaning equipment
- High pressure lubrication systems

MODEL CHART	
Model	**Actuation Set Point GPM (LPM)**
P8-11	0.25 (.95)
P8-12	0.50 (1.89)
P8-13	1.0 (3.79)
P8-14	1.5 (5.68)
P8-15	2.0 (7.57)

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Housing: Brass; Piston: PPS composite, epoxy; Spring: 316 SS; O-ring: Fluorocarbon.
Temperature Limits: -20 to 275°F (-28 to 135°C).
Pressure Limits: 1500 psi (103.4 bar).
Accuracy: ±20% of set point.
Switch Type: SPST, NO.
Electrical Rating: .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC.
Electrical Connection: No. 22 AWG, 24″ (61 cm), polymeric leads.
Process Connections: 3/8″ male NPT.
Mounting Orientation: Any position. Set points shown are based on vertical, inlet down position.
Required Filtration: 100 microns or better.
Weight: 6 oz (.17 kg).
Agency Approvals: CE.

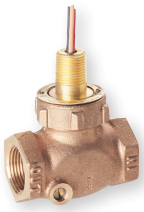
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

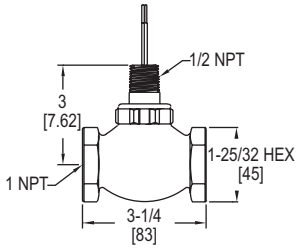
Dwyer

SERIES GVS

GLOBE VALVE SWITCH

Adjustable Set Point, Rugged Bronze Construction, Straight Through Flow





The **SERIES GVS** Globe Valve Switches offer accurate flow detection with 1% repeatability and external adjustability over a broad range of flow settings for compatible liquids.

FEATURES/BENEFITS
- Externally adjustable flow set point
- Durable construction delivers long-life reliability in either water or oil
- Ample space for flow to pass keep pressure drop low

APPLICATIONS
- Detection of improper flow rates in high volume lubrication
- Low flow detection in cooling lines
- Flow detection in process systems

MODEL CHART	
Model	**Actuation Set Point Range GPM (LPM)**
GVS-111	1.0 to 6.0 (3.8 to 22.7)
GVS-112	5.0 to 15.0 (18.9 to 56.8)
GVS-113	2.0 to 8.0 (7.6 to 30.3)

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: Housing: Bronze; Shuttle: TFE; Bonnet: Bronze; Spring: 316SS.; Other: Fluoroelastomer, ceramic.
Temperature Limits: -20 to 200°F (-29 to 93°C).
Pressure Limits: 400 psig (27 bar) @ 100°F (38°C).
Accuracy: ±10%.
Repeatability: 1% maximum deviation.
Switch Type: SPDT.
Electrical Rating: .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC.
Electrical Connections: 18 AWG, 24″ (61 cm), polymeric lead wires.
Process Connections: 1″ female NPT.
Mounting Orientation: Any position. Set points shown are based on horizontal, lead wires up positional.
Required Filtration: 150 microns or better.
Weight: 2 lb, 8 oz (1.16 kg).

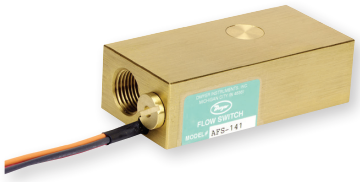
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

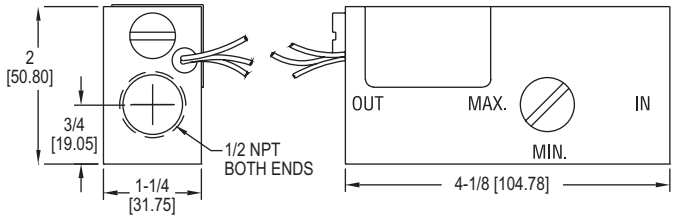
SERIES AFS

CE

ADJUSTABLE FLOW SWITCH

For Oils, Water and Gases, Infinite Adjustments





The **SERIES AFS** Adjustable Flow Switches are externally adjustable piston-type flow switches for oils, liquids and gases. This Series offers an infinite number of flow settings from 0.5 to 20 GPM.

FEATURES/BENEFITS
- Externally adjustable flow set point
- Offers a number of flow settings at pressures up to 1000 psig, with low pressure drop and precise repeatability

APPLICATIONS
- Protecting machine tools from coolant flow failure
- Protecting bearings from loss of lubricant
- Assuring proper air flow
- Water or compatible liquid control
- Oil flow control
- Control of gas flows

MODEL CHART				
Model	**Media**	**Electrical Connection**	**Piston**	**Housing**
AFS-131	Oil	Wire leads	Brass	Brass
AFS-141	Water	Wire leads	Polysulfone	Brass
AFS-151	Liquids	Wire leads	316 SS	316 SS
AFS-231	Gases	Wire leads	Brass	Brass
AFS-251	Gases	Wire leads	316 SS	316 SS
AFS-132	Oil	1/2″ NPT conduit	Brass	Brass
AFS-142	Water	1/2″ NPT conduit	Polysulfone	Brass
AFS-152	Liquids	1/2″ NPT conduit	316 SS	316 SS
AFS-232	Gases	1/2″ NPT conduit	Brass	Brass
AFS-252	Gases	1/2″ NPT conduit	316 SS	316 SS

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Housing and Piston: See model chart; Spring: 316SS; O-ring: Fluoroelastomer; Other: Epoxy.
Temperature Limits: -20 to 300°F (-29 to 149°C), -20 to 225°F (-29 to 107.2°C) with polysulfone piston.
Pressure Limit: 1000 psi (68 bar).
Accuracy: ±10% of setpoint.
Repeatability: ±1% maximum deviation.
Switch Type: SPDT.
Electrical Rating: .17 A @ 120 VAC, .08 A @ 240 VAC, .13 A @ 120 VDC, .06 A @ 240 VDC.
Electrical Connections: 18 AWG, 24″ (61 cm), polymeric lead wires, optional 1/2″ male NPT conduit connection.
Process Connection: 1/2″ female NPT ports.
Mounting Orientation: Any.
Set Point Adjustment: Liquids: 0.5 to 20 GPM (1.9 to 75.7 LPM); Gases: 1.0 to 75 SCFM (28 to 2124 LPM) at 5 psig.
Required Filtration: 50 microns or better.
Weight: 2 lb, 11 oz (1.22 kg).
Agency Approvals: CE.

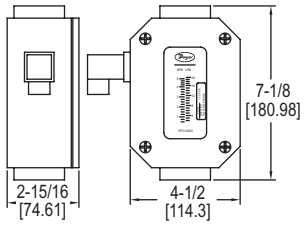
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES HFO

IN-LINE FLOW ALARMS

Latching Alarm Capabilities, For Air, Water or Caustic Fluids, Unrestricted Mounting



The **SERIES HFO** In-Line Flow Alarms provide continuous monitoring and control of flow rate levels. The flow alarm can be configured to open or close a contact for an increasing or decreasing set point. Available in 1/4″, 1/2″, 1″ or 1-1/2″ female NPT process connections, in aluminum, brass or 304 SS body.

FEATURES/BENEFITS
- Provides two 10 A SPDT limit switches with field adjustable alarm settings for application control and integral direct reading scale provides local indication of flow rate
- Increased application versatility with no inlet or outlet straight plumbing requirement and can be mounted horizontally, vertically, or inverted
- Outdoor or harsh environment installation capable with rugged cast aluminum construction and NEMA 4X (IP65) enclosure

APPLICATIONS
- Waste water processing
- Lubrication systems
- Process control
- Solar systems
- Drain lines
- Pump testing

MODEL CHART - DUAL SCALE RANGE

Model	Connection Size	Range, Air: SCFM, SLPS	Body Material
HFO-21112	1/4″ female NPT	2 to 12, 1 to 5.5	Aluminum
HFO-21123	1/4″ female NPT	4 to 23, 2 to 10	Aluminum

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Body: Aluminum, brass or 304 SS; Seals: Buna-N or fluoroelastomer; Magnet: PTFE coated Alnico; Other internal parts: 304 SS.
Viscosity: 500 SSU.
Temperature Limits: 170°F (76°C).
Pressure Limits: Aluminum body: 600 psig (41 bar); Brass body: 3500 psig (240 bar); 304 SS body: 6000 psig (413 bar).
Enclosure Rating: NEMA 4X (IP66).
Accuracy: ±2% FS.
Repeatability: ±1% of FS.
Switch Type: SPDT, 10 A @ 250 VAC; 0.5 A @ 125 VDC, (resistive).
Shipping Weight: 1/4 to 1/2″ female NPT models: 3 lb (1.4 kg); 3/4 to 1″ female NPT models: 4.5 lb (2.0 kg); 1-1/2″ female NPT models: 12 lb (5.4 kg).

MODEL CHART

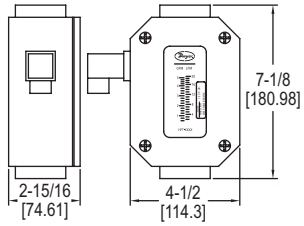
Model	Connection Size	Range, Water: GPM, LPM	Body Material
HFO-22205	1/2″ female NPT	0.5 to 5.0, 2 to 19	Brass
HFO-22315	3/4″ female NPT	1 to 15, 5 to 55	Brass
HFO-22320	3/4″ female NPT	2 to 20, 10 to 74	Brass
HFO-22440	1″ female NPT	4 to 40, 20 to 150	Brass
HFO-22550	1-1/2″ female NPT	6 to 50, 20 to 190	Brass
HFO-23202	1/2″ female NPT	.2 to 2, 1 to 8	304 SS
HFO-23210	1/2″ female NPT	1 to 10, 3 to 37.5	304 SS

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

SERIES HFT

IN-LINE FLOW TRANSMITTERS

Local Flow Indication, Unrestricted Mounting, 4-20 mA, 0-5 V, and 1-5 V Output



The **SERIES HFT** In-Line Transmitters provide continuous monitoring of flow rate levels via a direct reading in-line flowmeter with electronics to provide proportional 4-20 mA, 0-5 and 1-5 VDC analog outputs.

FEATURES/BENEFITS
- Provides analog output to monitor application flow and integral direct reading scale to provide local indication of flow rate
- Increased application versatility with no inlet or outlet straight plumbing requirement and can be mounted horizontally, vertically, or inverted
- Outdoor or harsh environment installation capable with rugged cast aluminum construction and NEMA 4X (IP65) enclosure

APPLICATIONS
- Waste water processing
- Lubrication systems
- Process control
- Solar systems
- Drain lines
- Pump testing
- Drive data acquisition devices, meters or analog input cards

MODEL CHART - DUAL SCALE RANGE

Model	Connection Size	Range, Air: SCFM, SLPS	Body Material
HFT-1112	1/4″ female NPT	2 to 12, 1 to 5.5	Aluminum
HFT-1123	1/4″ female NPT	4 to 23, 2 to 10	Aluminum

OPTIONS

Use order code:	Description
NISTCAL-FT1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: Body: Aluminum, brass or 304 SS; Seals: Buna-N or Fluoroelastomer; Magnet: PTFE coated Alnico; Other internal parts: 304 SS.
Viscosity: 500 SSU.
Temperature Limits: 170˚F (76˚C).
Pressure Limits: Aluminum body: 600 psig (41 bar); Brass body: 3500 psig (240 bar); 304 SS body: 6000 psig (413 bar).
Power Requirements: 12 to 35 VDC.
Enclosure Rating: NEMA 4X (IP66).
Accuracy: ±2% FS.
Repeatability: ±1% of FS.
Response Time: < 100 ms.
Output Signal: 4 to 20 mA; 0 to 5 V; 1 to 5 V.
Shipping Weight: 1/4 to 1/2″ female NPT models: 3 lb (1.4 kg); 3/4 to 1″ female NPT models: 4.5 lb (2.0 kg); 1-1/2″ female NPT models: 12 lb (5.4 kg).

MODEL CHART

Model	Connection Size	Range, Water: GPM, LPM	Body Material
HFT-2205	1/2″ female NPT	0.5 to 5.0, 2 to 19	Brass
HFT-2315	3/4″ female NPT	1 to 15, 5 to 55	Brass
HFT-2320	3/4″ female NPT	2 to 20, 1 to 75	Brass
HFT-2440	1″ female NPT	4 to 40, 15 to 150	Brass
HFT-2550	1-1/2″ female NPT	6 to 50, 20 to 190	Brass
HFT-3202	1/2″ female NPT	.2 to 2, 1 to 8	304 SS
HFT-3210	1/2″ female NPT	1 to 10, 3 to 3.75	304 SS

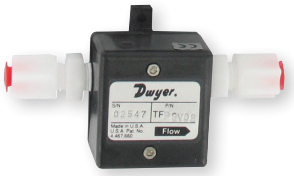
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

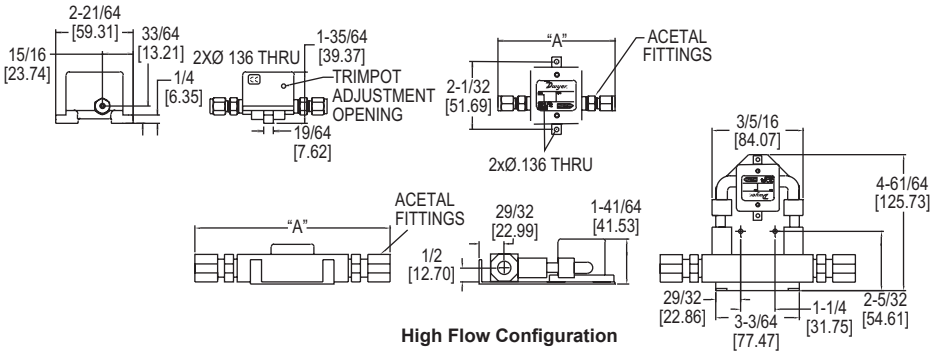
Dwyer

SERIES TFP-GV

GAS TURBINE FLOW METER

PPS Body, 0 to 5 VDC Output





High Flow Configuration

The **SERIES TFP-GV** Gas Flowmeters utilize a turbine wheel and electro-optical detection to convert flow rates into a linear 0 to 5 VDC output signal for recording and data logging. A power adapter or mating cable assembly is required for operation.

FEATURES/BENEFITS
- Corrosion resistant PPS body
- High repeatability with patented microturbine design
- Design accurately measures flow rates with no zero drift and no required maintenance

APPLICATIONS
- Industrial flow monitoring
- Commercial systems
- Laboratory equipment

MODEL CHART

Model	Range	Connection	"A" (in)
TFP-GV03	.042 to .21 SCFH (.02 to .1 LPM)	1/8″ OD	3-27/64
TFP-GV04	.085 to .42 SCFH (.04 to .2 LPM)	1/8″ OD	3-27/64
TFP-GV05	.21 to 1.1 SCFH (.1 to .5 LPM)	1/8″ OD	3-27/64
TFP-GV06	.42 to 2.1 SCFH (.2 to 1 LPM)	1/8″ OD	3-27/64
TFP-GV07	.85 to 4.2 SCFH (.4 to 2 LPM)	1/4″ OD	3-13/16
TFP-GV08	2.1 to 11 SCFH (1 to 5 LPM)	1/4″ OD	3-13/16
TFP-GV09	4.2 to 21 SCFH (2 to 10 LPM)	1/4″ OD	3-13/16
TFP-GV10*	8.5 to 42 SCFH (4 to 20 LPM)	3/8″ OD	7-7/64
TFP-GV11*	21 to 110 SCFH (10 to 50 LPM)	3/8″ OD	7-7/64
TFP-GV12*	42 to 210 SCFH (20 to 100 LPM)	1/2″ OD	7-1/2
TFP-GV13*	85 to 420 SCFH (40 to 200 LPM)	1/2″ OD	7-1/2

*These modes come in high flow configuration

SPECIFICATIONS

Service: Clean dry gases compatible with wetted materials.
Wetted Materials: PPS, acetal, sapphire, glass, epoxy, and fluoroelastomer.
Accuracy: ±3% of FS.
Linearity: ±3% of FS.
Repeatability: ±0.5% of FS.
Temperature Limits: 41 to 131°F (5 to 55°C); Storage: 32 to 158°F (0 to 70°C); Sensitivity: ±0.2% of FS per °C.
Pressure Limits: 40 psig (2.8 bar).
Process Connection: Compression fitting, see model table.
Power Requirements: 11.5 to 15 VDC.
Power Consumption: 35 mA @ 12 VDC.
Output Signal: 0 to 5 VDC: Minimum 2.5 kΩ load.
Electrical Connections: Four-pin power and signal connector. A power adapter or mating cable required for operation. See accessories table.
Enclosure Rating: IP10 (NEMA 1).
Weight: 0.16 lb (75 g).

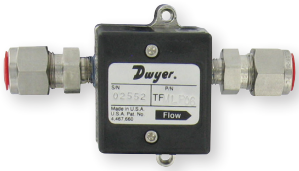
ACCESSORIES

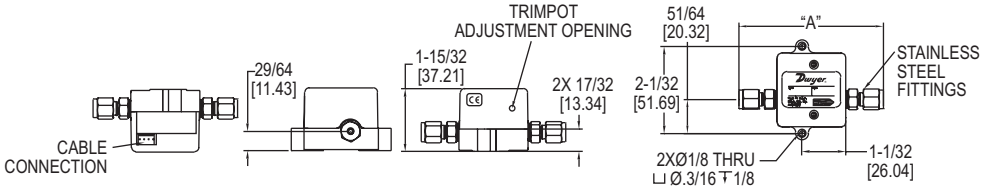
Model	Description
A-454	115 VAC power adapter and signal cable
A-455	230 VAC power adapter and signal cable
A-456	36″ mating cable with spliced leads

SERIES TFM-LP

LIQUID TURBINE FLOW METER

316SS Body, 0 to 5 VDC and Pulse Outputs





The **SERIES TFM-LP** Liquid Flowmeters utilize a turbine wheel and electro-optical detection to convert flow rates into a linear 0 to 5 VDC and pulsed output signal for recording and data logging. A power adapter or mating cable assembly is required for operation.

FEATURES/BENEFITS
- Rugged 316 SS body
- High repeatability with patented microturbine design
- Design accurately measures flow rates with no zero drift and no required maintenance

APPLICATIONS
- Industrial flow monitoring
- Commercial systems
- Laboratory equipment

MODEL CHART

Model	Range	Connection	"A" (in)
TFM-LP03	.21 to 1.6 GPH (.013 to .1 LPM)	1/8″ OD	3-27/64
TFM-LP04	.32 to 3.2 GPH (.02 to .2 LPM)	1/4″ OD	3-53/64
TFM-LP05	.79 to 7.9 GPH (.05 to .5 LPM)	1/4″ OD	3-53/64
TFM-LP06	1.6 to 16 GPH (0.1 to 1 LPM)	1/4″ OD	3-53/64
TFM-LP07	3.2 to 32 GPH (.2 to 2 LPM)	1/4″ OD	3-53/64
TFM-LP08	7.9 to 79 GPH (.5 to 5 LPM)	3/8″ OD	4-1/8
TFM-LP09	16 to 160 GPH (1 to 10 LPM)	3/8″ OD	4-1/8

SPECIFICATIONS

Service: Clean liquids compatible with wetted materials.
Wetted Materials: 316 SS, acetal, sapphire, glass, epoxy, and fluoroelastomer.
Accuracy: ±1% of FS.
Linearity: ±1% of FS.
Repeatability: ±0.2% of FS.
Temperature Limits: 41 to 131°F (5 to 55°C); Storage: 32 to 158°F (0 to 70°C); Sensitivity: ±0.2% of FS per °C.
Pressure Limits: 500 psig (34.5 bar).
Process Connection: Compression fitting, see model table.
Power Requirements: 11.5 to 15 VDC.
Power Consumption: 35 mA @ 12 VDC.
Output Signal: 0 to 5 VDC: Minimum 2.5 kΩ load; Pulse: 7.5 VDC peak buffered square wave.
Electrical Connections: Four-pin power and signal connector. A power adapter or mating cable required for operation. See accessories table.
Enclosure Rating: IP10 (NEMA 1).
Weight: 0.86 lb (390 g).

ACCESSORIES

Model	Description
A-454	115 VAC power adapter and signal cable
A-455	230 VAC power adapter and signal cable
A-456	36″ mating cable with spliced leads

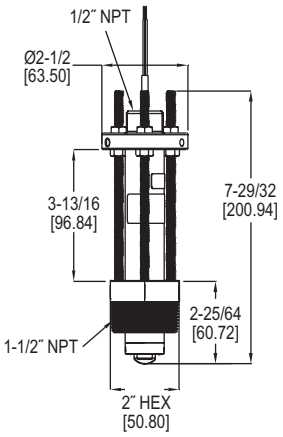
Dwyer

SERIES PFT | W. E. ANDERSON® BY DWYER

CE

PADDLEWHEEL FLOW SENSOR

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



The **SERIES PFT** Insertion Paddlewheel Flowmeters are used to monitor liquid flow rates in pipes from 1-1/2 to 40″ and is available in brass or 316 SS body. The unit outputs a frequency proportional pulsed or 4 to 20 mA output. The pulse models are a square wave output signal with frequency proportional to the flow velocity and the 4 to 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 to 20 mA output with no need for additional external components
- Sensor technology uses inductive sensing to sense the blades of the impeller therefor 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 to 20 mA: 4 mA is 0 ft/s, 20 mA is 25 ft/s.
Power Requirement: 10 to 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

Model	Body Material	Output	Description
PFT-IAN-B111-S	Brass	4 to 20 mA	1-1/2″ NPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IAN-S111-S	316 SS	4 to 20 mA	1-1/2″ NPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IDN-B111-S	Brass	Pulse	1-1/2″ NPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IDN-S111-S	316 SS	Pulse	1-1/2″ NPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IAN-B311-S	Brass	4 to 20 mA	1-1/2″ BSPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IAN-S311-S	316 SS	4 to 20 mA	1-1/2″ BSPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IDN-B311-S	Brass	Pulse	1-1/2″ BSPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable
PFT-IDN-S311-S	316 SS	Pulse	1-1/2″ BSPT connection, FKM seals, tungsten-carbide shaft, PTFE bearing, 20′ of cable

Consult factory for longer cable lengths, burial rated cable, 2″ NPT connection, or other wetted materials.

ACCESSORIES

Model	Description
SDF❶	Saddle fitting available for securing unit in pipe size ranging from 3 to 24″.

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

❶See page 316 (Series SDF)

Dwyer

SERIES PDWS & PWF

PADDLEWHEEL FLOW SENSOR

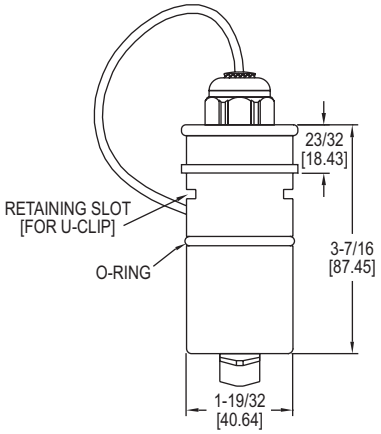
Low Friction Bearings, Long Life, 1/2 to 8″ Pipe (12.7 to 203 mm)

PWF-B-PXX

PWF-S-BXX

PWF-S-DXX

PWF-T-SFT-SS



The **SERIES PDWS** Insertion Paddlewheel Flowmeters are designed for pipe size ranges from 1/2 to 8″ with available materials of brass, stainless steel, PVC, and polypropylene. The Series PDWS is intended to be used with the Series PWF, a wide variety of custom tee, saddle, or welded fittings that come in bronze, PVC, and stainless steel.

FEATURES/BENEFITS

- The bearings are made from ruby jewel to reduce the coefficient of friction and maintain high accuracy
- PVC and polypropylene body material offers resistance against corrosive media

APPLICATIONS

- Industrial water & wastewater treatment
- Cooling water monitoring
- Industrial fluid control
- Chemical proportioning
- Fluctuating fluid conductivity applications

SPECIFICATIONS

Service: Compatible clean liquids.
Range: 0.3 to 30 ft/s (0.09 to 9.14 m/s).
Wetted Materials: Sensor: Brass, 316 SS, PVC, or polypropylene; Rotor: PVDF; Shaft: Nickel-bonded tungsten carbide (ceramic optional); Bearings: Ruby jewel; O-ring: EPDM (fluoroelastomer optional).
Accuracy: ±1.5% FS.
Temperature Limits: Brass, 316 SS: 200°F (93°C); PVC, Polypropylene: 130°F (55°C).
Pressure Limits: Brass: 200 psi (14 bar); 316 SS: 250 psi (17 bar); PVC, polypropylene: 175 psi (12 bar) @ 75°F (24°C); High pressure option: 400 psi (28 bar) (SS only).
Process Connection: See below.
Output: Current sinking, square wave pulse, opto-isolated.
Power Requirements: 6 to 24 VDC, 2 mA (max. 20 mA).
Electrical Connection: #22 AWG, 3 conductor, 18´ (5.5 m) cable (max. 2000´ run).
Enclosure Rating: NEMA 4X (IP66).
Weight: 2 lb (907 g).

MODEL CHART

Example	PDWS	-1B	-CRS	PDWS-1B-CRS
Series	PDWS			Insertion paddlewheel flow sensor
Size/ Material		1B 1S 1P 1Y 2B 2S 2P 2Y		1/2 to 3″, brass 1/2 to 3″, 316 SS 1/2 to 3″, PVC 1/2 to 3″, polypropylene 4 to 8″, brass 4 to 8″, 316 SS 4 to 8″, PVC 4 to 8″, polypropylene
Options			CRS IMM FOR HPO	Ceramic shaft Immersible (urethane potted electrical connection) Fluoroelastomer O-ring High pressure options (Use with SS only)

Note: Need to purchase with Series PWF fitting for proper installation.

ACCESSORIES

Series	Description
BAT	Blind analog transmitter; converts pulse output to 4 to 20 mA analog output; unit is loop powered, fits on the enclosure of the meter, and is field spannable.
RTI2	Rate total indicator; converts pulse output to 4 to 20 mA analog output with local flow rate and totalization display; unit is loop powered, can fit on the enclosure of the meter, and provides a high/low flow alarm.
PWD	Pulse divider, for use with pacing electronic metering pumps; unit divides the input frequency to any number from 1 to 9999 with the use of rotary switches to suit a number of metering pump inputs. (See website)

MODEL CHART - TEE FITTING

		PDWS-1XX						
		1/2″	3/4″	1″	1-1/2″	2″	3″	4″
Model	**Description**	**-0050**	**-0075**	**-0100**	**-0150**	**-0200**	**-0300**	**-0400**
PWF-T-BFS	Bronze/female sweat (for copper tubing)	X	X	X	X	X	X	X
PWF-T-BFT	Bronze/female thread	X	X	X	X	X	X	X
PWF-T-PME	PVC/male stub end	X	X	X	X	X		
PWF-T-CFT	Carbon steel/female thread	X	X	X	X	X		
PWF-T-SFT	304 SS/female thread	X	X	X	X	X		
-SS	All 316 SS option	X	X	X	X	X		
-HP	High pressure option (SS or CS only)	X	X	X	X	X		

MODEL CHART - SADDLE FITTING

		PDWS-1XX	PDWS-2XX		
		3″	4″	6″	8″
Model	**Description**	**-0300**	**-0400**	**-0600**	**-0800**
PWF-S-DXX	Ductile iron	X	X	X	X
PWF-S-PXX	PVC	X	X	X	X
PWF-S-BXX	Bronze	X	X		
-LPS	Installed on 16″ long pipe stub option (PVC only)	X	X	X	X

MODEL CHART - WELD/BRAZE FITTING

		PDWS-1XX	PDWS-2XX		
		3″	4″	6″	8″
Model	**Description**	**-0300**	**-0400**	**-0600**	**-0800**
PWF-W-BXX	Bronze	X	X	X	X
PWF-W-CXX	Carbon steel	X	X	X	X
PWF-W-SXX	316 stainless steel	X	X	X	X
-HP	High pressure option (SS or CS only)	X	X	X	X

Example: PWF-T-CFT-0050-SS
To order an all 316 SS female thread 1/2″ tee for Series PDWS-1XX Paddlewheel Flow Meter.

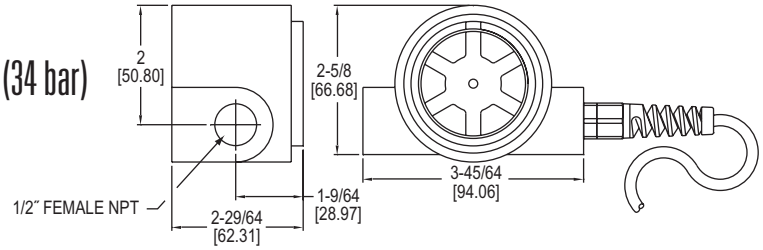
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES SF | W. E. ANDERSON® BY DWYER

SIGHT FLOW TRANSMITTER

±2% FS Accuracy, 4 to 20 mA Output, Pressure up to 500 psig (34 bar)



The **SERIES SF** Sight Flow Transmitter is a Series of sight indicators which can display flow or contents of pipelines and provide an analog 4 to 20 mA signal proportional to the flow rate. It is available with a 316 SS or clear polycarbonate cover.

FEATURES/BENEFITS
- Integrates tangential turbine technology with hermetically sealed circuitry to provide accurate flow measurement and control in the harshest environments
- 2-wire loop-powered design transmits a 4 to 20 mA signal proportional to flow rate for remote flow monitoring
- Clear polycarbonate viewing cover option for visible indication of flow
- 316 SS cover offers added protection with pressure limit up to 500 psig (34 bar)
- LED power indication, adjustable zero and span, polarity protection and over current limiting
- Accurately measures flow in both directions and can be mounted in any orientation

APPLICATIONS
- Cooling and lubrication circuits
- HVAC systems
- Aggressive chemical metering
- Batching systems

SPECIFICATIONS	
Service: Compatible liquids. **Wetted Materials:** 316 SS shaft and case, Iglide® bearings, Buna-N seal and acetal copolymer, (polycarbonate cover on Model SF11). **Flow Range:** 0.5 to 15 GPM (2 to 60 LPM). **Accuracy:** ±2% FS. **Repeatability:** 0.5% FS. **Temperature Limits:** 20 to 225°F (-7 to 107°C).	**Pressure Limits:** 500 psig (34 bar) Model SF10; 200 psig (14 bar) Model SF11. **Response Time:** 2 s to 90% (step change in flow rate). **Supply Voltage:** 12 to 35 VDC. **Output:** 4 to 20 mA. **Loop Resistance:** 1150 Ω max. **Process Connection:** 1/2″ female NPT. **Electrical Connection:** Wire leads: 22 AWG x 9′ (2.7 m). **Max. Particle Size:** 100µm. **Agency Approvals:** CE.

OPTIONS	
Use order code:	**Description**
NISTCAL-FT1	NIST traceable calibration certificate

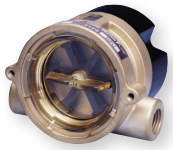
MODEL CHART	
Model	**Cover Material**
SF10	316 SS
SF11	Clear polycarbonate

Iglide® is a registered trademark of Igus GMBH

SERIES SF2

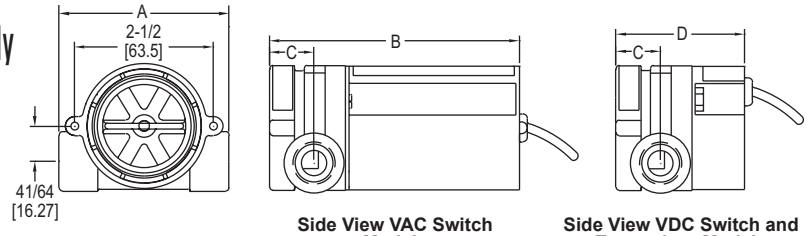
SIGHT FLOW METERS

SPDT or Pulse Output, Visual Flow Confirmation, Brass Body



SF2-1

SF2-2



DIMENSIONS in [mm]									
Model	**A**	**B**	**C**	**D**	**Model**	**A**	**B**	**C**	**D**
SF2-104	3-1/64 [76.6]	-	7/8 [22.23]	2-21/64 [59.13]	**SF2-134**	3-61/64 [100.41]	-	1-1/16 [26.99]	2-61/64 [75]
SF2-101	3-1/64 [76.6]	4-1/2 [114.3]	7/8 [22.23]	-	**SF2-131**	3-61/64 [100.41]	4-49/64 [121.05]	1-1/16 [26.99]	-
SF2-114	3-1/64 [76.6]	-	7/8 [22.23]	2-21/64 [59.13]	**SF2-204**	3-1/64 [76.6]	-	13/16 [20.64]	2-21/64 [59.13]
SF2-111	3-1/64 [76.6]	4-1/2 [114.3]	7/8 [22.23]	-	**SF2-214**	3-1/64 [76.6]	-	13/16 [20.64]	2-21/64 [59.13]
SF2-124	3-61/64 [100.41]	-	1-1/16 [26.99]	2-61/64 [75]	**SF2-224**	3-61/64 [100.41]	-	1-1/16 [26.99]	2-61/64 [75]
SF2-121	3-61/64 [100.41]	4-49/64 [121.05]	1-1/16 [26.99]	-	**SF2-234**	3-61/64 [100.41]	-	1-1/16 [26.99]	2-61/64 [75]

The **SERIES SF2** Sight Flow Transmitters combine visual confirmation of flow with a relay or pulse output. The SF2-1 offers a SPDT relay output and the SF2-2 offers a pulse output proportional to the rate of flow. The 4.5 to 24 VDC pulse output is compatible with most digital logic families.

FEATURES/BENEFITS
- Brass, solid body construction, one piece composite rotor, and ceramic shaft delivers durability with broader chemical, temperature, and pressure capabilities
- Set points are fully adjustable over the specified flow range
- The dynamic operation of the rotor guards against jamming and false actuation

APPLICATIONS
- Cooling and lubrication circuits
- HVAC systems
- Aggressive chemical metering
- Batching systems

SPECIFICATIONS	
Service: Liquids compatible with wetted parts. **Wetted Materials:** Brass body, ceramic pin, PPS rotor, Polysulfone lens and fluoroelastomer O-ring. **Accuracy:** Relay output: ±5%; Pulsed output: ±7% for ranges up to 5.0 GPM, ±15% for ranges up to 60.0 GPM. **Temperature Limits:** -20 to 212°F (-29 to 100°C). **Pressure Limit:** 200 psig (13.8 bar) @ 70°F. **Power Requirements:** See table.	**Output:** SPDT: 1 Amp, 24 VDC resistive; 0.3 Amp, 110 VAC or 4.5 VDC to 24 VDC pulse depending on model. **Electrical Connections:** Relay output models: 20AWG PVC-jacketed, 24″ cable; Pulsed output models: 22AWG PVC-jacketed, 24″ cable. **Process Connections:** See table. **Set Point Differential:** 15% max for relay output models. **Maximum Viscosity:** 200 SSU. **Agency Approvals:** CE.

MODEL CHART - SPDT RELAY OUTPUT			
Model	**Range (GPM)**	**Power**	**Connection**
SF2-104	0.5 to 5.0	24 VDC	1/4″ female NPT
SF2-101	0.5 to 5.0	110 VAC	1/4″ female NPT
SF2-114	4.0 to 20.0	24 VDC	1/2″ female NPT
SF2-111	4.0 to 20.0	110 VAC	1/2″ female NPT
SF2-124	5.0 to 30.0	24 VDC	3/4″ female NPT
SF2-121	5.0 to 30.0	110 VAC	3/4″ female NPT
SF2-134	8.0 to 60.0	24 VDC	1″ female NPT
SF2-131	8.0 to 60.0	110 VAC	1″ female NPT

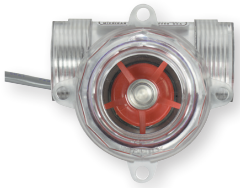
MODEL CHART - PULSED OUTPUT			
Model	**Range (GPM)**	**Power**	**Connection**
SF2-204	0.5 to 5.0	4.5 to 24 VDC	1/4″ female NPT
SF2-214	4.0 to 20.0	4.5 to 24 VDC	1/2″ female NPT
SF2-224	5.0 to 30.0	4.5 to 24 VDC	3/4″ female NPT
SF2-234	8.0 to 60.0	4.5 to 24 VDC	1″ female NPT

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

SERIES SFI-800 | W. E. ANDERSON® BY DWYER

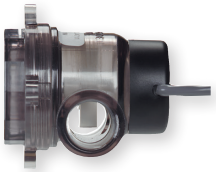
SIGHT FLOW INDICATOR/TRANSMITTER

Low Cost, Optional Output for Flow Rate and Totalization UV Stabilized Polycarbonate Model

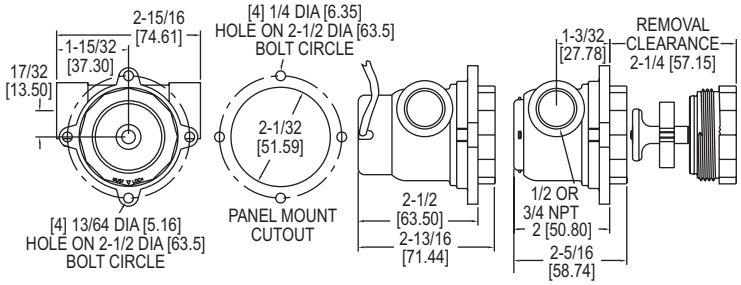


SFI-801

SFI-800



SFI with A-711 Option



SFI with A-711 Option

SFI Model Only

The **SERIES SFI-800** Sight Flow Indicators & Transmitters is a low cost, durable rotor style flow indicator with optional Hall Effect magnetic output packages to combine visual confirmation of flow with optional remote flow monitoring. There are three output sensors available, the A-711 offering two pulsed voltage signals proportional to flow rate, the A-712 which outputs a linear 1 to 10 VDC signal proportional to flow rate, and the A-713 which offers two programmable open collector switch outputs.
The Model A-711 is a unique and patent pending sensor that outputs two pulsed voltage signals with one providing a 5 VDC pulse and the other a pulse of the input supply voltage used, ranging from 8 to 18 VDC.
The Model A-712 is a sensor that outputs a linear 1 to 10 VDC signal proportional to flow rate.
The Model A-713 is a sensor with two programmable open collector switch outputs with one output closed above the set point and the other output closed below the set point ideal for low flow or high flow indication.

FEATURES/BENEFITS

- Constructed of clear plastic enabling 360° viewing of the rotor for easy flow indication
- SFI-800 models are constructed of Polysulfone with excellent chemical compatibility, high pressure and temperature ratings, and all wetted materials are FDA/NSF ratable for potable water applications
- SFI-801 models are constructed of UV stabilized Polycarbonate making them ideal for outdoor applications and easy view bright red impeller
- All three output packages cam be installed or replaced in the field without any tools and without removing the body from the process line
- Units are weather-tight for outdoor or wash-down area use
- A-713 features a user-friendly set point button which is set at the desired flow rate with red LED indication of switch status

APPLICATIONS

- Cooling and lubrication circuits
- HVAC systems
- Aggressive chemical metering
- Batching systems

SPECIFICATIONS

Service: Compatible fluids.
Wetted Materials: Body: SFI-800: Polysulfone; SFI-801: UV stabilized polycarbonate; Window: SFI-800: Polysulfone; SFI-801: UV stabilized polycarbonate; Rotor: SFI-800: White polysulfone; SFI-801: Red UV stabilized PBT; Rotor Pin: 316 SS; Thrust washers: 300 Series SS; O-ring: SFI-800: Fluoroelastomer (NSF grade); SFI-801: Buna-N.
Temperature Limits: SFI-800: -20 to 212°F (-29 to 100°C); SFI-801: -20 to 130°F (-29 to 55°C).
Pressure Limits: SFI-800: 150 psi (10.34 bar); SFI-801: 125 psi (8.62 bar).
Viscosity Max: 200 SSU.
Weight: SFI-800: 3.35 oz (95 g); SFI-800-A711: 5.0 oz (142 g).

ELECTRICAL SPECIFICATIONS (for A-711 Option Only)
Temperature Limits: -20 to 212°F (-29 to 100°C).
Power Requirements: 8 to 28 VDC.
Output Signal: White lead: 5 VDC; Green lead: 8 to 28 VDC equal to supply voltage. Pulsed output with frequency rate proportional to flow rate.
Accuracy: ±5% FS.
Frequency Output Range: 0 to 100 Hz.
Electrical Connections: Black lead - ground; White lead: 5 VDC out pulse; Green lead: 8 to 28 VDC out pulse; Red lead: 8 to 28 VDC supply.

ELECTRICAL SPECIFICATIONS (for A-712 option only)
Temperature Limits: -20 to 212°F (-29 to 100°C).
Power Requirements: 15 to 28 VDC.
Output Signal: White lead: 1 to 10 VDC.
Accuracy: ±5% FS.
Electrical Termination: Black lead: Ground; Red lead: 15 to 28 VDC input; White lead: 1 to 10 VDC output.

ELECTRICAL SPECIFICATIONS (for A-713 option only)
Temperature Limits: -20 to 212°F (-29 to 100°C).
Power Requirements: 8 to 28 VDC.
Output Signal: White lead: Normally open switch; Green lead: Normally closed switch. Both open collector, 100 mA max, 28 VDC max.
Electrical Connections: Black lead: Ground; White lead: Normally open; Green lead: Normally closed; Red lead: 8 to 28 VDC.

MODEL CHART - SENSOR ONLY

Model	Description
A-711	Pulsed output
A-712	1 to 10 VDC
A-713	Two open collectors
*Sensor only, not attached to the flow indicator body.	

MODEL CHART - BODY ONLY

Polysulfone Body Model	Description	Range GPM (LPM)	Connection Female NPT
SFI-800-1/2	Indicator only	2 to 20 (7.6 to 75.5)	1/2″
SFI-800-3/4	Indicator only	3 to 35 (11.4 to 132.5)	3/4″
SFI-800-1/2-LF	Indicator only	0.5 to 6.5 (1.9 to 24.6)	1/2″
Polycarbonate Body Model	**Description**	**Range GPM (LPM)**	**Connection Female NPT**
SFI-801-1/2	Indicator only	2 to 20 (7.6 to 75.5)	1/2″
SFI-801-3/4	Indicator only	3 to 35 (11.4 to 132.5)	3/4″
SFI-801-1/2-LF	Indicator only	0.5 to 6.5 (1.9 to 24.6)	1/2″

OPTIONS - BODY AND SENSORS ATTACHED

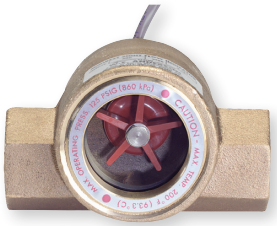
To order add suffix:	Description
-A711	A-711 attached to flow indicator body
Example: SFI-800-1/2-A711	
-A712	A-712 attached to flow indicator body
Example: SFI-800-1/2-A712	
-A713	A-713 attached to flow indicator body
Example: SFI-800-1/2-A713	

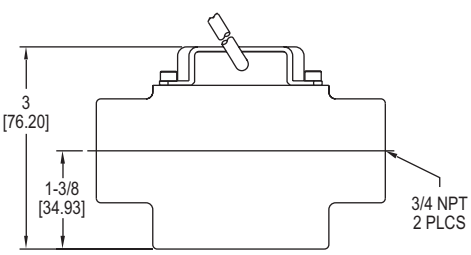
Dwyer

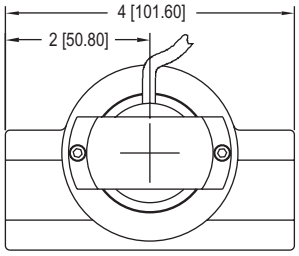
SERIES SFI-100T | W. E. ANDERSON® BY DWYER

SIGHT FLOW INDICATOR/TRANSMITTER

Output for Flow Rate and Totalization







The **SERIES SFI-100T** Sight Flow Indicators & Transmitters is a low cost and durable flow transmitter that combines our popular 100 Series Sight Flow Indicator with our A-711T output sensor for visual and remote monitoring of flow. The A-711T output sensor has two pulsed voltage signals with one providing a 5 VDC pulse, the other a pulse of the input supply voltage used, ranging from 8 to 28 VDC and a pulsed output with a frequency change proportional to the flow rate.

FEATURES/BENEFITS
- Constructed of a robust, solid brass body and a tempered glass window
- Bright red impeller yields great visual indication of flow through the window
- Front window can be easily unscrewed to clean out the sight flow indicator
- Ideal for outdoor applications with weatherproof body that is unaffected by UV light

APPLICATIONS
- Cooling and lubrication circuits
- HVAC systems
- Monitoring chilled or hot water flow
- Monitoring water flow in chillers

SPECIFICATIONS

Service: Compatible fluids.
Wetted Materials: Body: Brass; Window: Tempered glass; Rotor: Red UV stabilized PBT; Rotor pin: 316 SS; Thrust washers: 300 series SS; Gasket: Buna-N.
Temperature Limits: -20 to 200°F (-29 to 93°C).
Pressure Limits: 125 psi (8.62 bar).
Viscosity Max: 200 SSU.
Weight: SFI only: 1.5 lb (0.7 kg); with A-711T: 1.8 lb (0.8 kg).

ELECTRICAL SPECIFICATIONS
Temperature Limits: -20 to 212°F (-29 to 100°C).
Power Requirements: 8 to 28 VDC.
Output Signal: White lead: 5 VDC. Green lead: 8 to 28 VDC equal to supply voltage. Pulsed output with frequency rate proportional to flow rate.
Accuracy: ±5% FS.
Frequency Output Range: 0 to 100 Hz.
Mounting Orientation: Horizontal.
Electrical Connections: Black lead: Ground; White lead: 5 VDC out pulse; Green lead: 8 to 28 VDC out pulse; Red lead: 8 to 28 VDC supply.

MODEL CHART

Model	Description	Range GPM (LPM)	Connection Female NPT
SFI-100T-1/2-A711T	Brass indicator with A-711T sensor	2 to 20 (7.6 to 75.5)	1/2″
SFI-100T-3/4-A711T	Brass indicator with A-711T sensor	3 to 35 (11.4 to 132.5)	3/4″
A-711T	Output sensor package	-	-

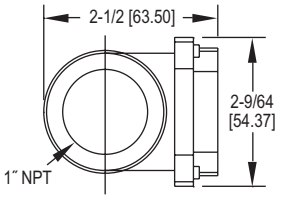
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

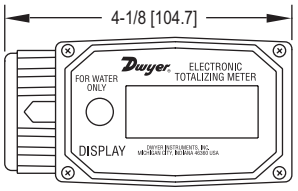
SERIES TTM

CE

ELECTRONIC TOTALIZING METER

Batch or Cumulative Totals, Easy-to-Read LCD Display, ±5% Accuracy





The **SERIES TTM** Electronic Totalizing Meter measures batch and cumulative totals in liquid transfer systems in Nylon or Aluminum for water or fuels. The meter is designed for any pump, pressure, or gravity feed system with a 3 to 30 GPM (10 to 100 LPM) flow range.

FEATURES/BENEFITS
- Easily view batch and cumulative totals on the large 4-digit LCD display
- Resettable batch totals ideal for totalizing a single use
- Cumulative total will automatically reset to zero when a maximum reading of 9999 is obtained
- Models designed for use in water applications are constructed of Nylon® and rated to 150 psig (10.3 bar)
- Aluminum models are calibrated for fuels and rated to 300 psig (20.7 bar)

APPLICATIONS
- Petrochemical
- Cooling towers
- De-icing in airports
- Pest control dispensing
- Chemical blending
- Onsite add water for concrete trucks

SPECIFICATIONS

Service: Compatible liquids.
Flow Range: 3 to 30 GPM (10 to 100 LPM).
Wetted Materials: Bearings: Ceramic; Shaft: Tungsten carbide; Rotor: Nylon 6-6; Rings: 316 SS; Body: TTM10, 11: Nylon 6-6, TTM20, 21: Aluminum; Other: TTM20, 21: Ceramic magnet.
Accuracy: ±5%.
Batch Total Maximum: 9999.
Cumulative Total Maximum: 9999.
Temperature Limits: 14 to 130°F (-10 to 54°C).
Pressure Limits: Nylon models: 150 psig (10 bar); Aluminum models: 300 psig (20 bar).
Pressure Drop: 2 psi (0.14 bar) @ 30 GPM (100 LPM).
Maximum Particulate Size: 350 microns.
Display: 4-digit LCD, 5/8″ H.
Auto Shut-off: After 1 minute.
Connections: 1″ female NPT.
Power Requirements: (2) AAA alkaline batteries, installed functional, user replaceable.
Battery Life: Approx. 9000 hours.
Weight: Nylon models: 0.4 lb (190 g); Aluminum models: 0.7 lb (340 g).
Agency Approvals: CE.

MODEL CHART

Model	Application	Body Material	Units
TTM10	Water*	Nylon	Gallons
TTM11	Water*	Nylon	Liters
TTM20	Fuels†	Aluminum	Gallons
TTM21	Fuels†	Aluminum	Liters

*Calibrated for use with water

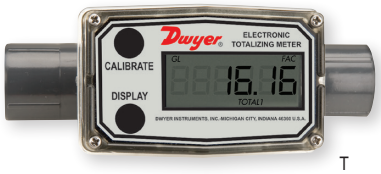
†Calibrated for use with gasoline, diesel fuel and kerosene

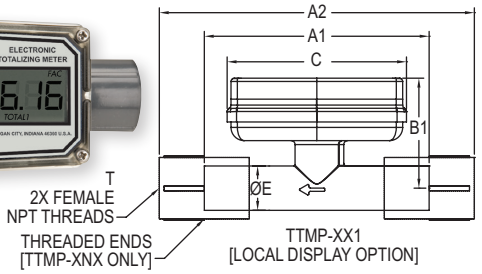
Dwyer

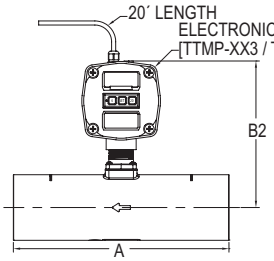
SERIES TTMP

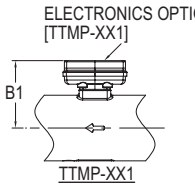
PVC ELECTRONIC TOTALIZING METER

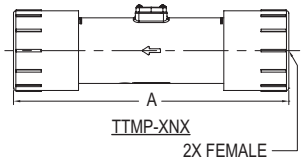
Batch or Cumulative Totals, Easy-to-Read LCD Display

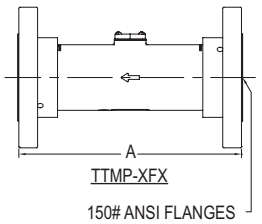












Model	Dimensions (in [mm])					
	A1	A2*	B1**	C	ØE	T*
TTMP-1XX	4-3/8 [111.00]	6-1/32 [153.16]	2-1/8 [54.10]	3-7/16 [87.38]	ø27/32 [21.34]	1/2″ NPT
TTMP-2XX	4-31/64 [113.79]	6-3/16 [156.97]	2-3/16 [55.63]	3-7/16 [87.38]	ø1-3/64 [26.67]	3/4″ NPT
TTMP-3XX	4-9/16 [116.08]	6-37/64 [167.13]	2-19/64 [58.42]	3-7/16 [87.38]	ø1-5/16 [33.53]	1″ NPT
TTMP-4XX	5-7/16 [138.18]	7-11/16 [195.33]	2-39/64 [66.29]	3-7/16 [87.38]	ø1-29/32 [48.26]	1-1/2″ NPT
TTMP-5XX	5-37/64 [141.73]	7-15/16 [201.68]	2-7/8 [72.90]	3-7/16 [87.38]	ø2-3/8 [60.45]	2″ NPT
TTMP-6XX	11-5/8 [295.40]	14-29/32 [378.71]	3-9/16 [90.42]	3-7/16 [87.38]	ø3-1/2 [88.90]	3″ NPT
TTMP-7XX	13-17/32 [343.66]	16-31/32 [431.04]	4-1/16 [103.12]	3-7/16 [87.38]	ø4-1/2 [114.30]	4″ NPT

*TTMP-XNX only; **TTMP-XX1 only

Model	Dimensions (in [mm])		
	A	B1**	B2***
TTMP-6SX	11-17/32 [292.89]	3-9/16 [90.42]	7-51/64 [198.04]
TTMP-6NX	14-29/32 [378.62]	3-9/16 [90.42]	7-51/64 [198.04]
TTMP-6FX	12-1/32 [305.59]	3-9/16 [90.42]	7-51/64 [198.04]
TTMP-7SX	13-17/32 [343.69]	4-1/16 [103.12]	8-19/64 [210.74]
TTMP-7NX	16-31/32 [431.01]	4-1/16 [103.12]	8-19/64 [210.74]
TTMP-7FX	14-1/32 [356.39]	4-1/16 [103.12]	8-19/64 [210.74]

**TTMP-XX1 only; ***TTMP-XX3/TTMP-XX6

The **SERIES TTMP** PVC Electronic Totalizing Meters offer batch and cumulative flow totals in a PVC construction for 1/2″ to 4″ pipe sizes with spigot, NPT or flange connections.

FEATURES/BENEFITS

- Compact modular design ideal for easy portability
- Easily alternate display from flow rate, batch or cumulative totals in one low cost unit
- Easy to read LCD display provides instantaneous local indication
- Included batteries featuring a 5 year life span with no added costs
- Immediate push button, field calibration eliminates downtime

APPLICATIONS

- Irrigation
- Municipal water monitoring

MODEL CHART					
Example	TTMP	-1	N	1	TTMP-1N1*
Series	TTMP				PVC electronic totalizing meter
Pipe Size		1			1/2″
		2			3/4″
		3			1″
		4			1-1/2″
		5			2″
		6			3″
		7			4″
Fitting Type			S		Spigot
			N		NPT female 1/2″ size
			N		NPT female 3/4″ size
			N		NPT female 1″ size
			N		NPT female 1-1/2″ size
			N		NPT female 2″ size
			N		NPT female 3″ size
			N		NPT female 4″ size
			F		150# ANSI flange 3″ size
			F		150# ANSI flange 4″ size
Electronics				1	Local display
				2	Pulse output
				3	4 to 20 mA output, no display**
				4	Pulse output, with display**
				5	4 to 20 mA output, with display**
				6	Scaled pulse output**

*1/2″ NPT PVC flowmeter with 2 button field configured computer
**Option only available in 3″ and 4″ options

SPECIFICATIONS

Service: Compatible fluids.
Flow Range: See flow chart.
Wetted Materials: 1/2 to 2″: PVC housing, ceramic bearings, tungsten carbide shaft, PVDF rotor, 316 stainless steel rings; 3 to 4″: PVC housing, PEEK® bearings, 316 stainless steel shaft & thrust washers, Acetal rotor & nose cone, ferrite signal generator.
Accuracy: 1/2″ to 2″: ±3% of reading; 3″ and 4″: ±2% of reading.
Batch Total Maximum: 999,999.
Cumulative Total Maximum: 99,999,900.
Temperature Limits: Process: 32 to 140°F (0 to 60°C); Storage: -40 to 158°F (0 to 70°C).
Pressure Limits: 1/2″ to 2″: 225 psig (15 bar) @ 73°F; 3″ and 4″: 135 psig (9.3 bar) @ 73°F.
Display: 6-digit LCD, 3/4″ H.
Process Connections: See model chart.
Power Requirements: TTMP-XX1: (2) 3V primary lithium metal batteries, installed functional, user replaceable; TTMP-XX3 to TTMP-XX6: (1) 9V primary lithium metal battery, installed functional, user replaceable or 7V to 30V external power.
Battery Life: TTMP-XX1: Approximately 5 years; TTMP-XX3 to TTMP-XX6: Approximately 4 years.
Weight: See weight chart.
Agency Approvals: CE.

Connection	Flow Range GPM (LPM)	Pressure Drop @ Max Flow Rate (Bar)	Weight lb (kg)
1/2″ spigot	1-10 (3.8-37.9)	14 psi (0.97)	0.38 (0.17)
3/4″ spigot	2-20 (7.6-75.7)	7.5 psi (0.52)	0.43 (0.20)
1″ spigot	5-50 (18.9-189)	15 psi (1.03)	0.49 (0.22)
1-1/2″ spigot	10-100 (37.9-379)	3 psi (0.21)	0.66 (0.30)
2″ spigot	20-200 (75.7-758)	4 psi (0.28)	0.78 (0.35)
3″ spigot	40-400 (152-1516)	3 psi (0.21)	2.4 (1.09)
4″ spigot	60-600 (227-2274)	5 psi (0.34)	3.7 (1.68)
1/2″ female NPT	1-10 (3.8-37.9)	14 psi (0.97)	0.55 (0.25)
3/4″ female NPT	2-20 (7.6-75.7)	7.5 psi (0.52)	0.67 (0.30)
1″ female NPT	5-50 (18.9-189)	15 psi (1.03)	0.49 (0.22)
1-1/2″ female NPT	10-100 (37.9-379)	3 psi (0.21)	1.38 (0.63)
2″ female NPT	20-200 (75.7-758)	4 psi (0.28)	1.78 (0.81)
3″ female NPT	40-400 (152-1516)	3 psi (0.21)	3.9 (1.77)
4″ female NPT	60-600 (227-2274)	5 psi (0.34)	6.1 (2.77)
3″ ANSI flange	40-400 (152-1516)	3 psi (0.21)	5.8 (2.63)
4″ ANSI flange	60-600 (227-2274)	5 psi (0.34)	9.2 (4.17)

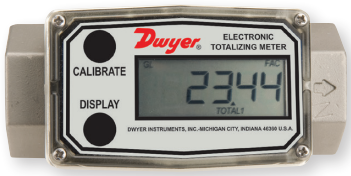
PEEK® is a registered trademark of Victrex.

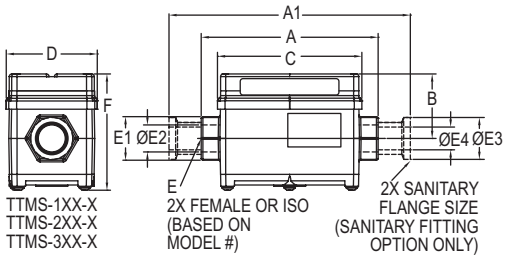
Dwyer

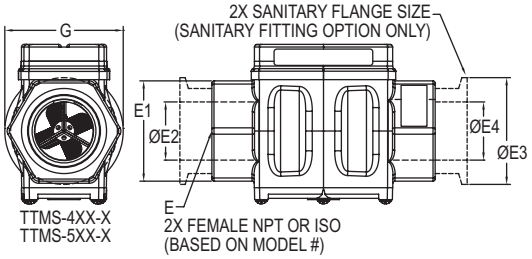
SERIES TTMS

METAL ELECTRONIC TOTALIZING METER

Batch or Cumulative Totals, Easy-to-Read LCD Display







Model	Dimensions (in [mm])						ISO Sizes						Weight	Flow Range
	A	A1	B	C	D	E	E1	E2	E3	E4	F	G	lb (kg)	GPM (LPM)
TTMS-1RX-X	4-5/32	5	1-31/64	3-7/16	2-11/64	1/2″	1-1/32	35/64	63/64	35/64	2-45/64	2-11/64	1.8	1-10
	[105.66]	[127.00]	[37.59]	[87.38]	[55.12]		[26.01]	[13.72]	[25.02]	[13.72]	[68.58]	[55.12]	(0.82)	(3.8-37.9)
TTMS-2RX-X	4-1/4	5	1-19/32	3-7/16	2-11/64	3/4″	1-17/64	43/64	1-63/64	43/64	2-29/32	2-11/64	2.0	2-20
	[107.95]	[127.00]	[40.39]	[87.38]	[55.12]		[32.00]	[17.15]	[50.29]	[17.15]	[73.91]	[55.12]	(0.91)	(7.6-75.7)
TTMS-3RX-X	4-1/2	5-1/2	1-51/64	3-7/16	2-11/64	1″	1-39/64	7/8	1-63/64	7/8	3-13/64	2-11/64	2.4	5-50
	[114.30]	[139.70]	[45.72]	[87.38]	[55.12]		[41.00]	[22.23]	[50.29]	[22.23]	[81.28]	[55.12]	(1.09)	(18.9-189)
TTMS-4RX-X	5-1/4	6-1/2	2	3-7/16	2-11/64	1-1/2″	2-23/64	1-3/8	2-33/64	1-3/8	3-45/64	2-27/32	4.0	10-100
	[133.35]	[165.10]	[50.80]	[87.38]	[55.12]		[59.89]	[34.93]	[63.75]	[34.93]	[94.23]	[72.14]	(1.81)	(37.9-379)
TTMS-5RX-X	6-1/4	7	2-7/32	3-7/16	2-11/64	2″	3	1-3/4	2-33/64	1-3/4	4-3/16	3-3/8	6.3	20-200
	[158.75]	[177.80]	[56.39]	[87.38]	[55.12]		[76.15]	[44.45]	[63.75]	[44.45]	[106.43]	[85.85]	(2.86)	(75.7-757)

The **SERIES TTMS** 316 SS Electronic Totalizing Meters offer batch and cumulative flow totals in a stainless steel construction for 1/2″ to 2″ pipe sizes with ISO, NPT, or sanitary fitting connections.

FEATURES/BENEFITS

- Compact modular design ideal for easy portability
- Easily alternate display from flow rate, batch or cumulative totals in one low cost unit
- Easy to read LCD display provides instantaneous local indication
- Included batteries featuring a 5 year life span with no added costs
- Immediate push button, field calibration eliminates downtime

APPLICATIONS

- Chemical batching
- Petrochemical
- Food & beverage liquid flow monitoring
- Municipal water monitoring

MODEL CHART						
Example	**TTMS**	**-1**	**R**	**N**	**-CE**	**TTMS-1RN-CE***
Series	TTMS					Metal electronic totalizing meter
Pipe Size		1 2 3 4 5				1/2″ 3/4″ 1″ 1-1/2″ 2″
Material			R			Stainless steel
Fitting Type				I N S		ISO female NPT female Sanitary fitting
Approval					CE	
*1/2″ NPT stainless steel flowmeter with 2 button field configured computer						

SPECIFICATIONS

Service: Compatible liquids.
Flow Range: 1/2″: 1 to 10 gpm (3.8 to 37.9 lpm); 3/4″: 2 to 20 gpm (7.6 to 75.7 lpm); 1″: 5 to 50 gpm (18.9 to 190 lpm); 1-1/2″: 10 to 100 gpm (38 to 380 lpm); 2″: 20 to 200 gpm (76 to 760 lpm).
Wetted Materials: Bearings: Ceramic; Shaft: Tungsten carbide; Rotor: PVDF; Rings: 316 SS; Body: SS.
Accuracy: ±2.0% of reading.
Repeatability: ±0.1%.
Batch Total Maximum: 999,999.
Cumulative Total Maximum: 99,999,900.
Temperature Limits: Computer: 0 to 140°F (-18 to 60°C); No computer: -40 to 250°F (-40 to 121°C).
Pressure Limits: NPT: 1500 psig (102 bar); Sanitary fitting: 100 psig (6.9 bar).
Display: 6-digit LCD, 3/4″ H.
Connections: ISO, NPT or sanitary fitting options.
Power Requirements: (2) 3V lithium, installed functional, user replaceable.
Battery Life: 5 years.
Weight: 1/2″: 2.36 lb (1.07 kg); 3/4″: 2.74 lb (1.24 kg); 1″: 4.00 lb (1.81 kg); 1-1/2″: 4.76 lb (2.16 kg); 2″: 6.52 lb (2.96 kg).
Agency Approvals: CE.

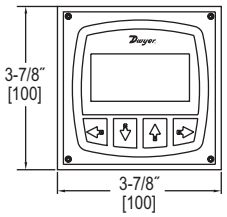
Dwyer

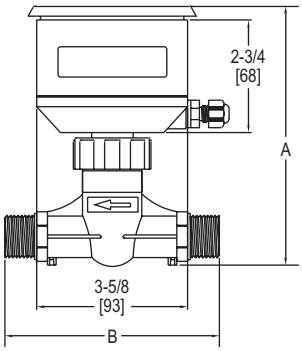
SERIES DFMT & DFMT2

DIGITAL PADDLEWHEEL FLOW TRANSMITTER

Flow and Total Indication, Easy to Read LCD Display, 4 to 20 mA or Pulse Output

DFMT

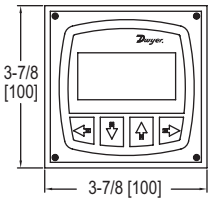


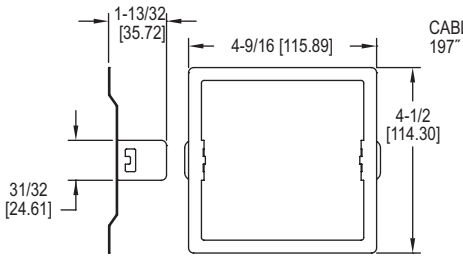


DFMT

Connection	A	B
3/8″	6″ (152 mm)	4-3/4″ (121 mm)
1/2″	6″ (152 mm)	5-1/8″ (130 mm)
3/4″	6-1/4″ (158 mm)	5-5/8″ (142 mm)
1″	6-1/4″ (158 mm)	5-1/2″ (141 mm)
1-1/2″	6-5/8″ (168 mm)	6-7/8″ (175 mm)
2″	7-1/4″ (184 mm)	6-7/8″ (175 mm)

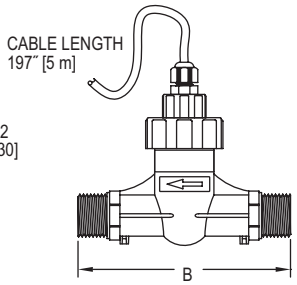
DFMT2





Remote Mounting Bracket
(Stainless Steel)

DFMT2



DFMT2

The **SERIES DFMT** Digital Paddlewheel Flow Transmitter provides instantaneous, as well as totalizing flow monitoring. The unit offers a user selectable 4 to 20 mA or pulse output with compact display.

FEATURES/BENEFITS

- The large backlit LCD display defines instantaneous as well as cumulative flow with visual indication bar designating percent of max flow
- Long operation life with high accuracy paddlewheel technology and corrosion resistant PVDF sensor
- Totalizer is user resettable at any time ideal for single batch totalization
- Security password protecting prevents any unauthorized changes

APPLICATIONS

- Cooling towers
- Chemical proportioning or blending
- Industrial water & wastewater treatment
- Cooling water monitoring
- Fluctuating fluid conductivity applications
- Reverse osmosis systems

The **SERIES DFMT2** Remote Digital Paddlewheel Flow Transmitter provides instantaneous, as well as totalizing flow monitoring. The unit offers a user selectable 4 to 20 mA or pulse output with remote display.

FEATURES/BENEFITS

- Two piece design allows the user to separate the control display from the application, making it ideal in areas where space is limited
- The large backlit LCD display defines instantaneous as well as cumulative flow with visual indication bar designating percent of max flow
- Long operation life with high accuracy paddlewheel technology and corrosion resistant PVDF sensor
- Totalizer is user resettable at any time ideal for single batch totalization
- Security password protecting prevents any unauthorized changes

APPLICATIONS

- Reverse osmosis systems
- Remote flow monitoring
- Cooling towers
- Chemical proportioning or blending
- Industrial water & wastewater treatment
- Cooling water monitoring
- Fluctuating fluid conductivity applications

SPECIFICATIONS

Service: Compatible clean liquids.
Range: See model chart.
Wetted Materials: Sensor and impeller: PVDF; Shaft: Ceramic; O-rings: Fluoroelastomer.
Accuracy: ±1.5% FS.
Repeatability: ±0.5% FS.
Output: Analog: 4 to 20 mA (750 Ω max. loop resistance); Pulse: NPN square wave output; Frequency: 0 to 2 kHz (adjustable); Pulse width: 0 to 1000 ms (adjustable).
Electrical Connections: Removable screw terminal.
Temperature Limits: Process: -4 to 194°F (-20 to 90°C); Ambient: -4 to 149°F (-20 to 65°C).
Pressure Limit: 145 psi (1.0 MPa).
Power Requirements: 12 to 24 VDC.
Power Consumption: 2 W.
Display: 2.38 x 1.25″ (60.33 x 31.75 mm) LCD.
Totalizing Display Maximum: 9,999,999,999.
Process Connection: See model chart.
Enclosure Rating: IP65.
Enclosure Material: ABS plastic.
Weight: See model chart.

MODEL CHART

Model	Range GPM (m³/h)	Connection	Weight lb (kg)
DFMT-10A	0.44 to 7.93 (0.1 to 1.8)	3/8″ NPT	1.06 (0.48)
DFMT-15A	0.88 to 17.61 (0.2 to 4)	1/2″ NPT	1.10 (0.5)
DFMT-20A	1.32 to 26.42 (0.3 to 6)	3/4″ NPT	1.15 (0.52)
DFMT-25A	2.20 to 52.83 (0.5 to 12)	1″ NPT	1.23 (0.56)
DFMT-40A	6.61 to 105.67 (1.5 to 24)	1-1/2″ NPT	1.46 (0.66)
DFMT-50A	8.81 to 176.11 (2 to 40)	2″ NPT	1.68 (0.76)

MODEL CHART

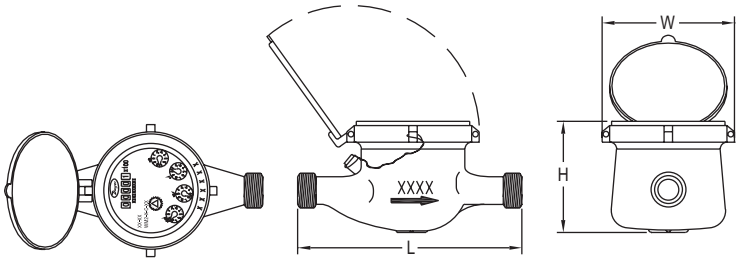
Model	Range GPM (m³/h)	Connection	Weight lb (kg)
DFMT2-10A	0.44 to 7.93 (0.1 to 1.8)	3/8″ NPT	1.76 (0.8)
DFMT2-15A	0.88 to 17.61 (0.2 to 4)	1/2″ NPT	1.81 (0.82)
DFMT2-20A	1.32 to 26.42 (0.3 to 6)	3/4″ NPT	1.85 (0.84)
DFMT2-25A	2.20 to 52.83 (0.5 to 12)	1″ NPT	1.94 (0.88)
DFMT2-40A	6.61 to 105.67 (1.5 to 24)	1-1/2″ NPT	2.20 (1.0)
DFMT2-50A	8.81 to 176.11 (2 to 40)	2″ NPT	2.43 (1.1)

Dwyer

SERIES WM2

MULTI-JET WATER METER

Economical, Brass Body, Dry Dial



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)	3-45/64 (94)	4-15/64 (107.5)	3.75 (1.7)
5/8 x 3/4	1″ (1″)	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	3.97 (1.8)
3/4 (20)	1″ (1″)	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	4.9 (2.2)
1 (25)	1-1/4″ (1-1/4″)	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	6.4 (2.9)
1-1/4 (32)	1-1/2″ (1-1/2″)	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	8.2 (3.7)
1-1/2 (40)	2″ (2″)	11-13/16 (300)	4-51/64 (122)	5-9/16 (141.5)	13.52 (6.17)
2 (50)	2-1/2″ (2-1/2″)	11-13/16 (300)	5-45/64 (145)	6-31/32 (177)	18.74 (8.5)

The **SERIES WM2** Multi-Jet Water Meters is a series of mechanical, water totalizing meters that display the total water usage in gallons or m^3. They are available in a range of body sizes and include NPT or BSPT couplings.

FEATURES/BENEFITS

- 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, even under harsh conditions
- Integral strainer that protects meter from particulate damage
- Easy installation with included coupling adapters

APPLICATIONS

- Irrigation
- Cooling systems
- Filtration systems
- Water monitoring

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Brass, polyethylene; Couplings: Brass; Measuring Chamber: Polyethylene, ABS plastic, ferrite, acetal.
Flow Range: See model chart.
Accuracy: Transitional flow: ±5%; Nominal flow: ±2%.
Temperature Limit: 104°F (40°C).
Pressure Limit: 232 psi (16 bar).
Totalizing Display Maximum: See model chart.
Mounting Orientation: Horizontal with the register face pointing up.
Weight: See dimension chart.

MODEL CHART

Model	Size	Coupling Size	Max Flow GPM (Gallons Per Minute)	Nominal Flow Range	Transitional Flow	Display Max (Gallons)
WM2-A-C-01	5/8 x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99
WM2-A-C-02	5/8 x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99
WM2-A-C-03	3/4″	3/4″ NPT	30	2 to 30	0.5	99,999,999.9
WM2-A-C-04	1″	1″ NPT	50	3 to 50	0.75	99,999,999.9
WM2-A-C-06	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	99,999,999.9
WM2-A-C-07	2″	2″ NPT	160	8 to 160	2	99,999,999.9

MODEL CHART

Model	Size	Coupling Size	Max Flow m^3/h	Nominal Flow Range	Transitional Flow	Display Max (m^3)
WM2-B-C-08	15 mm	1/2″ BSPT	3	0.12 to 1.5	0.03	99,999.9999
WM2-B-C-10	20 mm	3/4″ BSPT	5	0.2 to 2.5	0.05	99,999.9999
WM2-B-C-11	25 mm	1″ BSPT	7	0.28 to 3.5	0.07	99,999.9999
WM2-B-C-12	32 mm	1-1/4″ BSPT	12	0.48 to 6	0.12	99,999.9999
WM2-B-C-13	40 mm	1-1/2″ BSPT	20	0.8 to 10	0.2	999,999.9999
WM2-B-C-14	50 mm	2″ BSPT	30	1.2 to 15	0.3	999,999.9999

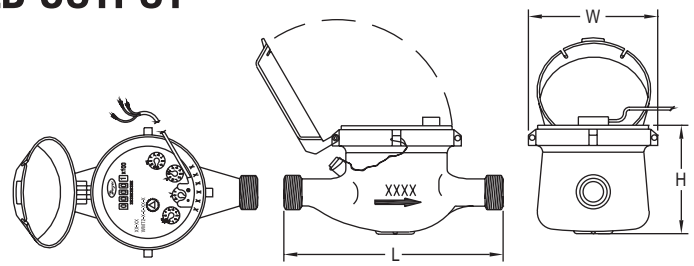
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES WMT2

MULTI-JET WATER METER WITH PULSED OUTPUT

Economical, Brass Body, Dry Dial, Pulsed 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)	3-45/64 (94)	4-15/64 (107.5)	3.75 (1.7)
5/8 x 3/4	1″ (1″)	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	3.97 (1.8)
3/4 (20)	1″ (1″)	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	4.9 (2.2)
1 (25)	1-1/4″ (1-1/4″)	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	6.4 (2.9)
1-1/4 (32)	1-1/2″ (1-1/2″)	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	8.2 (3.7)
1-1/2 (40)	2″ (2″)	11-13/16 (300)	4-51/64 (122)	5-9/16 (141.5)	13.52 (6.17)
2 (50)	2-1/2″ (2-1/2″)	11-13/16 (300)	5-45/64 (145)	6-31/32 (177)	18.74 (8.5)

The **SERIES WMT2** Multi-Jet Water Meters is a series of mechanical, water totalizing meters that display the total water usage in gallons or m³ and provide a reed switch output proportional to flow rate. They are available in a range of body sizes and include NPT or BSPT couplings.

FEATURES/BENEFITS

- 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, even under harsh conditions
- Integral strainer that protects meter from particulate damage
- Easy installation with included coupling adapters
- Pulsed output proportional to flow allows for remote flow totalization

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Brass, polyethylene; Couplings: Brass; Measuring chamber: Polyethylene, ABS plastic, ferrite, acetal.
Flow Range: See model chart.
Accuracy: Transitional flow: ±5%; Nominal flow: ±2%.
Temperature Limit: 104°F (40°C).
Pressure Limit: 232 psi (16 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 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 the register face pointing up.
Weight: See dimension chart.

APPLICATIONS

- Irrigation
- Cooling systems
- Filtration systems
- Water monitoring

MODEL CHART

Model	Size	Coupling Size	Max Flow GPM (Gallons Per Minute)	Nominal Flow Range GPM (Gallons Per Minute)	Transitional Flow GPM (Gallons Per Minute)	Display Max (Gallons)	Pulse Rate (Gal./Pulse)
WMT2-A-C-01	5/8 x 1/2′	1/2′ NPT	20	1 to 10	0.25	9,999,999.99	0.1
WMT2-A-C-02	5/8 x 3/4′	3/4′ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WMT2-A-C-03*	3/4′	3/4′ NPT	30	2 to 30	0.25	9,999,999.99	0.1
WMT2-A-C-04	1′	1′ NPT	50	3 to 50	0.75	99,999,999.9	0.1
WMT2-A-C-01-1	5/8 x 1/2′	1/2′ NPT	20	1 to 10	0.25	9,999,999.99	1
WMT2-A-C-02-1	5/8 x 3/4′	3/4′ NPT	20	1 to 20	0.25	9,999,999.99	1
WMT2-A-C-03-1*	3/4′	3/4′ NPT	30	2 to 30	0.25	9,999,999.99	1
WMT2-A-C-04-1	1′	1′ NPT	50	3 to 50	0.75	99,999,999.9	1
WMT2-A-C-06-10	1-1/2′	1-1/2′ NPT	100	5 to 100	1.5	99,999,999.9	10
WMT2-A-C-07-10	2′	2′ NPT	160	80 to 160	2	99,999,999.9	10
WMT2-A-C-04-100	1′	1′ NPT	50	3 to 50	0.75	99,999,999.9	100
WMT2-A-C-07-100	2′	2′ NPT	160	80 to 160	2	99,999,999.9	100

*Does not include inlet filter.

MODEL CHART

Model	Size	Coupling Size	Max Flow m³/h	Nominal Flow Range m³/h	Transitional Flow m³/h	Display Max (m³/h)	Pulse Rate (L/Pulse)
WMT2-B-C-08-1	15 mm	1/2′ BSPT	3	0.12 to 1.5	0.03	99,999.9999	1
WMT2-B-C-10-1*	20 mm	3/4′ BSPT	5	0.2 to 2.5	0.05	99,999.9999	1
WMT2-B-C-11-1	25 mm	1′ BSPT	7	0.25 to 3.5	0.07	99,999.9999	1
WMT2-B-C-12-1	32 mm	1-1/4′ BSPT	12	0.48 to 6	0.12	99,999.9999	1
WMT2-B-C-08-10	15 mm	1/2′ BSPT	3	0.12 to 1.5	0.03	99,999.9999	10
WMT2-B-C-12-10	32 mm	1-1/4′ BSPT	12	0.48 to 6	0.12	99,999.9999	10
WMT2-B-C-14-10	50 mm	2′ BSPT	30	1.2 to 15	0.3	999,999.9999	10
WMT2-B-C-12-100	32 mm	1-1/4′ BSPT	12	0.48 to 6	0.12	99,999.9999	100
WMT2-B-C-14-100	50 mm	2′ BSPT	30	1.2 to 15	0.3	999,999.9999	100

*Does not include inlet filter.

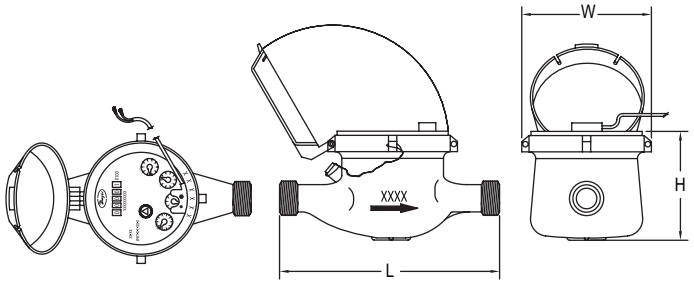
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES WMH

MULTI-JET HOT WATER METER

High Temperature Threshold, Pulsed 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)	3-45/64 (94)	4-15/64(107.5)	3.75(1.7)
5/8 x 3/4	1″(1″)	7-1/2(190)	3-45/64(94)	4-15/64(107.5)	3.97(1.8)
3/4 (20)	1″(1″)	7-1/2(190)	3-45/64(94)	4-15/64(107.5)	4.9(2.2)
1 (25)	1-1/4″(1-1/4″)	10-1/4(260)	3-55/64(98)	4-5/8(117.5)	6.4(2.9)
1-1/4 (32)	1-1/2″(1-1/2″)	10-1/4 (260)	3-55/64(98)	4-5/8(117.5)	8.2(3.7)
1-1/2 (40)	2″(2″)	11-13/16 (300)	4-51/64(122)	5-9/16(141.5)	13.52 (6.17)
2 (50)	2-1/2″(2-1/2″)	11-13/16 (300)	5-45/64(145)	6-31/32(177)	18.74 (8.5)

The **SERIES WMH** High Temperature Multi-Jet Water Meters are 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 high temperature resistant brass body is compatible in applications with high temperature water no suitable with standard brass water meters and maintains its accuracy.

FEATURES/BENEFITS

- High temperature threshold of 190°F (88°C) ideal for high temperature applications
- 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

SPECIFICATIONS

Service: Water.
Wetted Materials: Body: Brass; Couplings: Brass; Measuring Chamber: Brass.
Flow Range: See model chart.
Accuracy: WMH-A-X-XX: Transitional Flow: ±3%; Nominal Flow: ±1.5%.
Temperature Limit: 190°F (88°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: 0.01A @ 24VAC/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

APPLICATIONS

- HVAC applications
- Measuring total condenser water flow in residential, commercial and industrial applications
- Remote hot water monitoring

MODEL CHART

Model	Size	Coupling Size	GPM (Gallons Per Minute) Max Flow	Nominal Flow Range	Transitional Flow	Display Max (Gallons)	Pulse Rate (Gal/Pulse)
WMH-A-C-01	5/8″ x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WMH-A-C-02	5/8″ x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	0.1
WMH-A-C-03	3/4″ SL	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	0.1
WMH-A-C-04	3/4″	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	0.1
WMH-A-C-05	3/4 x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	0.1
WMH-A-C-06	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	0.1
WMH-A-C-01-1	5/8″ x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	1
WMH-A-C-02-1	5/8″ x 3/4	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	1
WMH-A-C-03-1	3/4″ SL	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	1
WMH-A-C-04-1	3/4″	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	1
WMH-A-C-05-1	3/4 x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	1
WMH-A-C-06-1	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	1
WMH-A-C-07-1	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	9,999,999.9	1
WMH-A-C-08-1	2″	2″ NPT	160	8 to 160	2	9,999,999.9	1
WMH-A-C-01-10	5/8 x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	10
WMH-A-C-02-10	5/8 x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	10
WMH-A-C-03-10	3/4″ SL	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	10
WMH-A-C-04-10	3/4″	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	10
WMH-A-C-05-10	3/4 x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	10
WMH-A-C-06-10	1″	1″ NPT	50	3 to 50	0.75	9,999,999.99	10
WMH-A-C-07-10	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	9,999,999.9	10
WMH-A-C-08-10	2″	2″ NPT	160	8 to 160	2	9,999,999.9	10

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

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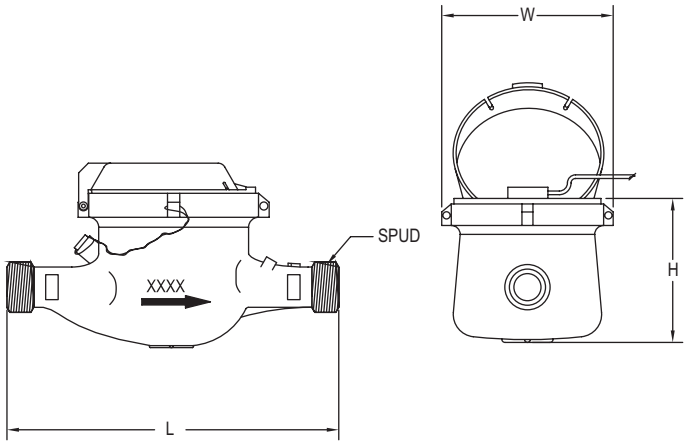
SERIES WNT

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 NSF Certified Water Meters 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

- NSF/ANSI 61 approval makes it ideal for no lead portable water requirements
- Multi-jet design allows for simplicity and accuracy with side 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: CE, 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

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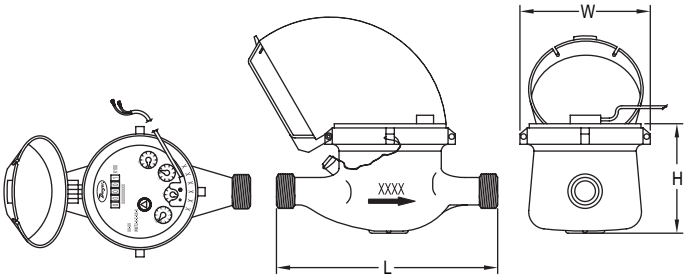
SERIES WPT

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** Plastic Multi-Jet Water Meters are 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® ; 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

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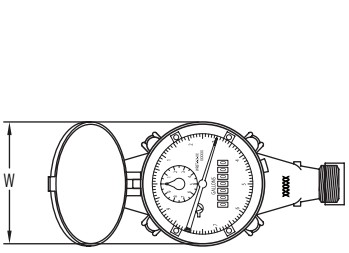
SERIES WRBT

MULTI-JET WATER METER WITH REMOVABLE BOTTOM

Easy Clean Access, Lead Free



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″)	7-1/2 (190)	3-13/16 (97)	4-3/4 (121)	4.38 (1.99)
5/8 x 3/4	1″ (1″)	7-1/2 (190)	3-13/16 (97)	4-3/4 (121)	4.6 (2.09)
3/4 SL (20)	1″ (1″)	7-1/2 (190)	3-13/16 (97)	4-3/4 (121)	4.6 (2.09)
3/4 (20)	1″ (1″)	9 (229)	3-13/16 (97)	4-3/4 (121)	4.6 (2.09)
1 (25)	1″ (1″)	9 (229)	4-3/4 (111)	4-3/4 (111)	5.2 (2.34)
1-1/4 (32)	1-1/4″ (1-1/4″)	10-3/4 (273)	4-3/4 (111)	5-1/8 (130)	7.1 (3.22)
1-1/2 (40)	2″ (2″)	9-5/8 (245)	5-3/4 (146)	6-1/4 (159)	11.3 (5.13)
2 (50)	2-1/2″ (2-1/2″)	11-1/2 (292)	6 (152)	6-3/4 (171)	15 (6.80)

The **SERIES WRBT** Removable Bottom Multi-Jet Water Meters are 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 ECO BRASS® body incorporates a removable section that easily disassembles for easy cleaning of any collected debris that may collect in the system while maintaining its performance.

FEATURES/BENEFITS

- Removable bottom allows for easy entry for cleaning
- 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

- Agricultural
- Irrigation
- HVAC applications
- Measuring total condenser water flow in residential, commercial and industrial applications

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: 10 gal or 100 gal 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.

MODEL CHART

Model	Size	Coupling Size	GPM (Gallons Per Minute) Max Flow	Nominal Flow Range	Transitional Flow	Display Max (Gallons)	Pulse Rate (Gal/Pulse)
WRBT-A-C-01-10	5/8 x 1/2″	1/2″ NPT	20	1 to 20	0.25	9,999,999.99	10
WRBT-A-C-02-10	5/8 x 3/4″	3/4″ NPT	20	1 to 20	0.25	9,999,999.99	10
WRBT-A-C-03-10	3/4″ SL	3/4″ NPT SL	30	2 to 30	0.5	9,999,999.99	10
WRBT-A-C-04-10	3/4″	3/4″ NPT	30	2 to 30	0.5	9,999,999.99	10
WRBT-A-C-05-10	3/4 x 1″	1″ NPT	30	2 to 30	0.5	9,999,999.99	10
WRBT-A-C-06-10	1″ L	1″ NPT L	50	3 to 50	0.75	9,999,999.99	10
WRBT-A-C-07-100	1-1/2″	1-1/2″ NPT	100	5 to 100	1.5	9,999,999.9	100
WRBT-A-C-08-100	2″	2″ NPT	160	8 to 160	2	9,999,999.9	100

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

ECO BRASS® is a registered trademark patent by Mitsubishi Shindoh

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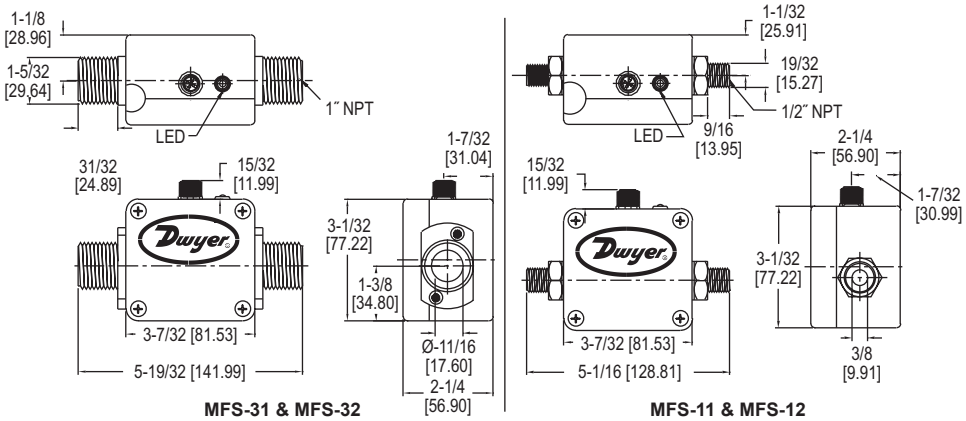
SERIES MFS & MFS2

MAGNETIC INDUCTIVE FLOW SENSOR

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

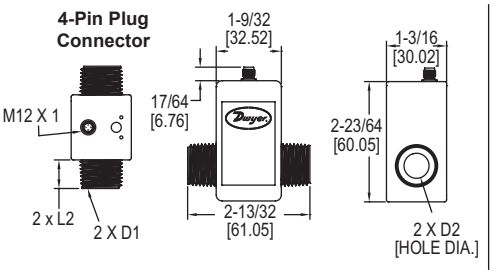
MFS



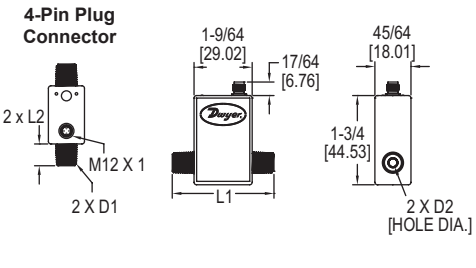
MFS-31 & MFS-32

MFS-11 & MFS-12
MFS-21 & MFS-22

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"



MFS2-6



MFS2-1/5

The **SERIES MFS & MFS2** Electromagnetic Flow Transmitters is a compact, 316 SS body, in line flowmeter with pulse and optional analog 4 to 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 & 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 to 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 & 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)

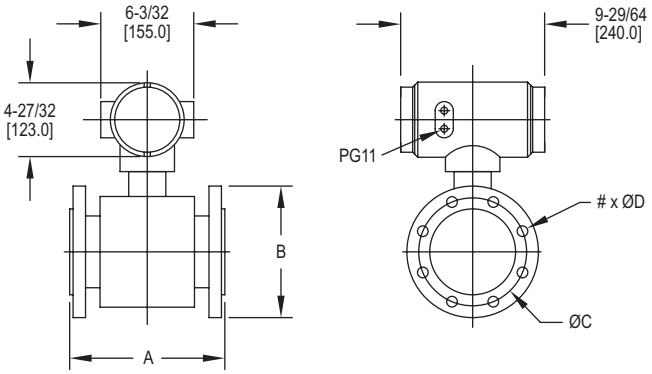
MFS-X 4 Pin Cable

Dwyer

SERIES FLM

FLANGED ELECTROMAGNETIC FLOW TRANSMITTER

No Moving Parts, Minimal Straight Pipe Requirement, Unobstructed Flow, Modbus® or BACnet Communication Options



DIMENSIONS IN (MM)					
Model	A	ØB	ØC	ØD	N (# BOLT HOLES)
FLM-BLRS-0025-R-M	5-29/32 (150)	4-17/32 (115)	3-11/32 (85)	9/16 (14)	4
FLM-BLRS-0040-R-M	7-7/8 (200)	5-29/32 (150)	4-11/32 (110)	23/32 (18)	4
FLM-BLRS-0050-R-M	7-7/8 (200)	6-1/2 (165)	4-29/32 (125)	23/32 (18)	4
FLM-BLRS-0065-R-M	7-7/8 (200)	7-9/32 (185)	5-23/32 (145)	23/32 (18)	4
FLM-BLRS-0080-R-M	7-7/8 (200)	7-7/8 (200)	6-5/16 (160)	23/32 (18)	8
FLM-BLRS-0100-R-M	9-27/32	8-21/32 (220)	7-3/32 (180)	23/32 (18)	8
FLM-BLRS-0125-R-M	9-27/32 (250)	9-27/32 (250)	8-9/32 (210)	23/32 (18)	8
FLM-BLRS-0150-R-M	11-13/16 (300)	11-7/32 (285)	9-7/16 (240)	7/8 (22)	8

The **SERIES FLM** Flanged Electromagnetic Flow Transmitter is a flanged, in-line flowmeter designed for use in pipe sizes ranges from 1″ to 40″ (25 to 1000 mm)*. This series displays flow rate and total with current analog output.

FEATURES/BENEFITS

- Long life cycle and less frequent maintenance with no moving parts to wear or break and electrodes that discourage fouling
- Minimal space requirement between the meter and a pipe elbow
- Rate and total indication are standard on large LCD display
- Obstruction-free pipe cross-section yields low pressure drop
- Unaffected by change in temperature, density, viscosity or concentration
- Pulse output for use with a variety of displays and controllers for remote reading
- Backup battery power to provide auxiliary power during power failures

APPLICATIONS

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

SPECIFICATIONS

Service: Compatible non-coating conductive liquids.
Range: See chart.
Wetted Materials: Liner: Dual durometer rubber; Electrodes: 316 SS.
Accuracy: ±1.0%.
Temperature Limits: Process: 14 to 140°F (-10 to 60°C); Ambient: 14 to 140°F (-10 to 60°C).
Pressure Limit: ≤232 psi (1.6 MPa).
Mounting Orientation: Horizontal or vertical.
Process Connection: GB9119-88 flanges.†
Display: Rate: 5 digits; Total: 9 digits LCD.
Output: 4 to 20 mA with 2-wire RS-485. Modbus® RTU or BACnet MSTP options.*
Power Requirements: 24 VDC @ ≥1A (20 to 36 VDC).
Electrical Connection: Terminal block.
Conductivity: ≥5 µs/cm.
Enclosure Materials: Body: Epoxy-coated welded steel; Housing: Powder-coated diecast aluminum.
Enclosure Rating: IP65.
Weight: See chart.
Agency Approvals: CE.

*Consult factory for communication options.
†Will bolt to most ANSI and DIN flanges. Consult factory for alternatives. Refer to dimension chart or consult factory for additional flange options.

MODEL CHART						
Model	Body Size	Pipe Size in	Pipe Size mm	GPM (LPM) Min Flow (Qi)	GPM (LPM) Max Flow	Weight lb (kg)
FLM-BLRS-0025-R-M	DN 25	1	25	0.77 (3.5)	30.82 (116.67)	17.6 (8)
FLM-BLRS-0040-R-M	DN 40	1-1/2	40	1.99 (9.05)	88.06 (333.33)	19.8 (9)
FLM-BLRS-0050-R-M	DN 50	2	50	3.08 (14.01)	132.09 (500)	22 (10)
FLM-BLRS-0065-R-M	DN 65	2-1/2	65	5.24 (23.84)	220.14 (833.33)	26.4 (12)
FLM-BLRS-0080-R-M	DN 65	3	80	7.92 (36.04)	352.23 (1333.33)	30.8 (14)
FLM-BLRS-0100-R-M	DN 100	4	100	12.41 (56.47)	528.34 (2000)	35.2 (16)
FLM-BLRS-0125-R-M	DN 125	5	125	17.78 (80.9)	880.57 (3333.33)	44 (20)
FLM-BLRS-0150-R-M	DN 150	6	150	17.78 (80.9)	1320.86 (5000)	55 (25)

*Consult factory for sizes not listed in model chart and refer to instruction manual.

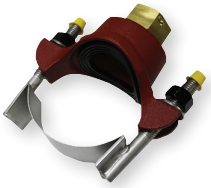
OPTIONS	
To order add suffix:	Description
NISTCAL-FU	NIST traceable calibration certificate

Dwyer

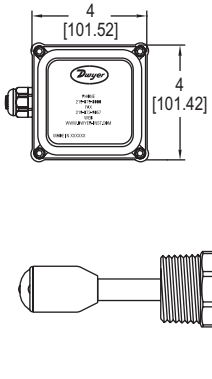
SERIES IEFS & SDF

INSERTION ELECTROMAGNETIC FLOW SENSOR

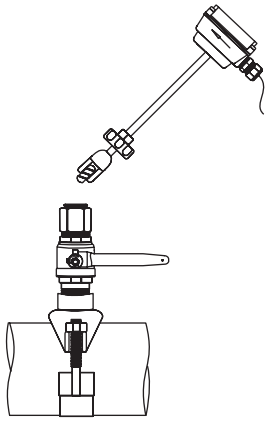
No Moving Parts, Hot-Tap Option, 3 to 48″ (76 to 1219 mm) Field Adjustable Insertion



SDF-I-XX



Hot-Tap Option



Hot-Tap Option
(Shown installed on pipe)

The **SERIES IEFS** Insertion Electromagnetic Flow Transmitters is an adjustable, insertion flowmeter designed for use in 3 to 48″ (7.6 to 122 cm) pipes. This series provides a pulse rate output of the flow.

FEATURES/BENEFITS
- Long life cycle and less frequent maintenance with no moving parts to wear or break and electrodes that discourage fouling
- Unaffected by change in temperature, density, viscosity or concentration
- Pulse output for use with a variety of displays and controllers for remote reading
- Easy meter mount display and transmitter accessories for local indication and analog 4 to 20 mA output

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

The **SERIES SDF** Saddle Fitting are available for pipe sizes ranging from 3 to 24″ and securely attach Series IPFS, IEFS or any other1-1/2″ or 2″ size connection to the process application. Fittings are available in PVC, ductile iron, and bronze materials.

FEATURES/BENEFITS
- Simple installation with provided O-rings

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

SPECIFICATIONS

Service: Compatible clean or dirty non-coating, conductive liquids.
Range: 0.28 to 20 ft/s (0.08 to 6.09 m/s).
Wetted Materials: Body shaft/fitting: 316 SS or brass; Electrodes: Hastelloy®; Electrode cap: PVDF; Valve assembly: (IEFS-1XX) Bronze (SS optional) with bronze ball valve; O-ring: EPDM.
Accuracy: ±1% FS.
Temperature Limits: Process: 32 to 200°F (0 to 93°C); Ambient: 0 to 160°F (-17 to 72°C).
Process Connection: IEFS-0XX: 1-1/2″ male NPT; IEFS-1XX: 2″ male NPT.
Pressure Limit: 200 psi (13.8 bar).
Output: Current sinking, square wave pulse, opto-isolated, 550 Hz @ 20 ft/s, 30 VDC @ 6 mA max.
Power Requirements: 12 to 25 VDC @ 250 mA; Low Power: 12 to 25 VDC @ 40 mA.
Electrical Connection: Terminal block.
Conductivity: ≥ 20 microSiemens/cm.
Enclosure Material: Housing: Die-cast powder-coated aluminum.
Enclosure Rating: NEMA 4X (IP66).
Weight: IEFS-0SX: 6 lb (2721 g); IEFS-0LB: 12 lb (5443 g); IEFS-1XX: 15 lb (6804 g).

ACCESSORIES

Series	Description
BAT❶	Blind analog transmitter; converts pulse output to 4 to 20 mA analog output; unit is loop powered, fits on the enclosure of the meter, and is field spannable.
RTI2❷	Rate total indicator; converts pulse output to 4 to 20 mA analog output with local flow rate and totalization display; unit is loop powered, can fit on the enclosure of the meter, and provides a high/low flow alarm.
PWD	Pulse divider, for use with pacing electronic metering pumps; unit divides the input frequency to any number from 1 to 9999 with the use of rotary switches to suit a number of metering pump inputs. (See website)

MODEL CHART

Example	IEFS	-0SB	-BAF	IEFS-0SB-BAF		
Series	IEFS			Insertion electromagnetic flow sensor		
Size/ Material		0SB 0SS 0LB 0LS 1SB 1SS 1LB 1LS		Size 3 to 10″ 3 to 10″ 10 to 48″ 10 to 48″ 3 to 10″ 3 to 10″ 10 to 48″ 10 to 48″	Hot-Tap No hot-tap No hot-tap No hot-tap No hot-tap Hot-tap Hot-tap Hot-tap Hot-tap	Material Brass SS Brass SS Brass SS* Brass SS*
Options			BAT BAF SAF SVA NVA RFO BPT SPT IMM LOP EXT	Blind analog transmitter 2″ brass adapter fittings (IEFS-0XX only) 2″ SS adapter fittings (IEFS-0XX only) 316 SS valve assembly (IEFS-1XX only) No valve assembly (deduct price) (IEFS-1XX only) Reverse flow output 1-1/2″ brass BPT adapter (2 piece) (IEFS-0XX only) 1-1/2″ SS BPT adapter (2 piece) (IEFS-0XX only) Immersible (urethane potted electrical components) Low power (12 to 25 VDC @ 40 mA) 12″ extension (IEFS-XLX only)		

*SS is stem and fitting. For SS valve order SVA option.

MODEL CHART

Example	SDF	-I	-03	-15	SDF-I-03-15
Series	SDF				Saddle fittings
Material		I			Iron
Pipe Size			03 06 08 10 12 14 16 18 20 22 24		3″ 6″ 8″ 10″ 12″ 14″ 16″ 18″ 20″ 22″ 24″
Thread Size				15 20	For Series IEFS, IPFS, TBS non hot-tap models (1-1/2″ male NPT) For Series IEFS, IPFS, TBS hot-tap models (2″ male NPT)

MODEL CHART

Stocked Model	Description	Pipe Size	Material
IEFS-0SB	Adjustable insertion electromagnetic flow sensor	3 to 10″	Brass
IEFS-0SS	Adjustable insertion electromagnetic flow sensor	3 to 10″	SS

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

Hastelloy® is a registered trademark of Hanes International

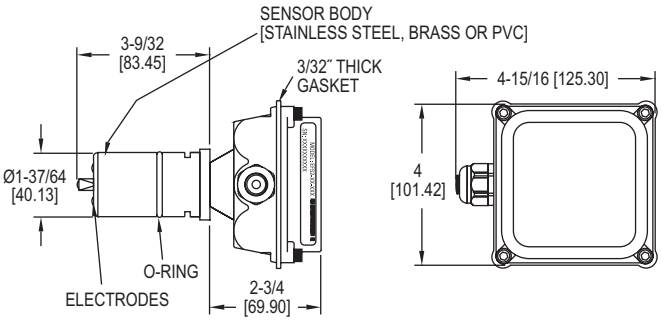
❶See page 326 (Series BAT)
❷See page 326 (Series RTI)

Dwyer

SERIES EFS2

INSERTION ELECTROMAGNETIC FLOW SENSOR

No Moving Parts, Durable, Easy Installation & Maintenance, 1 to 12″ Pipe (25 to 305 mm)



The **SERIES EFS2** Insertion Electromagnetic Flow Transmitters is an economical, fixed insertion flowmeter designed for use with the Series EFF fittings and tees to fit in pipe sizes ranging from 1 to 12″ (2.5 to 30.5 cm) pipes. This series provides a pulse rate output of the flow.

FEATURES/BENEFITS

- Long life cycle and less frequent maintenance with no moving parts to wear or break and electrodes that discourage fouling
- Unaffected by change in temperature, density, viscosity or concentration
- Pulse output for use with a variety of displays and controllers for remote reading
- Easy meter mount display and transmitter accessories for local indication and analog 4 to 20 mA output

APPLICATIONS

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

SPECIFICATIONS

Service: Compatible clean or dirty non-coating, conductive liquids.
Range: 0.28 to 20 ft/s (0.08 to 6.09 m/s).
Wetted Materials: Sensor: 316 SS, brass or PVC; Electrodes: Hastelloy®, metal; Electrode Cap: PVDF; O-ring: EPDM (fluoroelastomer optional).
Accuracy: ±1% FS.
Temperature Limits: Process: Brass/SS: 32 to 200°F (0 to 93°C); PVC: 32 to 130°F (0 to 55°C); Ambient: 0 to 160°F (-17 to 72°C).
Pressure Limits: Brass/SS: 200 psi (13.8 bar); PVC: 150 psi (10 bar).
Process Connection: See page reference ❶ below.
Output: Current sinking, square wave pulse, opto-isolated, 550 Hz @ 20 ft/s.
Power Requirements: 12 to 25 VDC @ 250 mA; (12 to 25 VDC @ 40 mA (max. 250 mA) - LOP option).
Electrical Connection: Terminal block.
Conductivity: 20 microSiemens/cm.
Enclosure Material: Housing: Die-cast powder-coated aluminum.
Enclosure Rating: NEMA 4X (IP66).
Weight: 3 lb (1361 g).

MODEL CHART

Example	EFS2	-1P	-RFO	EFS2-1P-RFO
Series	EFS2			Insertion electromagnetic flow sensor
Size/ Material		1P		1 to 3″ pipe, PVC
		1B		1 to 3″ pipe, brass
		1S		1 to 3″ pipe, 316 SS
		2P		4 to 10″ pipe, PVC
		2B		4 to 10″ pipe, brass
		2S		4 to 10″ pipe, 316 SS
		3P		12″ pipe, PVC
		3B		12″ pipe, brass
		3S		12″ pipe, 316 SS
Options			BAT	Blind analog transmitter
			RFO	Reverse flow output
			IMM	Immersible (urethane potted electrical connection)
			FOR	Fluoroelastomer O-ring
			LOP	Low power (12 to 25 VDC @ 40 mA) (max 250 mA)

Note: Need to purchase with Series EFF fitting for proper installation.

ACCESSORIES

Series	Description
BAT❷	Blind analog transmitter; converts pulse output to 4 to 20 mA analog output; unit is loop powered, fits on the enclosure of the meter, and is field spannable.
RTI2❸	Rate total indicator; converts pulse output to 4 to 20 mA analog output with local flow rate and totalization display; unit is loop powered, can fit on the enclosure of the meter, and provides a high/low flow alarm.
PWD	Pulse divider, for use with pacing electronic metering pumps; unit divides the input frequency to any number from 1 to 9999 with the use of rotary switches to suit a number of metering pump inputs. (See website)

MODEL CHART

Stocked Model	Description	Pipe Size	Material
EFS2-1P	Insertion electromagnetic flow sensor	1 to 3″	PVC
EFS2-1B	Insertion electromagnetic flow sensor	1 to 3″	Brass
EFS2-1S	Insertion electromagnetic flow sensor	1 to 3″	SS
EFS2-2B	Insertion electromagnetic flow sensor	4 to 10″	Brass
EFS2-3B	Insertion electromagnetic flow sensor	12″	Brass

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

Hastelloy® is a registered trademark of Hanes International

❶Process Connection: See page 318 (Series EFF)
❷See page 326 (Series BAT)
❸See page 326 (Series RTI)

Dwyer

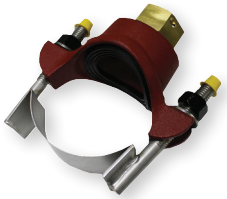
SERIES EFF

FITTINGS AND TEES

Saddles, Tees & Weld/Braze Fittings for Series EFS2

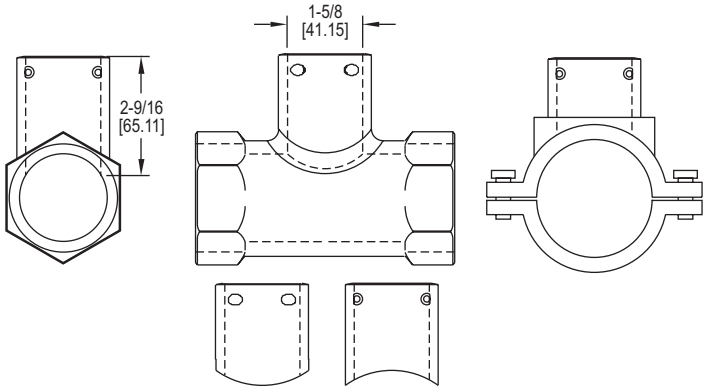
EFF-S-PXX

EFF-S-BXX



EFF-S-DXX

EFF-T-SFT-SS



The **SERIES EFF** Fittings & Tees is to be used with the Series EFS2 Insertion Electromagnetic Flow Sensors. The Series EFF allows for accurate sensor insertion of the Series EFF in a wide range of pipe sizes. These fittings and tees are available in bronze, 304 SS, 316 SS, and PVC, further expanding application prospects.

FEATURES/BENEFITS

- Multiple end connections are available to allow for easy installation in a variety of applications

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials: See model chart.
Temperature Limits: Flow meter dependent.
Pressure Limits: Flow meter dependent.
Connections: 1/2 to 12″.
Weight: Consult factory.

APPLICATIONS

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

MODEL CHART - TEE FITTING

		EFS2-1XX				
		1″	1-1/2″	2″	3″	4″
Model	Description	-0100	-0150	-0200	-0300	-0400
EFF-T-BFT	Bronze/female thread	X	X	X	X	X
EFF-T-BFS	Bronze/female sweat (for copper tubing)	X	X	X	X	X
EFF-T-PME	PVC/male stub end	X	X	X		
EFF-T-CFT	Carbon steel/female thread	X	X	X		
EFF-T-SFT	304 SS/female thread	X	X	X		
-SS	All 316 SS option	X	X	X		

MODEL CHART - SADDLE FITTING

		EFS2-1XX	EFS2-2XX				EFS2-3XX
		3″	4″	6″	8″	10″	12″
Model	Description	-0300	-0400	-0600	-0800	-1000	-1200
EFF-S-DXX	Ductile iron	X	X	X	X	X	X
EFF-S-PXX	PVC (See note 2)	X	X	X	X		
EFF-S-BXX	Bronze	X	X				
-LPS	Installed on 16″ long pipe stub option (PVC only)	X	X	X	X		

MODEL CHART - WELD/BRAZE FITTING

		EFS2-1XX	EFS2-2XX				EFS2-3XX
		3″	4″	6″	8″	10″	12″
Model	Description	-0300	-0400	-0600	-0800	-1000	-1200
EFF-W-BXX	Bronze	X	X	X	X	X	X
EFF-W-CXX	Carbon steel	X	X	X	X	X	X
EFF-W-SXX	316 SS	X	X	X	X	X	X

Example: EFF-T-CFT-0100-SS
To order an all 316 SS female thread 1″ tee for Series EFS2-1XX Electromagnetic Flow Sensor.

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

Dwyer

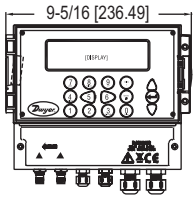
SERIES UFB & UFC

ULTRASONIC FLOWMETER SET

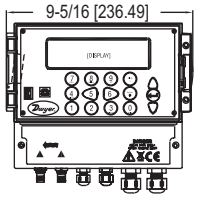
Non-Invasive Pipe Flow Measurement, Easy Operation and Data Logging Option

UFB

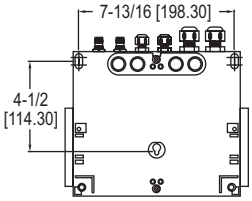
UFC

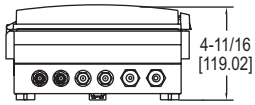


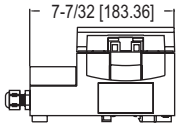
UFB



UFC







The **SERIES UFB & UFC** 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 to 20 mA and pulse output capabilities for pipe sizes from1/2 to 79″ (13 to 2000 mm). The Series UFC offers the same features plus data logging capability.

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 to 264 VAC
UFB-123	2 to 79 (50 to 2000)	86 to 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

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

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 to 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 to 20 mA, 0 to 16 mA or 0 to 20 mA (selectable); Error current: 0 to 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).
Serial Communications: USB (UFC only).
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.

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

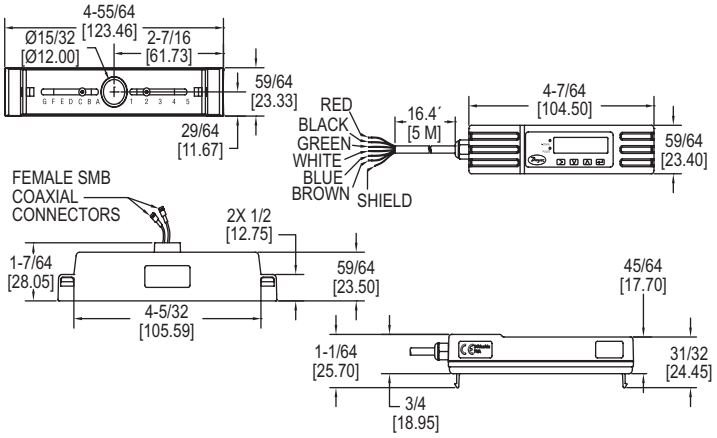
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

MODEL UFM

COMPACT ULTRASONIC FLOWMETER

Cost Effective, Compact & Adjustable Design, Non-Invasive



The **MODEL UFM** Compact Ultrasonic Flowmeters is an economical, clamp-on, ultrasonic flowmeter. The Model UFM implements the transit-time difference to measure flow rates in pipes and can measure velocity and flow in pipes with outside diameters ranging from 0.98 to 4.62″ (24.89 to 117.35 mm). This model comes with a volume pulse and 4 to 20 mA flow rate output.

FEATURES/BENEFITS

- Non-invasive pipe measurement
- Simple installation with all necessary components included such as converter, sensor, cables and mounting accessories
- Compact and lightweight design, featuring an easily installed, all in one clamp-on unit intended for homogeneous liquids that contain no air
- Screen offers easy to read text displaying both flow rate and total with a convenient backlight for visual comfort

APPLICATIONS

- Flow measurement for heat metering
- Chilled water metering & monitoring
- Potable water metering & monitoring
- Process water metering & monitoring

KIT INCLUDES

- Converter with adjustable guiderail
- Set of 1.81 to 2.75″ (46 to 70 mm) clamps
- Set of 2 to 5″ (51 to 127 mm) clamps
- Set of small pipe adaptor circle clamps
- Set of small pipe adaptor V clamps
- Ultrasonic coupling grease

MODEL CHART	
Model	**Description**
UFM-1	Compact ultrasonic flowmeter

SPECIFICATIONS	
Service: Clean water with < 3% by volume of particulate content. **Range:** 0.33 to 32.8 ft/s (0.1 to 10 m/s). **Display:** Backlit: 3.27″ H x 0.74″ W (83.1 mm x 18.8 mm), 2 line x 16 characters. **Accuracy:** ±3% of flow reading for > 0.98 ft/s (> 0.3 m/s). **Power Requirements:** 12 to 24 VDC or VAC. **Power Consumption:** 7 W max. **Temperature Limits:** Process: 32 to 185°F (0 to 85°C); Ambient: 32 to 122°F (0 to 50°C). **Outputs:** Analog: 1 opto-isolated: 4 to 20 mA; Error current: 3.5 mA; Load resistance: 620 Ω max; Pulse: 1 opto-isolated MOSFET relay, 500 mA max, 166 pps max, 200 Hz max.	**Enclosure Rating:** IP54. **Enclosure Material:** Plastic polycarbonate. **Repeatability:** ±0.5% of measured value. **Electrical Connections:** 16.4´ (5 m) cable. **Response Time:** < 1 s. **Weight:** 2.9 lb (1.315 kg). **Agency Approvals:** CE. **ADDITIONAL SPECIFICATIONS** **Applicable Pipe Material:** Steel, copper, or plastic. **Pipe Outside Diameter:** 0.98 to 4.62″ (24.89 to 117.35 mm). **Applicable Pipe Lining:** None. **Pipe Wall Thickness:** 0.02 to 0.39″ (0.5 to 10 mm).

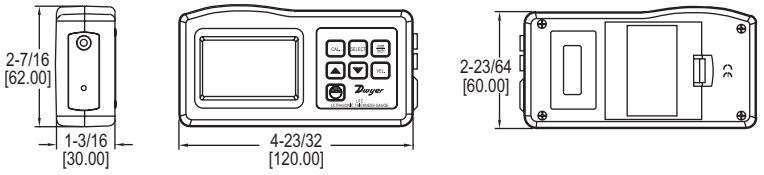
OPTIONS	
Use order code:	**Description**
NISTCAL-FU	NIST traceable calibration certificate

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

MODEL UTG

ULTRASONIC THICKNESS GAGE

Ideal For Use with Ultrasonic Flow Transmitters, Adjustable Sound Velocity



The **MODEL UTG** Ultrasonic Thickness Gages measures the thickness of a variety of materials. The UTG works on a variety of parallel surface material ranging from 0.05 to 7.9″ (1.2 to 200 mm).

FEATURES/BENEFITS

- Non-invasive thickness measurement
- Reads in inches or millimeters and features an adjustable sound velocity to allow for an array of materials to be measured
- Allows the user to find the wall thickness of the pipe when programming an ultrasonic transmitter without cutting or removing a section of the pipe to measure it
- Ideal for monitoring corrosion in closed vessels such as boilers and chemical tanks and with any ultrasonic flow transmitter

APPLICATIONS

- Pipe thickness measurement
- Finding wall thickness
- Monitoring corrosion in closed vessels
- Industrial applications
- Automotive
- HVAC
- Plumbing

SPECIFICATIONS	
Service: Steel, cast iron, aluminum, red copper, brass, zinc, quartz glass, polyethylene, PVC, gray cast iron, nodular cast iron, other. Selectable option for special materials with known sound propagation rate.* **Range:** 0.047 to 7.874″ (1.2 to 200 mm). **Accuracy:** ±0.5%. **Resolution:** 0.001″ / 0.1 mm.	**Sound Velocity:** 1118 to 20132 mph (500 to 9000 m/s). **Temperature Limits:** 32 to 122°F (0 to 50°C). **Humidity Limit:** < 80%. **Display:** 4 digits, 0.394″ (10 mm) LCD. **Power Requirement:** (4) 1.5 V AAA alkaline batteries, not included, user replaceable. **Weight:** 5.78 oz (164 g).
*Material must be uniform with minimal coating/paint.	

MODEL CHART	
Model	**Description**
UTG	Ultrasonic thickness gage

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

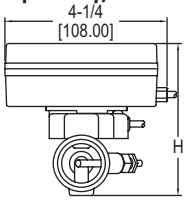
Dwyer

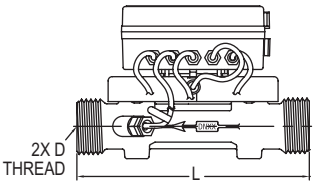
SERIES TUF

ULTRASONIC ENERGY METER

Flow & Temperature Monitoring Capability, Modbus® and BACnet Communication

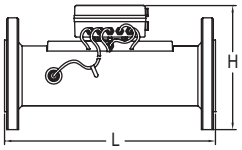
TUF-150/400

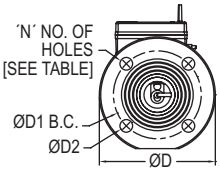




DIMENSIONS in [mm]			
Model	**L**	**D**	**H**
TUF-150-XX	4-21/64 [110.00]	G3/4B	3-31/32 [101.00]
TUF-200-XX	5-1/8 [130.00]	G1B	3-31/32 [101.00]
TUF-250-XX	6-19/64 [160.00]	G11/4B	4-11/64 [106.00]
TUF-320-XX	7-3/32 [180.00]	G11/2B	4-29/64 [113.00]
TUF-400-XX	7-7/8 [200.00]	G2B	4-49/64 [121.00]

TUF-500





DIMENSIONS in [mm]						
Model	**L**	**ØD**	**H**	**ØD1**	**ØD2**	**N**
TUF-500-XX	11-13/16 [300.00]	6-1/2 [165.00]	6-57/64 [175.00]	4-59/64 [125.00]	45/64 [18.00]	4
TUF-650-XX	11-13/16 [300.00]	7-9/32 [185.00]	7-23/32 [196.00]	5-45/64 [145.00]	45/64 [18.00]	4
TUF-800-XX	13-25/32 [350.00]	7-7/8 [200.00]	8-1/2 [216.00]	6-19/64 [160.00]	45/64 [18.00]	8
TUF-1000-XX	13-25/32 [350.00]	8-21/32 [220.00]	9-11/64 [233.00]	7-3/32 [180.00]	45/64 [18.00]	8
TUF-1250-XX	13-25/32 [350.00]	9-27/32 [250.00]	10-25/64 [264.00]	8-17/64 [210.00]	45/64 [18.00]	8

The **SERIES TUF** Ultrasonic Energy Meter is a highly accurate and stable energy meter that utilizes ultrasonic technology to measure heating and cooling energy consumption. The Series TUF is a compact meter with a flowmeter and energy calculator in one, making it great for installation on chillers and boilers.

FEATURES/BENEFITS

- Lower maintenance costs with local parameter display and no moving parts
- Serial communication output allows for easy transfer of data
- Flow and temperature monitor in one unit eliminates the need for multiple units

APPLICATIONS

- Heat metering
- Utilities billing
- Tenant billing
- Monitoring of water heating or cooling: radiators, fan coils

INSTRUCTIONS FOR ORDERING

- Choose 1 ultrasonic energy meter model (includes 2 BSPP pipe fittings, 2 tightening nuts, 2 o-rings, and 1 thermowell with welding collar)
- Choose 1 pipe fitting model given the appropriate fitting size if NPT or BSPT connections are required (for DN15 to DN40 only)*

Example: TUF-150-MD, Fitting Size: A, select pipe fitting Model WM-ACC-C01 or WM-ACC-C11.

SPECIFICATIONS

Service: Clean, compatible liquids.
Wetted Materials: Brass and 316L SS.
Range: See chart.
Display: 8-digit LED.
Accuracy: BTU: EN1434/CJ128 Class 2; Flow: ±(2+(0.02 Qp / Q))%; Temperature: ±0.1°C.
Power Requirements: 24 VDC/VAC (model dependent) or 3.6 V ER26500 lithium metal battery, user supplied and installed, battery acts as back-up if power is lost.
Power Consumption: 1 W.
Temperature Limits: Ambient: 41 to 131°F (5 to 55°C); Process: 36 to 203°F (2 to 95°C).
Humidity Limit: < 93%.
Pressure Limits: 232 psi (16 bar) for DN15 to DN40; 362 psi (25 bar) for >DN50.
Pressure Drop: < 1.5 psi (10 kPa).
Process Connection: See chart.
Serial Communications: Modbus® RTU or BACnet® MSTP (selectable)**.
Enclosure Rating: IP65.
Enclosure Material: Plastic.
Repeatability: Flowmeter: 1%.
Electrical Connections: 3´ (0.91 m) 4x0.2 mm2 cable with terminal block.
Flow Direction: Unidirectional.
Mounting Orientation: Horizontal or vertical.
Weight: See chart.
Agency Approvals: CE.

**M-BUS available upon request.

MODEL CHART

Ultrasonic Energy Meter Model	Body Size†	Pipe Size		Fitting Size	Communication	Meter Connection	GPM (LPM)			Weight lb (kg)
		in	mm				Min Flow (Qi)	Nominal Flow Range (Qp)	Max Flow (Qs)	
TUF-150-MD	DN15	1/2	15	A	Modbus®	G-3/4	0.1 (0.5)	6.6 (25)	13 (50)	3.1 (1.4)
TUF-200-MD	DN20	3/4	20	B	Modbus®	G1	0.2 (0.8)	11 (42)	22 (83)	3.1 (1.4)
TUF-250-MD	DN25	1	25	C	Modbus®	G1-1/4	0.3 (1.2)	15 (58)	31 (117)	4.1 (1.8)
TUF-320-MD	DN32	1-1/4	32	D	Modbus®	G1-1/2	0.5 (2)	26 (100)	53 (200)	5.2 (2.3)
TUF-400-MD	DN40	1-1/2	40	E	Modbus®	G2	0.9 (3)	44 (167)	88 (333)	6.6 (3)
TUF-500-MD*	DN50	2	50	-	Modbus®	Flange	1.3 (5)	66 (250)	132 (500)	33 (15)
TUF-650-MD	DN65	2-1/2	65	-	Modbus®	Flange	2.2 (8.3)	110 (417)	220 (833)	10.1 (4.6)
TUF-800-MD	DN80	3	80	-	Modbus®	Flange	3.5 (13.3)	176 (667)	352 (1333)	13.5 (6.1)
TUF-1000-MD	DN100	4	100	-	Modbus®	Flange	5.3 (20)	264 (1000)	528 (2000)	16.5 (7.5)
TUF-1250-MD	DN125	5	125	-	Modbus®	Flange	8.8 (33)	440 (1667)	881 (3333)	21.1 (9.6)
TUF-150-BN	DN15	1/2	15	A	BACnet	G-3/4	0.1 (0.5)	6.6 (25)	13 (50)	3.1 (1.4)
TUF-200-BN	DN20	3/4	20	B	BACnet	G2	0.2 (0.8)	11 (42)	22 (83)	3.1 (1.4)
TUF-250-BN	DN25	1	25	C	BACnet	G1-1/4	0.3 (1.2)	15 (58)	31 (117)	4.1 (1.8)
TUF-320-BN	DN32	1-1/4	32	D	BACnet	G1-1/2	0.5 (2)	26 (100)	53 (200)	5.2 (2.3)
TUF-400-BN	DN40	1-1/2	40	E	BACnet	G2	0.9 (3)	44 (167)	88 (333)	6.6 (3)
TUF-500-BN*	DN50	2	50	-	BACnet	Flange	1.3 (5)	66 (250)	132 (500)	33 (15)
TUF-650-BN	DN65	2-1/2	65	-	BACnet	Flange	2.2 (8.3)	110 (417)	220 (833)	10.1 (4.6)
TUF-800-BN	DN80	3	80	-	BACnet	Flange	3.5 (13.3)	176 (667)	352 (1333)	13.5 (6.1)
TUF-1000-BN	DN100	4	100	-	BACnet	Flange	5.3 (20)	264 (1000)	528 (2000)	16.5 (7.5)
TUF-1250-BN	DN125	5	125	-	BACnet	Flange	8.8 (33)	440 (1667)	881 (3333)	21.1 (9.6)

*A pipe fitting is required to use the DN15 to DN40 energy meters. The DN50 has a flange connection and does not require a pipe fitting.
†For additional sizes up to 8″ (203.2 mm) contact factory.

MODEL CHART

Fitting Size	Pipe Fitting Model*	Process Connection Size	Weight lb (kg)	Fitting Size	Pipe Fitting Model*	Process Connection Size	Weight lb (kg)
A	**WM-ACC-C01**	1/2″ NPT	0.6 (0.3)	C	**WM-ACC-C13**	1″ BSPT	1.8 (0.8)
A	**WM-ACC-C11**	1/2″ BSPT	0.6 (0.3)	D	**WM-ACC-C04**	1-1/4″ NPT	2.3 (1.1)
B	**WM-ACC-C02**	3/4″ NPT	1.2 (0.5)	D	**WM-ACC-C14**	1-1/4″ BSPT	2.3 (1.1)
B	**WM-ACC-C12**	3/4″ BSPT	1.2 (0.5)	E	**WM-ACC-C05**	1-1/2″ NPT	4.4 (2)
C	**WM-ACC-C03**	1″ NPT	1.8 (0.8)	E	**WM-ACC-C15**	1-1/2″ BSPT	4.4 (2)

*Each model includes 1 fitting.

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

Dwyer

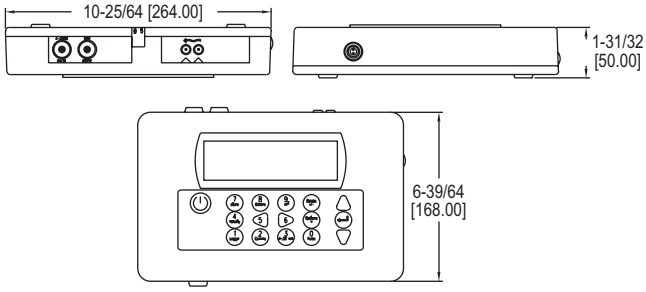
SERIES PUB & PUF

PORTABLE ULTRASONIC FLOWMETER KIT

Portable, Non-Invasive and Data Logging Option

PUB

PUF



The **SERIES PUB & PUF** Portable Ultrasonic Flowmeter Sets 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 to 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 to 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 to 20 mA, 0 to 16 mA or 0 to 20 mA (selectable); Error current: 0 to 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

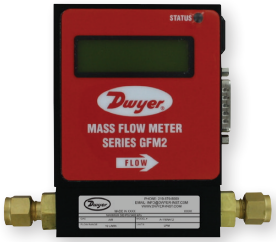
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

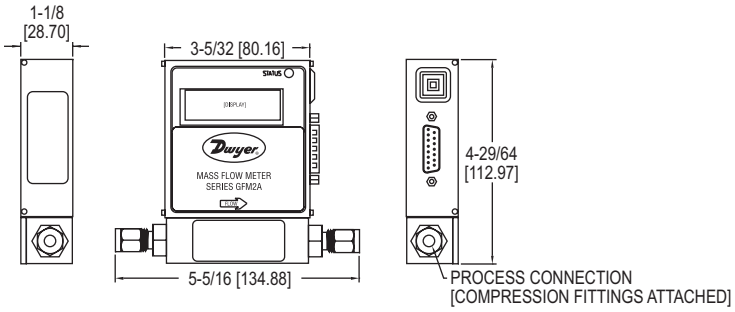
Dwyer

SERIES GFM2

GAS MASS FLOW METER

±1% FS, Programmable Relays





The **SERIES GFM2** Gas Mass Flow Meters is an ideal choice for the measurement of flow rates of a wide variety of gases. Unit can be calibrated for a variety of gases with user selectable 0 to 5 VDC or 4 to 20 mA and two relay outputs and programmable totalizer that indicates total gas quantity.

FEATURES/BENEFITS

- Utilizes a straight tube sensor with a restrictor flow element to provide a high ±1% FS accuracy and ±0.25% FS repeatability
- Gas flow can be displayed in 23 different engineering units on an optional 2x16 character LCD display with internal conversion factors for up to 32 gases
- Digital RS-232 or RS-485 interfaces allow for easy communication and for multi-drop capability of up to 256 units (RS-485 only)
- User-friendly interface allows for the programming of high and low gas flow alarms, along with two user-programmable electromechanical SPDT relays with latch options
- Stores calibration information for up to 10 different gases, internal or user-specific K-factors
- Automatic sensor zero offset adjustment (via digital interface or local push button)
- NIST traceable certificate included
- Self-diagnostic tests

APPLICATIONS

- Gas flow measurement
- Gas flow control
- Operating pumps and valves
- Process equipment
- Vacuum processes
- Glass and metal coating
- Film deposition

SPECIFICATIONS

Service: Clean gases compatible with wetted parts.
Wetted Materials: GFM2-X-X-A: Anodized aluminum, brass, 316 SS fluoroelastomer O-rings; GFM2-X-X-S: 316 SS, and fluoroelastomer O-rings; Buna-N, EPR and PTFE O-rings optional.
Accuracy: ±1% FS.
Repeatability: ±0.25% FS.
Response Time: 2 seconds to within ±2% of actual flow.
Output Signal: Linear 0 to 5 VDC (3000 Ω min. load impedance) and 4 to 20 mA (500 Ω max. loop resistance).
Relay Rating: 1 A @ 24 VDC.
Max. Particulate Size: 5 microns.
Temperature Limits: 32 to 122°F (0 to 50°C).
Power Supply: 11 to 26 VDC.
Process Connections: 1/8″ compression fitting for flow rates ≤ 10 L/min; 1/4″ for ≤ 50 L/min; 3/8″ for ≤ 100 L/min.
Display: 2 x 16 character LCD (optional).
Pressure Limits: 500 psig (34.5 bar).
Leak Integrity: 1 x 10^{-9} smL/sec of helium.
Weight: 1.05 lb (0.48 kg).

MODEL CHART

Example	GFM2	-AIR	-010	-A	-V	-A	-N	-A	-2	GFM2-AIR-010-A-V-A-N-A-2
Series	GFM2									Gas mass flow meter
Specialty Gas & K-Factor		AIR AR C2H2 C3H8 C4H10 CH4 CO CO2 HF HE H2 N2 NH3 O2 SO2								Air 1.0000 Argon 1.4573 Acetylene 0.5829 Propane 0.3500 Butane 0.2631 Methane 0.7175 Carbon monoxide 1.0000 Carbon dioxide 0.7382 Hydrogen fluoride 0.9998 Helium 1.4540 Hydrogen 1.0106 Nitrogen 1.0000 Ammonia 0.7310 Oxygen 0.9926 Sulfur dioxide 0.6900
Body Size			010 050 100							Low flow Medium flow High flow
Body Material				A S						Aluminum Stainless steel: Body size = 010 Body size = 050 Body size = 100
Seal Material					V B E T					Fluoroelastomer Buna-N EPR PTFE
Fittings						A B D				1/4″ compression (low) 1/8″ compression (medium) 3/8″ compression (high)
Display							N L			No display LED display
Output Signal								A B		0 to 5 VDC 4 to 20 mA
Digital Interface									2 5 9	RS232 RS485 PROFIBUS

MAXIMUM FLOW RANGE (l/min)

Body Size	AIR	AR	C_2H_2	C_3H_8	C_4H_{10}	CH_4	CO
010	10	10	5	2	2	5	10
050	50	50	20	10	5	30	50
100	100	100	50	30	20	60	100

MAXIMUM FLOW RANGE (l/min)

Body Size	CO_2	HE	H_2	N_2	NH_3	O_2	SO_2
010	5	10	10	10	5	10	5
050	30	50	50	50	30	50	30
100	60	100	100	100	60	100	60

FLOW RANGES

ml/min	l/min
10	2
20	5
50	10
100	20
200	30
500	40
1000	50
	60
	80
	100

Note: Specify flow range at time of order

ACCESSORIES

Model	Description
A-110NA12	110 VAC power supply, 12 VDC with communication interface branch

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

Dwyer

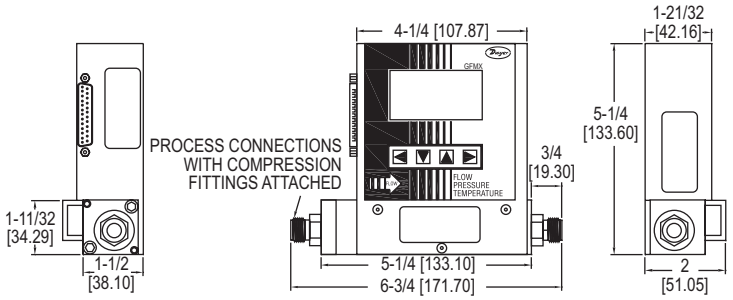
SERIES GFM3 & GFM4

GAS MASS FLOW METER

Flow Monitoring, Push-Button Configuration

GFM3

GFM4



The **SERIES GFM3 & GFM4** Gas Mass Flow Meters are an ideal choice for the measurement of flow rates of a wide variety of gases. Unit can be calibrated for a variety of gases via push-button with 0 to 5 VDC, 0 to 10 VDC or 4 to 20 mA and relay outputs.

FEATURES/BENEFITS

- Multi parameter flow meter supports various functions such as flow totalizer, flow, temperature, and pressure alarms, and is available in a choice of 0 to 5 VDC, 0 to 10 VDC, or 4 to 20 mA output signals
- Set alarms remotely via digital interface for flow, pressure, and temperature to alert user of high or low thresholds being exceeded
- Programmable 12-digit totalizer for total gas volume indication, and is available in the choice of 0 to 5 VDC, 0 to 10 VDC, or 4 to 20 mA output signals
- Standard four button keypad and large 128 x 64 graphical LCD with backlight allows easy access to the many features
- Digital interface operates through available RS-485 or RS-232, providing access to internal data parameters and multi-drop capability of up to 255 units (RS-485 only)
- Set alarms remotely via digital interface for flow to alert user of high or low thresholds being exceeded
- Internal conversion factors for up to 32 gases
- NIST traceable certificate included
- Automatic zero adjustment
- Self-diagnostic tests

SPECIFICATIONS

Service: Clean gases compatible with wetted parts.
Wetted Materials: 316 SS, 416 SS; Fluoroelastomer, Buna-N, EPR or PTFE O-rings.
Accuracy: ±1% FS.
Repeatability: ±0.25% FS.
Response Time: 0.6 to 1.0 s to within ±2% of setpoint over 20 to 100% FS.
Output Signal: Linear 0 to 5 VDC (3000 Ω min. load impedance); 0 to 10 VDC (6000 Ω min. load impedance); 4 to 20 mA (500 Ω max. loop resistance).
Relay Rating: 1 A @ 24 VDC.
Max. Particulate Size: 5 microns.
Temperature Limits: Ambient: 32 to 122°F (0 to 50°C); Dry Gases: 14 to 122°F (-10 to 50°C).
Power Supply: 12 VDC; 15 VDC; ±24 VDC.
Process Connections: 1/8″ compression fitting for flow rates ≤ 10 L/min; 1/4″ for ≤ 50 L/min; 3/8″ for ≤ 100 L/min.
Pressure Limits: 500 psia (35 bar).
Leak Integrity: 1 x 10^{-9} smL/sec of helium.
Display: 128 x 64 graphic LCD with backlight.
Weight: 1 lb (.45 kg).

APPLICATIONS

- Gas flow measurement
- Gas flow control
- Operating pumps and valves
- Process equipment
- Vacuum processes
- Glass and metal coating
- Film deposition

MODEL CHART

Example	GFM3	-AIR	-010	-5	-E	-B	-L	-B	-C	-2	GFM3-AIR-010-5-E-B-L-B-C-2
Series	GFM3 GFM4										Gas mass flow meter Gas mass flow meter with temperature
Specialty Gas & K-Factor		AIR AR C2H2 C3H8 C4H10 CH4 CO CO2 HF HE H2 N2 NH3 O2 SO2									Air 1.0000 Argon 1.4573 Acetylene 0.5829 Propane 0.3500 Butane 0.2631 Methane 0.7175 Carbon monoxide 1.0000 Carbon dioxide 0.7382 Hydrogen fluoride 0.9998 Helium 1.4540 Hydrogen 1.0106 Nitrogen 1.0000 Ammonia 0.7310 Oxygen 0.9926 Sulfur dioxide 0.6900
Body Size❷			010 050 100								Low flow Medium flow High flow
Power Supply				5 2 4							±15 VDC 12 VDC 24 VDC
Seal Material					V B E T						Fluoroelastomer Buna-N EPR PTFE
Fittings						A B D					1/4″ compression (low) 1/8″ compression (medium) 3/8″ compression (high)
Display							L				LED display
Flow Output Signal								A B G			0 to 5 VDC 4 to 20 mA 0 to 10 VDC
Temperature & Pressure Output Signal									A B C D E F G H I J		N.A/N.A 0 to 5 VDC/0 to 5 VDC 0 to 5 VDC/4 to 20 mA 0 to 5 VDC/0 to 10 VDC 4 to 20 mA/0 to 5 VDC 4 to 20 mA/4 to 20 mA 4 to 20 mA/0 to 10 VDC 0 to 10 VDC/0 to 5 VDC 0 to 10 VDC/4 to 20 mA 0 to 10 VDC/0 to 10 VDC
Digital Interface										2 5 9	RS232 RS485 PROFIBUS
Note: Specify flow range at time of order❶											

ACCESSORIES

Model	Description
A-110N12	110 VAC power supply, 12 VDC standard interface
A-110N24	110 VAC power supply, 24 VDC standard interface
A-110NA15	110 VAC power supply, 15 VDC standard interface

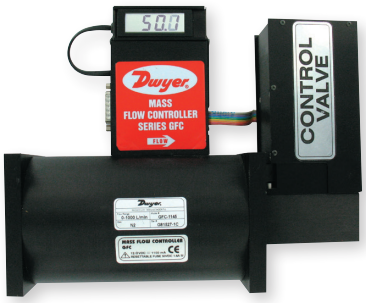
❶Flow Range Chart: See page 323 (Series GFM2)
❷Max Flow Range Chart (per body size for the given gases): See page 323 (Series GFM2)

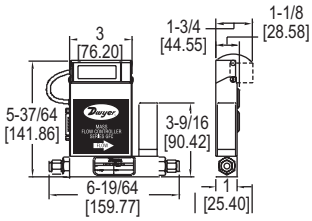
Dwyer

SERIES GFC

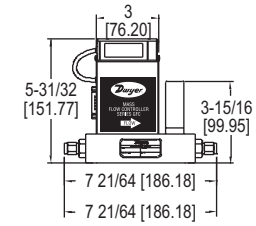
GAS MASS FLOW CONTROLLERS

Flow Range Up to 1000 L/min, Pressures Up to 500 psi, NIST Traceable

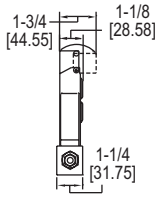




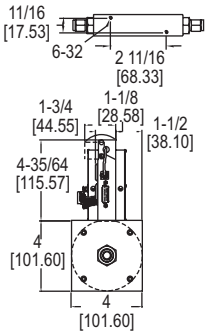
Model GFC-1101 Thru GFC-1111 & GFC-2101 Thru GFC-2111

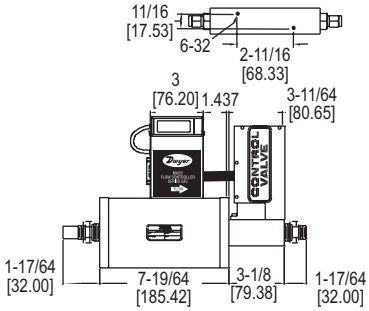


Model GFC-1130 Thru GFC-1133 & GFC-2130 Thru GFC-2133



Model GFC-1140 Thru GFC-1142 & GFC-2140 Thru GFC-2142





Model GFC-1143 Thru GFC-1145 & GFC-2143 Thru GFC-2145

The **SERIES GFC** Gas Mass Flow Controllers combines a straight tube sensor with a restrictor flow element. It is available for flow ranges up to 1000 L/min and offered in aluminum or 316 SS in 1/4″, 3/8″, 1/2″ and 3/4″ sizes.

FEATURES/BENEFITS

- Provides high accuracy and repeatability
- Flow rates are virtually unaffected by temperature and pressure variations
- Utilizes an electromagnetic valve and PID electronics to maintain continuous control by comparing measured sensor signal set to flow rates
- Set points can be adjusted with local potentiometers or remotely via 0 to 5 VDC or 4 to 20 mA analog signal
- Actual gas flow is displayed in engineering units on a 3-1/2 digit, 90° tiltable LCD readout
- Can be used with Series GFT2 Flow Totalizer for applications requiring totalization
- NIST traceable certificate included

APPLICATIONS

- Gas flow measurement
- Gas flow control
- Operating pumps and valves
- Process equipment
- Vacuum processes
- Glass and metal coating
- Film deposition

SPECIFICATIONS

Service: Clean gases compatible with wetted parts.
Wetted Materials: GFC-1XXX: Anodized aluminum, brass, 316 SS and fluoroelastomer O-rings; GFC-2XXX: 316 SS and fluoroelastomer O-rings.
Accuracy: ±1% FS including linearity over 59 to 77°F (5 to 25°C) and 5 to 60 psia (0.34 to 4 bar); Series GFC X143, X144, X145, ±1.5% FS.
Repeatability: ±0.25% FS.
Response Time: 2 s to within ±2% of actual flow.
Output: Linear 0 to 5 VDC and 4 to 20 mA.
Max. Particulate Size: 5 microns.
Temperature Limits: 32 to 122°F (0 to 50°C).
Power Supply: ±12 VDC.
Process Connections: 1/4″ compression fitting for flow rates ≤50 L/m; 3/8″ for 100 and 200 L/m; 1/2″ for 500 L/min; 3/4″ for 1000 L/min.
Pressure Limits: 1000 psig (68.9 bar); Series GFC-X143, X144, X145, 500 psig (34.5 bar).
Leak Integrity: 1 x 10^{-9} sccs of He.
Display: 90° tiltable, 3-1/2 digit.
Agency Approvals: CE.

MODEL CHART

Aluminum Model	SS Model	Flow Range	Process Connector Compression Fitting
GFC-1101*	**GFC-2101***	0 to 10 mL/m	1/4″
GFC-1102*	**GFC-2102***	0 to 20 mL/m	1/4″
GFC-1103*	**GFC-2103***	0 to 50 mL/m	1/4″
GFC-1104*	**GFC-2104***	0 to 100 mL/m	1/4″
GFC-1105*	**GFC-2105***	0 to 200 mL/m	1/4″
GFC-1106*	**GFC-2106***	0 to 500 mL/m	1/4″
GFC-1107*	**GFC-2107***	0 to 1000 mL/m	1/4″
GFC-1108*	**GFC-2108***	0 to 2 L/min	1/4″
GFC-1109*	**GFC-2109***	0 to 5 L/min	1/4″
GFC-1111*	**GFC-2111***	0 to 15 L/min	1/4″
GFC-1131*	**GFC-2131***	0 to 30 L/min	1/4″
GFC-1133*	**GFC-2133***	0 to 50 L/min	1/4″
GFC-1142*	**GFC-2142***	0 to 100 L/min	3/8″
GFC-1143*	**GFC-2143***	0 to 200 L/min	3/8″
GFC-1144*	**GFC-2144***	0 to 500 L/min	1/2″
GFC-1145*	**GFC-2145***	0 to 1000 L/min	3/4″

*Specified flow ranges are for an equivalent flow of nitrogen at 70°F (21°C) @ 760 mm Hg

ACCESSORIES

Model	Description
GFC-110P	110 V power supply
GFC-220PE	220 V power supply
GFC-CBL1	8′ cable with 15-pin connector
GFC-CBL3	3′ extension cable for LCD readout

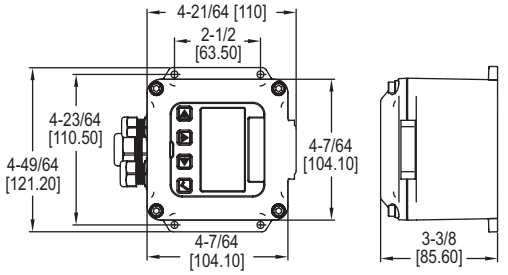
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES RTI2

RATE/TOTAL INDICATOR

Loop Powered, Converts Pulse Frequency to 4 to 20 mA, High/Low Flow Alarm



The **SERIES RTI2** Rate & Total Indicator is an indicator/transmitter that takes the pulse output signal from compatible flowmeters, displays flow rate and total, and provides output signals. It is compatible with the Series EFS2, IEFS, PDWS, and FLMG.

FEATURES/BENEFITS
- Can be mounted on a wall or mounted on the flowmeter for added flexibility
- Accessory mounting kits make it easy to change the mounting orientation
- High environmental protection with semi-flexible urethane potted electrical components
- Provides a pulse, 4 to 20 mA and dual-relay output

APPLICATIONS
- Water treatment
- Water utilities
- Industrial chemical handling

MODEL CHART	
Model	**Description**
RTI2-W	Wall-mounted
RTI2-M	Meter-mounted
RTI2-P	Panel-mounted

ACCESSORIES	
Model	**Description**
MMK2	Meter mounting kit
WMK2	Wall mounting kit

SPECIFICATIONS

Input: 5 V pulse or contact closure; 1 to 15 pulses/s.
Temperature Limits: Process: -32 to 131°F (0 to 55°C); Storage: -40 to 158°F (-40 to 75°C).
Output: Current sinking square wave
pulse: Scaled pulse output (0.1 s duration 6.1 Hz max. or high alarm
output or low alarm output), sensor pass-through pulse output (un-scaled); Pulse output range: 0.1 to 9999999.9 units/pulse; Analog: 4 to 20 mA, 24 to 30 VDC.
Power Requirements: 7 to 30 VDC @ 4 mA (4 to 20 mA when loop-powered).
Display: Rate: 8 digits, 1/2˝H LCD; Total: 8 digits, 5/16˝character height.
K-Factor Range: 0.001 to 999999.999.
Flow Alarm Output Range: 0.1 to 99999.99.
Enclosure Material Housing: Die-cast powder-coated aluminum; Faceplate #HP92W Lexan.
Enclosure Rating: NEMA 4X (IP67).
Electrical Connection: Terminal blocks, #22 AWG, 3 conductor 18´ (5.5 m) cable (2000´ max.).
Mounting: See model chart.
Weight: 3 lb (1361 g).

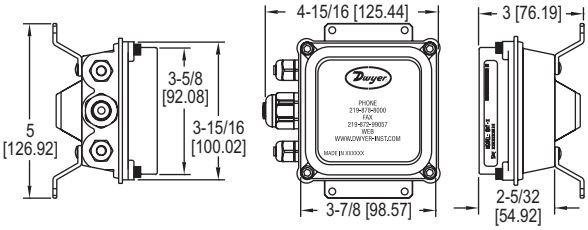
SERIES BAT

BLIND ANALOG TRANSMITTER

Converts Pulse Frequency to 4 to 20 mA, Loop Powered

BAT-M shown installed on Series EFS2 meter. Meter sold separately.

BAT-W



The **SERIES BAT** Analog Transmitters is a 4 to 20 mA transmitter for use with the Series EFS2, IEFS, PDWS, PFT and FLMG.

FEATURES/BENEFITS
- Easy to set up and can be either wall or meter mounted
- Takes a pulse frequency output from the compatible flow meters and converts it into a continuous 4 to 20 mA analog output signal
- The frequency for the flowmeter output signal can be adjusted using four rotary switches on the back of the transmitter and a microcontroller automatically scales all other values accordingly
- The microcontroller averages inputs for more stable reading outputs and is adjustable from 2 to 16 seconds
- Loop powered, 2 wire connection
- High environmental protection with semi-flexible urethane potted electrical components

APPLICATIONS
- Telemetry applications
- Data logging
- Distributed control systems
- Chart recording

MODEL CHART	
Model	**Description**
BAT-M	Blind analog transmitter, meter-mounted*
BAT-W	Blind analog transmitter, wall-mounted
*Compatible Series: EFS2, IEFS, PDWS, TBS and FLMG.	

ACCESSORIES	
Model	**Description**
MMK	Meter mounting kit
WMK	Wall mounting kit

SPECIFICATIONS

Input: Open-collector solid state sensor. Averaging: 2, 4, 8, 16 s (DIP switch selectable); Pulse Frequency: Min. 10 Hz @ 20 mA; Max. 999.9 Hz (rotary DIP switch selectable).
Temperature Limits: 32 to 130°F (0 to 55°C).
Output: 4 to 20 mA.
Power Requirements: 24 to 36 VDC @ 4 to 20 mA when loop powered.
Response Time: 2 to 60 s; 90% FS (depends on input averaging).
Loop Resistance: 0 to 1300 Ω max.❶
Enclosure Material: Die-cast powder-coated aluminum.
Enclosure Rating: NEMA 4X (IP66).
Electrical Connections: Terminal block.
Mounting: See model chart.
Weight: 3 lb (1361 g).

❶**Loop Resistance: See Bulletin F-BAT**