AW-LAKE COMPANY

Excellence in Flow

AW FLOW METERS

LAKE MONITORS

AW FLOW METERS

Flow Meters * Sensors * Controllers

AW FLOW METERS

JV-KG Series
Positive Displacement Flow Meter

Technical Specifications:

- Flow ranges 0.003 to 120.0 GPM
- Accuracy ± 0.5% of reading
- Pressure rating up to 5,000 PSI
- Bi-Directional flow capabilities
- Six Flow Ranges available
- Aluminum, 303 and 316 SS bodies
- Pulse, mA and Voltage Sensors available
- Economical cost

What is a JV-KG Meter?

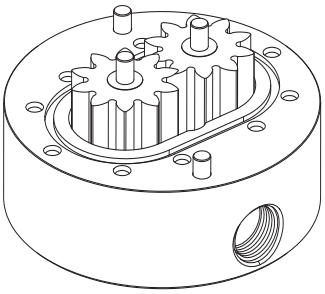
The JV-KG Series represents a positive displacement meter that is affordable and accurate. One primary feature is the ability to maintain consistent accuracy despite changing viscosity conditions. This reliability, coupled with a large turndown range, offers an affordable replacement for older turbine technology. The meter's solid construction and excellent dynamic response are well suited to the measurement of oil, grease, fuel, solvents, polyurethanes, brake fluid, skydrol as well as other nonabrasive lubricating fluids.

Since there is no need for straight run piping upstream or downstream of the flow meter, the JV-KG flow meters are simple to use and to install. The meters produce good resolution and high accuracy at low flow rates. Flow may be bi-directional, such as for cylinder position measurements, without damage to internal parts. Non-intrusive sensors, panel displays and electronic modules can be added to complete this superior value package.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JV-KG Series
Positive Displacement Flow Meter



Meter Technical Data

Materials of Construction:
Body: JVA - Aluminum
JVM - 303 Stainless Steel
JVS - 316 Stainless Steel
Gear: Stainless Steel
O-Ring: Teflon / Viton optional

Bearings: Stainless Steel
Accuracy: ± 0.5% over 10:1 turndown with 30cP fluid
Repeatability: ± 0.1%
Max Fluid Temperature:
Meter 185° F Aluminum Body
Meter 400° F Stainless Body

Meter Type	Range Gal/Min	Impulse/ Gallon	Impulse/ cc	Dia (in)	HGT (in)	Ports	Filtration (micron)	Pressure Rating (PSI)
JV#-12KG	0.003-0.8	53,000	14	3.0	2.2	1/4" **	30	5,000
JV#-20KG	0.01-2.0	15,900	4.2	3.3	2.2	1/4" **	30	5,000
JV#-30KG	0.03-7.0	6,600	1.7	3.3	2.6	1/2" **	30	5,000
JV#-60KG	0.05-20	1,800	0.47	4.9	4.25	3/4" **	30	5,000
JV#-80KL	0.5-60	1,600~	0.42	8.4	5.5	1-1/4" *	200	5,000
JV#-90KL	1.0-120	800~	0.21	8.4	7.0	1-1/4" *	200	5,000

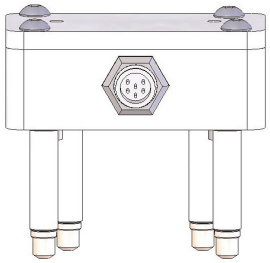
Complete part # by selecting body material as follows: JVA=AL, JVM=303SS, JVS=316SS
** NPT is standard, BSPP is available
* Through hole for 1-1/4" Code 62 flange connections
~ Configured for x4 sensor output

Model	Sensor Types	Sensor Features
HEF-xx	Single Sensor - standard	Frequency output
DH-xx	Dual Sensor with x2 resolution	Single or quadrature frequency output
MAG-xx	Hall Effect Single Sensor	Frequency output, with conduit connection
FIP-xxx	Meter Mounted Analog Output Sensor	3 wire analog output, current or voltage
CAPM-xx	Single Sensor	Frequency output
CAPM-15	High Temp Sensor to 400°F for Stainless Steel	Separated pickup & amplifier module
QUAD-4	Quad Sensor with x4 Resolution	Single or quadrature frequency, -80KL & -90KL

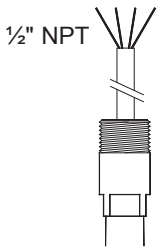
XX = Consult factory or see price list for complete part number

Products may be subject to change without notice – Contact factory for current information

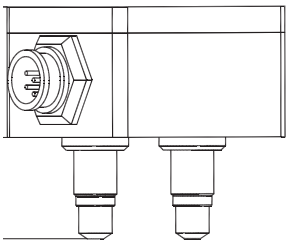
Quad-4



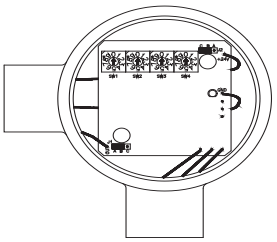
Mag-xx



DH Sensor



FIP-Analog Output Pickup



8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVHS Series – High Pressure Positive Displacement Flow Meter

Technical Specifications:

- 316 SS bodies
- Flow ranges 0.003 to 7 GPM
- 15,000 PSI working pressure
- ATEX approved, non-sparking
- Xylan coated bolts
- Accuracy ± 0.5%
- Bi-Directional flow capabilities
- Medium pressure Autoclave connections

What is a JVHS Meter?

The JVHS series of positive displacement flow meters are designed for high pressure systems requiring flow meters rated up to 15,000 psi (1035 bar) working pressure. The JVHS meters are equipped with medium pressure autoclave connections, 316 SS bodies and xylan coated bolts. The flow meters are bi-directional and can be hydrotested to 1.5X the working pressure rating. A complete line of explosion proof sensors and displays are available for the JVHS meters.

Typical applications include high pressure hydraulic and fuel systems and off shore chemical injection systems ranging from methanol, corrosion and wax inhibitors, and water treatment chemicals. ATEX certificates for non-sparking devices and material certificates 2.2 and 3.1.b are available.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVHS Series – High Pressure Positive Displacement Flow Meter

Part Number Configuration

JVHS - _____ - _____

Flow Range (GPM)
12 = 0.003 - 0.8
20 = 0.01 - 2.0
30 = 0.03 - 7.0

Options
KG = Standard Unit
KG-Ex = Explosion Proof

Example:
JVHS-12KG-Ex Has a flow range of 0.003 to 0.8 GPM, and is modified to accept an explosion proof sensor.

Meter Technical Data

Materials of Construction:
Body: 316 Stainless Steel
Gear: Stainless Steel
O-Ring: Teflon
Bearings: Stainless Steel
Accuracy: ± 0.5% over 10:1 turndown with 30 cP fluid
Repeatability: ± 0.1%
Max Fluid Temperature:
Meter 400° F Stainless Body

NOTE: Meter can be hydrotested to 1.5x working pressure.

Meter Type	Range Gal/Min	Impulse/ Gallon	Impulse/ cc	Dia (in)	Height (in)	Porting Medium Pressure Auto Clave	Filtration (micron)	Pressure Rating (PSI)
JVHS-12KG	0.003-0.8	53,000	14	3.75	2.5	3/8”	30	15,000
JVHS-20KG	0.01-2.0	15,900	4.2	3.75	2.5	3/8”	30	15,000
JVHS-30KG	0.03-7.0	6,600	1.7	3.75	3.0	3/8”	30	15,000

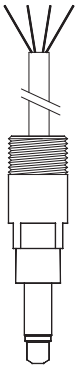
Model	Sensor Types	Sensor Features
HUB-30-Ex	Pulse Output Single Sensor	Frequency output, with conduit connection
FIP-xx	Meter Mounted Analog Output Sensor	3 wire analog output, current or voltage
HEF-B	Single Sensor – Standard pick-up	Frequency output
RT-Ex15-xx	Digital Meter Mounted Sensor	4-20 mA loop powered output and scaled pulse output
MAG-xx	Hall Effect Single Sensor	Frequency output with conduit connection

XX = Consult factory or see price list for complete part number

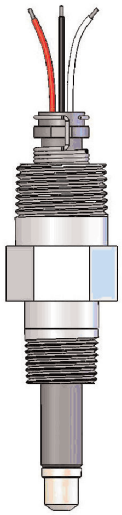
Products may be subject to change without notice – Contact factory for current information

Mag-xx

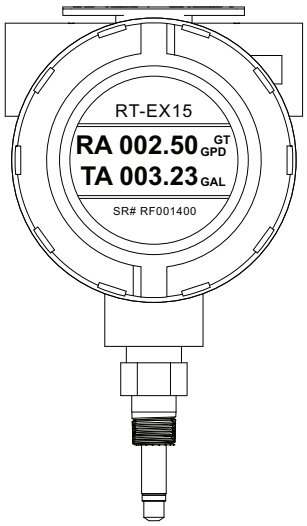
½" NPT



HUB-30-Ex



RT-Ex15-Ex



8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVM Series
Positive Displacement Flow Meter

Technical Specifications:

- Flow ranges 0.001 to 20 GPM
- Accuracy ± 0.5% of reading
- Pressure rating up to 5000 PSI
- Economical cost
- 6 Flow ranges available
- Stainless Steel construction
- Pulse, mA and Voltage Sensors available
- Bi-directional flow capabilities

What is a JVM Meter?

The JVM Series flow meters are economical and reliable positive displacement flow meters suitable for a wide variety of paints and industrial fluids. The principal of operation is that of a gear pump, but in reverse; instead of the gears driving the medium, the medium drives the gears. A non-intrusive sensor detects the movement of the gears and produces a square wave pulse for each gear tooth. The resulting pulse train is proportional to the actual flow rate and provides a highly accurate representation of the fluid flow.

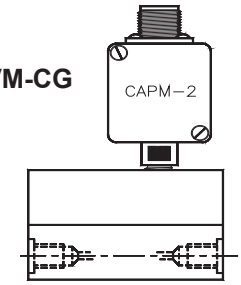
The body and gears are manufactured from stainless steel with tungsten carbide shafts and tungsten carbide bearings. The JVM meters are recommended for non-lubricating fluids such as paints, adhesives, sealants and resins. Sensors available include frequency output, analog output, fiber optic and intrinsically safe models.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVM Series
Positive Displacement Flow Meter

JVM-CG



Meter Technical Data

Materials of Construction:

Body:	JVM - 303 SS
Gear:	Stainless Steel
O-Ring:	Teflon / Viton optional
Bearings:	Tungsten Carbide
Shafts:	Tungsten Carbide

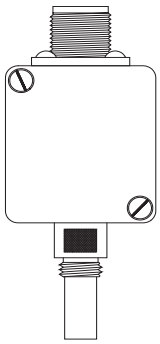
Accuracy:	± 0.5% over 10:1 turndown with 30 cP fluid
Repeatability:	± 0.1%
Temperature:	180° C / 350° F
Ports:	NPT, BSPP available Specify upon ordering

Meter Type	Range Gal/Min	Impulse/ Gallon	Impulse/ cc	Dia (in)	Ports	Filtration (micron)	Wt (lbs)	Pressure Rating (PSI)
JVM-01CG	0.001 to 0.25	155,000	41	3.0	1/4”	120	3.0	5,000
JVM-10CG	0.003 to 0.5	100,300	26.5	3.0	1/4”	120	2.9	5,000
JVM-15CG	0.01 to 1.0	31,000	8.2	3.3	1/4”	120	4.5	5,000
JVM-20CG	0.02 to 2.0	15,900	4.2	3.3	1/4”	120	4.9	5,000
JVM-30CG	0.1 to 7.0	6,600	1.7	3.3	1/2”	120	6.3	5,000
JVM-60CG	0.1 to 20	1,800	0.47	4.9	3/4”	175	20.0	5,000

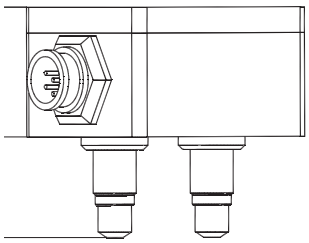
Model	Sensor Types	Sensor Features
HEF-xx	Single Sensor - standard	Frequency output
DH-xx	Dual Sensor with x2 resolution	Single or quadrature frequency output
MAG-xx	Hall Effect Single Sensor	Frequency output, with conduit connection
FIP-xxx	Meter Mounted Analog Output Sensor	3 wire analog output, current or voltage
CAPM-xx	Single Sensor	Frequency output
CAPM-15	High Temp Sensor to 400°F for Stainless Steel	Separated pickup & amplifier module
FOP-20	Fiber Optic Sensor	Fully isolated optical signal

Products may be subject to change without notice – Contact factory for current information

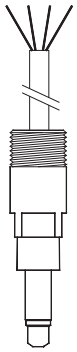
CAPM-2o



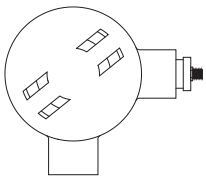
DH-Sensor



Mag-xx



FOP-20 Fiber Optic



8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVK Series
Positive Displacement Flow Meter for Chemicals

Technical Specifications:

- Flow ranges 0.02 to 7 GPM
- Accuracy ± 1.0% of reading
- Pressure rating up to 500 PSI
- Economical cost
- Compatible with acid and caustic fluids
- Thermoplastic construction
- Pulse, mA and Voltage Sensors available
- Bi-directional flow capabilities

What is a JVK meter?

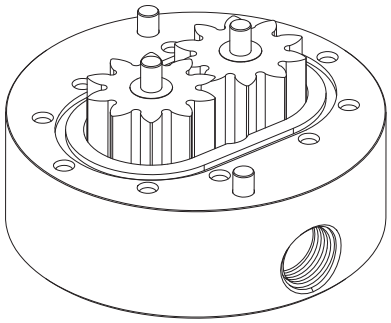
The JVK Series is a line of positive displacement flow meters that economically and reliably meet the harsh demands of the chemical dispensing market. The JVK features materials of construction designed to provide years of service when used with the strongest chemicals including acid and caustic based fluids.

A non-intrusive sensor detects the movement of the gears and produces a square-wave pulse for each gear tooth. This high resolution pulse train is proportional to the actual flow rate and provides a highly accurate representation of the fluid flow. The positive displacement principle is able to retain accuracy in conditions of changing viscosity and temperature and for this reason is superior to turbine flow meters in chemical dispensing applications.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVK Series
Positive Displacement Flow Meter for Chemicals



Meter Technical Data

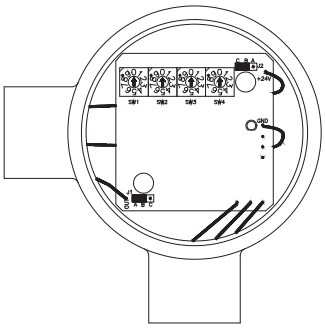
Materials of Construction:

Body: Kynar® (PVDF)
Gear: Teflon® (PTFE)
O-Ring: Teflon® (PTFE)
Shafts: Ceramic (Al_2O_3)
Accuracy: ± 1.0% over 10:1 turndown with 30 cP fluid
Repeatability: ± 0.2%
Temperature: 50-110° F
Filtration: Not Provided – See recommendation
Porting: Female NPT
Sensors: Pulse output standard

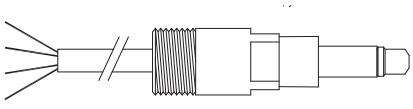
Meter Type	Range Gal/Min	Impulse/ Gallon	Impulse/ cc	Dia (in)	Filtration (Micron)	Ports	Wt (lbs)	Pressure Rating (PSI)
JVK-20	0.02 to 0.9	15,460	4.0	3.5	120	1/4” NPT	1.5	500
JVK-60	0.1 to 7	1,800	0.47	4.5	120	1/2” NPT	4.0	500

Model	Sensor Type	Sensor Features
FIP-X-IR-X	Meter mounted analog output sensor	3 wire analog output, current or voltage
IR-PX	Infrared optical sensor	Sinking (IR-PA) or sourcing (IR-PB) pulse output

FIP-Analog Output Pickup



IR-PX Infrared pulse output Pickup



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVS / HPM-SLG Series
Positive Displacement Flow Meter

Techncial Specifications:

- Flow ranges 0.003 to 2.0 GPM
- Accuracy ± 0.5% of reading
- Pressure rating up to 2000 PSI
- Special Titanium coated gears available upon request
- Compact for tight spaces
- 303 and 316 SS bodies
- Manifold Mount or Threaded Port
- Fiber Optic or Pulse Sensors

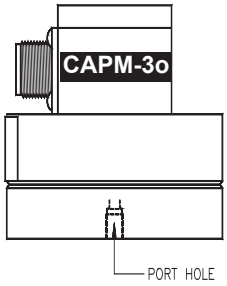
What is a JVS / HPM - SLG Meter?

Automotive paint systems place extreme demands on their components. For over 15 years, AW brand flow meters have met these demands, and more. The JVS-SLG and HPM-SLG Positive Displacement Flow Meters feature smaller, lighter bodies than traditional flow meters, making them easier to install on robotic arms and in tight spaces. These meters also feature a revolutionary body with virtually no dead space, allowing for extremely efficient flush cycles and color changes. Available in 303 or 316 stainless steel and with a variety of sensor options including fiber optic and intrinsically-safe designs for electrostatic applications, these meters are the industry standard for water-based and solvent-based paints and coatings.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

JVS / HPM-SLG Series
Positive Displacement Flow Meter



Meter Technical Data

Materials of Construction:
Body: HPM 303 SS
JVS 316 SS
Gear: DIN 1.4122
Seal: JVS:Teflon Oring
HPM: Teflon gasket
Bearings: Tungsten Carbide

Accuracy: ± 0.5% over 10:1 turndown with 30 cP fluid
Repeatability: ± 0.1%
Temperature: 180° C / 350° F
Filtration: Not Provided - See recommendation
****Porting** BSPP, NPT adapters available

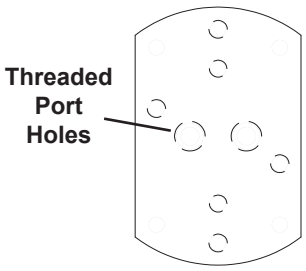
Meter Type	Range Gal/Min	Impulse/ Gallon	Impulse/ cc	Ports	Filtration (micron)	Wt (lbs)	Pressure Rating (PSI)
JVS-10SLGS	0.003-0.5	100,300	26.5	1/8" BSPP	120	2.75	2,000
JVS-10SLGFS	0.003-0.5	100,300	26.5	6 mm	120	2.75	2,000
JVS-15SLGS	0.01 -1.0	31,000	8.2	1/8" BSPP	120	2.75	2,000
JVS-15SLGFS	0.01-1.0	31,000	8.2	6 mm	120	2.75	2,000
JVS-20SLGS	0.02-2.0	15,900	4.2	1/8" BSPP	120	3.00	2,000
JVS-20SLGFS	0.02-2.0	15,900	4.2	6 mm	120	3.00	2,000
HPM-15SLGF*	0.01-0.5	31,000	8.2	6 mm	120	2.50	500
HPM-15SLG*	0.01-0.5	31,000	8.2	1/8" BSPP	120	2.50	500
HPM-20SLGF*	0.02-2.0	15,900	4.2	6 mm	120	3.00	500
HPM-20SLG*	0.02-2.0	15,900	4.2	1/8" BSPP	120	3.00	500

* = **Titanium coated gears available for water based fluids**

Model	Sensor Types	Sensor Features
CAPM-3o	Single Sensor - UL Approved	Intrinsically safe, frequency output when used with a barrier
Fiber Optic System FOP 30/S includes:		
FOP-30	Fiber Optic Sensor	Fully isolated optical signal
OPTV-20	Light to Frequency Converter	Converts optical output to frequency output
Fiber Optic Cable	Standard Heavy Duty Fiber Optic Cable	Available in 30, 40, 60 & 100 foot lengths

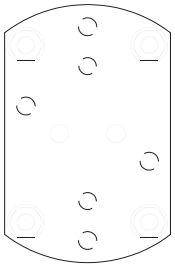
Products may be subject to change without notice – Contact factory for current information

JVS-XX SLGS or HPM-XX SLG



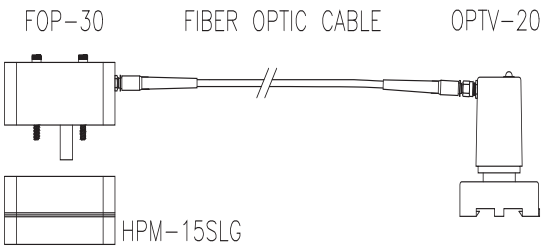
- Standard corner bolts
- Port Threads

JVS-XX SLGFS or HPM-XX SLGF



- Unthreaded corners with long bolts
- No Port Threads

Fiber Optic System FOP 30/S



8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

ZHM Series
Positive Displacement Flow Meter

Technical Specifications:

- Flow ranges 0.001 to 265 GPM
- Accuracy ± 0.5% of reading
- Pressure rating up to 9000 PSI
- Great for multi-viscosity fluids
- 303 SS or 316Ti bodies
- Long operating life

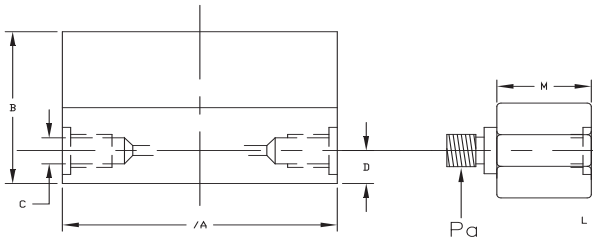
What is a ZHM Meter?

The ZHM series positive displacement flow meters are ideally suited for multi-viscosity fluid measurement. Manufactured of stainless steel and tungsten carbide, the ZHM meter can be used with abrasive fluids as well as those fluids under high pressure. The ZHM measures a small volume of liquid as each gear tooth passes the sensor. The uncompromised manufacturing tolerances prevents slippage of fluid even at the lowest flow while the robust design ensures a long operating life.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

ZHM Series Positive Displacement Flow Meter



Meter Technical Data

Materials of Construction:
Body: Stainless Steel
Gear: Stainless Steel
O-Ring: Teflon / Viton Optional
Bearings: Tungsten Carbide
Accuracy: ± 0.5% of actual reading
Repeatability: ± 0.1%
Temperature: max 180° C / 350° F
Filtration: Not Provided - See recommendation

Model	GPM Range	Impulses / Gallon	Impulses / CC	A in	B in	C	Adaptor Pb	Filtration (Micron)	Pressure Rating (PSI	Weight (lb)
ZHM-01	0.001 - 0.25	155,000	41.00	2.90	1.61	M12 x 1.5	1/4” NPT	120	9,000	3
ZHM-01/1	0.003 - 0.5	100,300	26.50	2.99	1.61	M12 x 1.5	1/4” NPT	120	9,000	3
ZHM-02/1	0.01 - 0.5	31,000	8.80	3.33	2.00	M12 x 1.5	1/4” NPT	120	9,000	5
ZHM-02	0.02 - 2.0	15,900	4.40	3.33	2.16	M12 x 1.5	1/4” NPT	120	9,000	5
ZHM-03	0.1 - 7	6,600	1.74	3.33	2.63	M12 x 1.5	1/4” NPT	120	9,000	6
ZHM-04	0.1 - 20	1,800	0.47	4.92	3.78	M20 x 1.5	3/4” NPT	200	8,000	20
ZHM-05	1.0 - 40	500	0.13	6.88	5.24	M33 x 2	1” NPT	200	6,000	50
ZHM-06/1KL	1.0 - 66	400	0.10	7.40	5.51	SAE 1-1/4” Flange	Flange	300	6,000	70
ZHM-06KL	5 -132	200	0.05	7.40	7.09	SAE 1-1/4” Flange	Flange	300	6,000	70
ZHM-07KL	13 -265	90	0.02	9.13	7.87	SAE 1-1/2” Flange	Flange	300	6,000	114

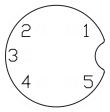
Products may be subject to change without notice – Contact factory for current information

Sensor Options

Carrier-Frequency Sensor
with single pick-up

VTER/P for ZHM-01
VTEK/P for ZHM-02-04
VTEL/P for ZHM-05-07
Supply Voltage: 7-29 VDC
Temperature: 248° F short version
Temperature: 302° F (long version)
Output Signal: Frequency, max 3 KHz

5-Pin Amphenal Plug

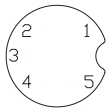


1 = +U
2 = Signal push pull
3 = O V
4 = Open collector signal (collector)
5 = Open collector signal (emitter)

Carrier-Frequency Sensor
with Dual Pick-up

TD-01 for ZHM-01
TD-11 for ZHM-01/1
TD-21 for ZHM-02/1
TD-02 for ZHM-02
TD-03 for ZHM-03
TD-04 for ZHM-04
Supply Voltage: 8-30 VDC
Temperature: 176° F
Output Signal: Push-Pull, NPN open collector passive

5-Pin Amphenal Plug



1 = +U 8-30 VDC
2 = Signal out- push pull/open collector
3 = O V
4 = Signal out- push pull/open collector
5 = Common emitter for pins 2 & 4
Open collector outputs

All sensors: Pulse High = Supply -1.2V High temperature sensors are available up to 180°C / 350° F

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

High-Resolution Helical Gear Flow Meter with Integral Dual Pickup (SRZ...STAT)

Ideal for highly filled and abrasive fluids, such as polyurethanes and polymers, glues and sealing materials, as well as heavy fuel oils.

Applications:

AW Flow Meters offers these specialized helical gear flow meters suitable for a variety of industrial applications, including:

- Sealant / Adhesive Dispensing Applications – Single and Multi-Component
- Paint Reclaim and Environmental Tracking
- Paint Circulation / Supply
- Paint Spray Operations-High Solids / Filled Materials
- Material Manufacturing – Monitoring / Batching
- RIM Applications

Benefits:

AFFORDABLE AND ACCURATE

This meter has the ability to maintain consistent accuracy despite changing viscosity conditions, with accuracy of ±0.5% of reading.

RUGGED CONSTRUCTION / HIGH PRESSURE

The SRZ's solid meter construction is made of 303 stainless steel with tungsten carbide bearings for corrosion resistance and durability. Optional hard-coat gear offerings available.

FLEXIBLE

May be used with a wide range of materials and viscosities with a low pressure drop than conventional meters and wide flow range/size selection. Models now offered in both NPT and BSPP threaded ports.

PROVEN RELIABILITY & PERFORMANCE

With a proven industry record for reliable meter life and electronics, these meters now offered in a low profile design with integrated sensor technology.

Technical Specifications:

- Three flow ranges: 0.1 to 105 gpm
- Working pressure: up to 6,000 psi
- Accuracy: ± 0.5% of reading with fluid viscosities >30cP
- Fluid temperature: up to 160°F
- Sizes from ¾" to 1½"
- Low pressure loss

Materials of Construction:

- Body: 303 Stainless Steel
- Internals:
  Stainless Steel DIN 1.4122
  Tungsten Carbide
  303 Stainless Steel
  316 Stainless Steel
- Seals:
  Teflon® standard (Viton® also available)

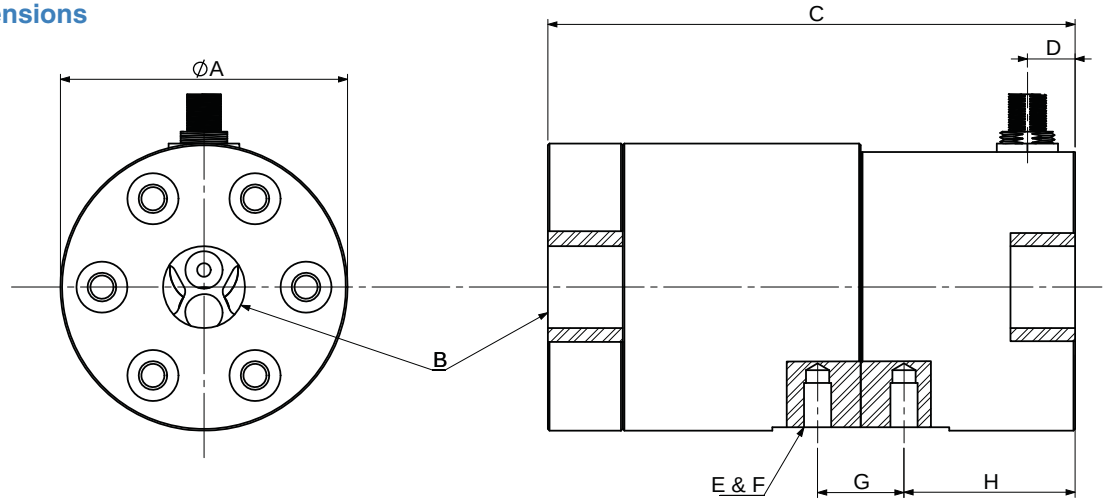
Meter Specs

Meter Size	Flow Range (gpm)	Nominal K-Factor* (pulses/gal)	Porting (NPT or BSPP)	Filtration (micron)	Frequency Range (Hz)	Pressure Rating
SRZ-40-STAT-xx	0.1 - 11	26,500	3/4"	200	45 - 4,600	6,000 psi
SRZ-100-STAT-xx	.25 - 26	6,400	1"	300	28 - 2,800	6,000 psi
SRZ-400-STAT-xx	1.0 - 105	1,600	1-1/2"	300	28 - 2,850	6,000 psi

** A calibration sheet accompanies every meter sold with specific K-factor. K-factors shown are pin 4 double frequency output value.*
xx= B1 for NPT port thread, B2 for BSPP port thread

High-Resolution Helical Gear Flow Meter with Integral Dual Pickup (SRZ...STAT)

Meter Dimensions



Meter Size	Ø A	B (port size)	C	D	E (thread type)	F (thread depth)	G	H
SRZ-40-STAT-xx	3.35”	3/4”	6.10”	0.55”	M8	0.51”	1.0”	1.98”
SRZ-100-STAT-xx	4.33”	1”	8.70”	0.91”	M10	0.71”	1.73”	1.61”
SRZ-400-STAT-xx	5.28”	1-1/2”	12.52”	1.64”	n/a	n/a	n/a	n/a

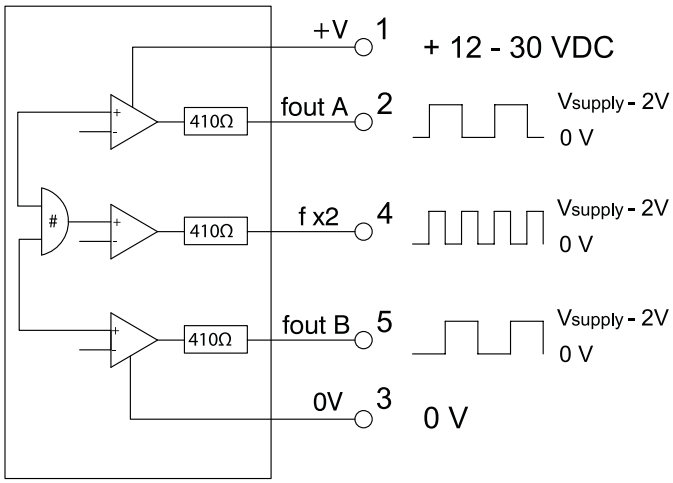
xx= B1 for NPT port thread
B2 for BSPP port thread

Electrical Data

Supply Voltage: 12 up to 30 VDC

Frequency Output: Active push pull, square wave signal
Iout max. 20 mA
Duty cycle 50% nominal

Electrical Connection: Micro (M12)
1 = +Supply (12 up to 30 VDC)
2 = Output signal A
3 = 0V
4 = Output signal A+B
5 = Output signal B
- All output signals are available simultaneously.
- Signals 2 and 5 are 90° phase-shifted.



Ingress Protection: IP 67 when used with IP67 rated mating connector

Connector Pin-Out:

Contact AW Gear Meters:

toll-free: **800-850-6110**

phone: **262-884-9810**

email: **awinfo@aw-lake.com**

website: **www.awgearmeters.com**

Ultra High-Resolution Helical Gear Flow Meter with Integral Dual Pickup (SRZ...HR)

AWGEARMETERS

Ideal for highly filled and abrasive fluids, such as polyurethanes and polymers, glues and sealing materials, as well as heavy fuel oils.

Applications:

AW Flow Meters offers these specialized helical gear flow meters suitable for a variety of industrial applications, including:

- Sealant / Adhesive Dispensing Applications – Single and Multi-Component
- Paint Reclaim and Environmental Tracking
- Paint Circulation / Supply
- Paint Spray Operations-High Solids / Filled Materials
- Material Manufacturing – Monitoring / Batching
- RIM Applications

Benefits:

AFFORDABLE AND ACCURATE

This meter has the ability to maintain consistent accuracy despite changing viscosity conditions, with accuracy of ±0.5% of reading.

RUGGED CONSTRUCTION / HIGH PRESSURE

The SRZ's solid meter construction is made of 303 stainless steel with tungsten carbide bearings for corrosion resistance and durability. Optional hard-coat gear offerings available.

FLEXIBLE

May be used with a wide range of materials and viscosities with a low pressure drop than conventional meters and wide flow range/size selection. Models now offered in both NPT and BSPP threaded ports.

PROVEN RELIABILITY & PERFORMANCE

With a proven industry record for reliable meter life and electronics, these meters now offered in a low profile design with integrated sensor technology.

Technical Specifications:

- Linear range: 0.1 to 2.0 gpm*
- Accuracy: ± 0.5% of reading with fluid viscosities >30cP*
- Working pressure: up to 6,000 psi
- Fluid temperature: up to 160°F
- Low pressure loss
- High resolution

Materials of Construction:

- Body: 303 Stainless Steel
- Internals:
  Stainless Steel DIN 1.4122
  Tungsten Carbide
  303 Stainless Steel
  316 Stainless Steel
- Seals:
  Teflon® standard (Viton® also available)

Meter Specs

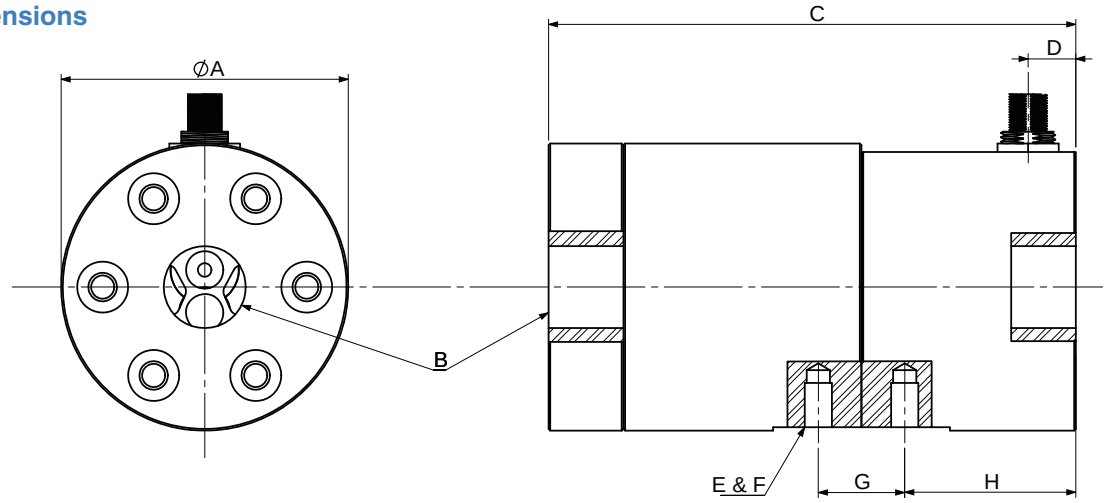
Meter Size	Range* (gal/min)	Nominal K-Factor**	Porting (NPT or BSPP)	Filtration (micron)	Frequency Range (Hz)	Pressure Rating
SRZ-40ST.HR.T-xx	0.01 - 2	124,900 pulses/gal 33 pulses/cc	3/4"	200	20 - 4,200	6,000 psi

** Operation down to 0.01 gpm with reduced accuracy.*

*** A calibration sheet accompanies every meter sold with specific K-factor.*

Ultra High-Resolution Helical Gear Flow Meter with Integral Dual Pickup (SRZ...HR)

Meter Dimensions



Meter Size	Ø A	B (port size)	C	D	E (thread type)	F (thread depth)	G	H
SRZ-40ST.HR.T-xx	3.35”	3/4”	6.10”	0.55”	M8	0.51”	1.0”	1.98”

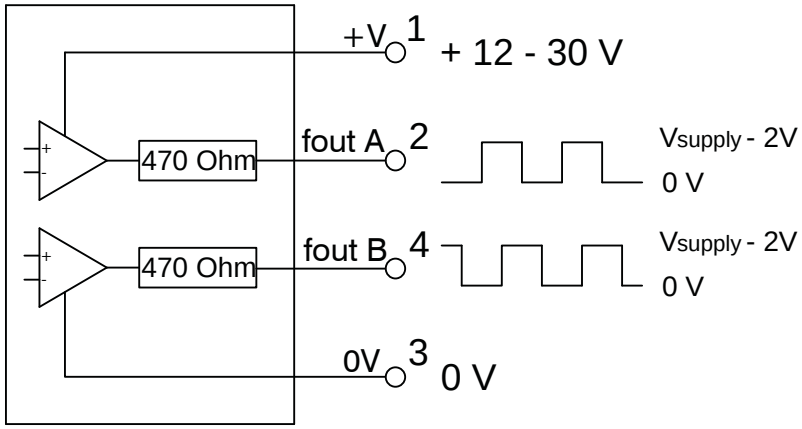
xx= B1 for NPT port thread
B2 for BSPP port thread

Electrical Data

Supply Voltage: 12 up to 30 VDC

Frequency Output: Active push pull, square wave signal
Iout max. 20 mA
Duty cycle 50% nominal

Electrical Connection: Micro (M12)
1 = +Supply (12 up to 30 VDC)
2 = Output signal A
3 = 0V
4 = Output signal B
5 = n.c.



Ingress Protection: IP 67 when used with IP67 rated mating connector

Connector Pin-Out:

Note: Not for use with materials containing any ferromagnetic fillers or particles due to internal multi-pole magnet.

Contact AW Gear Meters:

toll-free: **800-850-6110**

phone: **262-884-9810**

email: **awinfo@aw-lake.com**

website: **www.awgearmeters.com**

AW FLOW METERS

SRZ Series
Helical Gear Flow Meter

Technical Specifications:

- Flow ranges 0.003 to 105 GPM
- Turn down ratio of over 1:100
- Pressure rating up to 6000 PSI
- Great for highly filled & abrasive fluids
- 5 Flow ranges available
- 303/316 stainless steel construction
- Lower pressure loss
- High resolution

What is a SRZ Helical Gear Flow Meter?

The SRZ series represents a helical gear flow meter that is constructed of two highly accurate cycloid shaped screw spindles that mesh and rotate inside the cylindrical housing with two overlapping holes in the form of a figure 8, which forms the measuring chamber. The medium flows in an axial direction rotating the spindles without pulsation.

The SRZ helical gear flow meter is highly accurate with wider measuring ranges, and is largely independent of your fluid viscosity. The lower pressure drop compared with other flow metering types makes this meter perfect for measuring polyurethanes and polymer, glues and sealing materials and heavy fuel oils.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

SRZ Series
Helical Gear Flow Meter

Meter Technical Data

Materials of Construction:

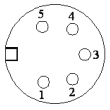
Body: 303 SS or 316 SS
O-Ring: Teflon / Viton Optional
Accuracy: ± 0.5% of actual reading
Repeatability: ± 0.1%
Temperature: 150° C / 300° F (higher temperature meters available upon request)
****Porting:** BSPP, NPT adapters available

Meter Type	Range Gal/Min	Impulse/ Gallon	Dia (in)	Length (in)	Port size BSPP	Wt (lbs)	Pressure Rating (PSI)
SRZ-10	0.003 to 1	62,500	2.3	4.0	1/4”	5.0	6,000
SRZ-20	0.01 to 4	34,500	3.0	4.9	1/2”	9.0	6,000
SRZ-40	0.1 to 11	13,300	3.4	6.1	3/4”	14.0	6,000
SRZ-100	0.25 to 26	3,230	4.4	8.7	1”	32.0	6,000
SRZ-400	1 to 105	810	5.25	12.5	1-1/2”	70.0	6,000

Products may be subject to change without notice – Contact factory for current information

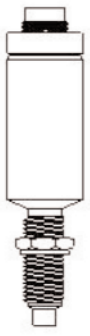
Model	Works with	Sensor Features
VTER/P	SRZ-10, SRZ-20, SRZ-40	Frequency output - 5-pin screw on connector
VTEK/P	SRZ-100, SRZ-400	Frequency output - 5-pin screw on connector

Pin Connections

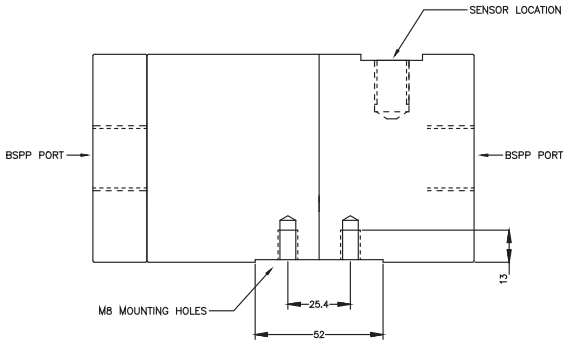


5 = E] OC
4 = C]
3 = 0V (gnd)
2 = OUT ⎍ (signal)
1 = +Ub (supply)

VTER/P or VTEK/P



Mounting Holes - available only on the SRZ-40 shown



8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

FEM-03
Flow Monitor

Technical Specifications:

- Single or dual channel
- RS-232 communication
- Easy to read graphic display
- Monitor/Display
- Rate, flow, limit or ratio monitor
- Two programmable Form C Relay outputs
- Assignable 4-20 mA output
- Multiple display modes

What is a FEM-03 Flow Monitor?

The FEM-03 is available as a simple, compact easy to use flow monitor. A large, backlighted LCD graphic display provides easy to read indication of flow rate, totals or ratios. Two Form C relay outputs can be programmed to perform limit, warning or alarm functions. Remote programming or monitoring is available via the RS-232 serial communications port. The FEM-03A model has a 4-20mA output to track data remotely. The FEM-03A2 model is equipped with 2 channels to monitor dual flows and display them separately or as a sum (as in total material use) or as a difference (as in fuel consumption) or as a ratio of A/B. This unit can also be configured to monitor and detect bi-directional flow when “A” and “B” channel (90° phase shifted) signals are available from a single flow meter.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

FEM-03 Flow Monitor

Monitor Technical Data

Power Supply:
16 VAC/500mA with supplied
110 VAC Transformer
OR
24 VDC/200mA (customer supplied)

Flow Sensor Power Supplies:
(2) @ 15 VDC/20 mA each

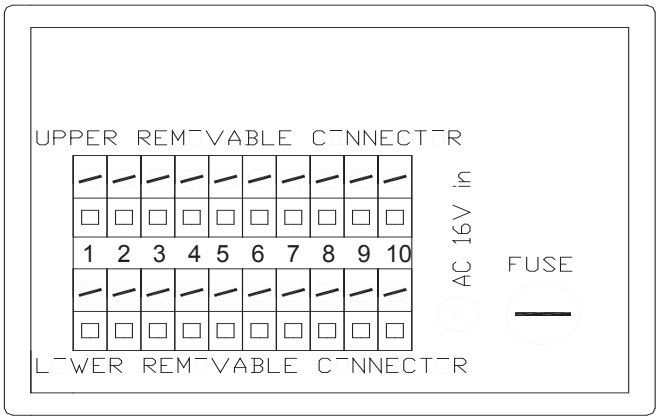
Frequency Inputs:
0-4 KHz, Sine, Square or Saw-tooth
2 Volts minimum amplitude,
10 Kohm impedance

4-20 mA Analog Output:
Self powered loop output into a
maximum 400 ohm load impedance.

Relay Contact Ratings:
Maximum Switch Voltage: 220V DC, 250 VAC
Maximum Switch Current: 2A

Maximum Switched Power
Resistive Load: DC 60W / AC 125 VA
Inductive Load: DC 30W / AC 60 VA

Rated Load
Resistive Load: DC 30V, 2A / AC 110V 0.5A
Inductive Load: DC 30V, 1A / AC 110V 0.3A

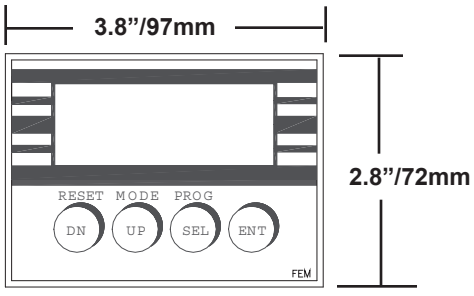


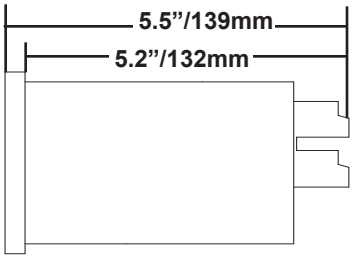
Terminal	Upper Connector	Terminal	Lower Connector
#1	+15 VDC Out	#1	+15 VDC Out
#2	DC Common	#2	DC Common
#3	Freq. A Input	#3	Freq B Input
#4	Not Used	#4	RS232 TX Output
#5	Not Used	#5	RS232 RX Output
#6	+mA Output	#6	Reset Total
#7	-mA Output	#7	DC Common
#8	Limit 2 Common	#8	Limit 1 Common
#9	Limit 2 N.C.	#9	Limit 1 N.C.
#10	Limit 2 N.O.	#10	Limit 1 N.O.

Ordering Information:

Single Channel Rate/Totalizer
Two Form C Limit Relay Outputs
RS-232 Communications
With a 4-20 Milliamp Output
FEM-03 **A**

Dual Channel Rate/Totalizer
With Bi-directional Flow Indication
Dual Channel Ratio Monitor
2
X





Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

FEM-03 Flow Monitor
Industrial Enclosure Options

Technical Specifications:

- Flow rate monitor
- Ratio monitor w/alarm
- Warning lights available
- Pre-wired enclosure - install and use
- Flow totalizer monitor
- One or two flowmeter input
- Limit relay available
- 110 VAC input

What is a FEM-03 Flow Monitor in an Enclosure?

The FEM-03 is a versatile flow monitor designed to receive single or dual flowmeter inputs, with the ability to monitor a range of functions including flow rate, totalization and two component ratio with an alarm. To provide easy setup and installation, AW Company offers the FEM-03 flow monitor in three pre-wired enclosures with many standard features. Optional features are available and include warning lights, alarm annuciators, on/off switch, limit relays, 4-20 mA outputs and pump shut off relays. Remote programming and monitoring is available by adding the optional RS-232 serial output connector to the FEM-03RT-E and the FEM-03AX-E.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

FEM-03 Flow Monitor
Industrial Enclosure Options

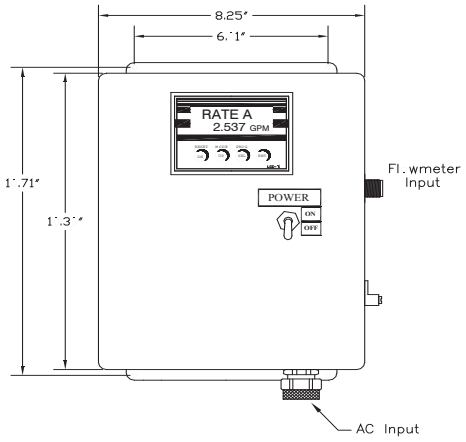
FEM-03E Flow Rate Monitor

BASE UNIT

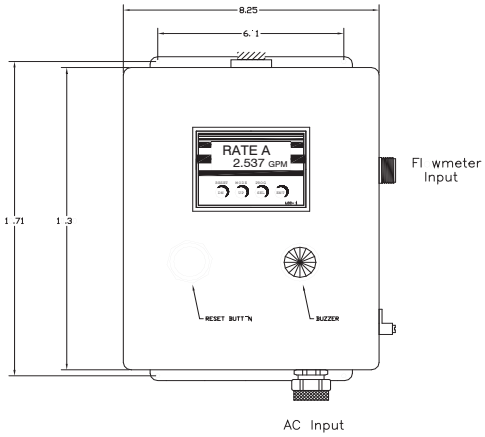
* One flowmeter input
* 110 VAC Input
* One FEM-03 Single Channel Unit
* On/Off switch

ADDITIONAL OPTIONS

* 2nd Flowmeter input
* Intrinsic Barrier(s)
* FEM-03A2 (Dual Channel unit)
* Customized Label



FEM-03RT-E Flow Totalizer Monitor



BASE UNIT

* One Flowmeter Input
* 110 VAC Input
* One FEM-03 Single Channel Unit
* One Red Limit Light
* One Reset Button
* One Buzzer

ADDITIONAL OPTIONS

* On/Off Switch
* 2nd Flowmeter Input
* Intrinsic Barrier(s)
* FEM-03A (Single Channel w/Analog output)
* FEM-03A2 (Dual Channel Unit)
* Customized Label
* Analog Output Connection
* Limit Output Connection
* 2nd Limit Light
* Customized Lights (Tower Lights, etc)
* Fiber Optic Signal Input(s)
* Serial Output Connector (RS-232 Comm)

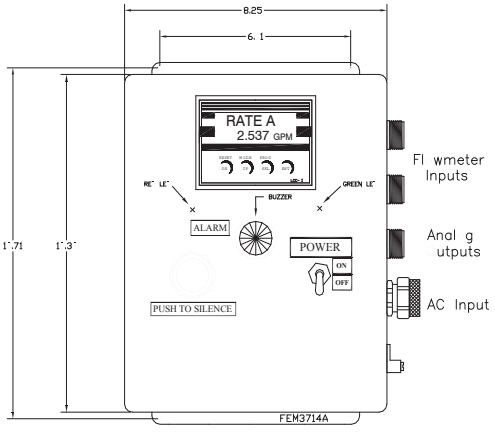
FEM-03AX-E Ratio Monitor with Alarm

BASE UNIT

* Two Flowmeter Input
* 110 VAC Input
* One FEM-03A Ratio Unit
* Off Ratio Red LED
* Silencer Push Button
* One Buzzer
* On/Off Switch w/LED

ADDITIONAL OPTIONS

* External Reset Connection
* Gun Trigger Input
* Intrinsic Barrier(s)
* Analog Output Connection
* Customized Lights (Tower Lights, etc)
* Customized Label
* Limit Output Connection
* 2nd Limit Output Connection
* 2nd Ratio Light (Warning Light)
* Serial Output Connector (RS-232 Comm)



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

RT-Ex10
Meter Mounted Flow Monitor

Technical Specifications:

- Portable, meter mounted flow monitor
- 6 digit LCD display
- 4-20 mA loop power output
- Flow rate, total, real time clock
- Gate time function
- Sleep Mode for battery conservation
- All functions can be magnetically operated
- Battery life indicator, estimated 4 year life

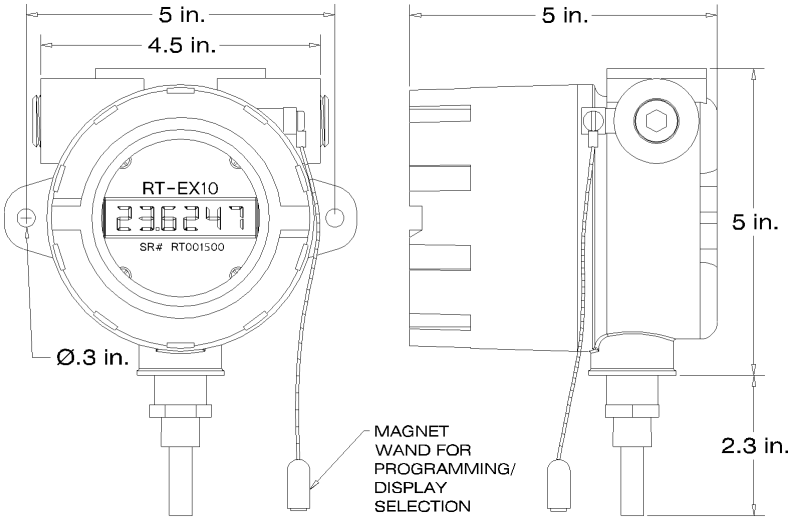
What is a RT-Ex10 meter mounted flow monitor?

The RT-Ex10 is a portable, meter mounted flow monitor that is compatible with AW Company's JV and HPM series of positive displacement meters and TRG and TA turbine meters. The RT-Ex10 is used in a wide variety of applications where ease of operation and flexibility is required. A NEMA 4x enclosure houses a large 6 digit LCD display screen where either flow rate or total is continuously displayed in the customers selected & programmed engineering units. The selection of rate, total, reset of the total, programmable sleep mode and the real time clock can be done via a magnet – without opening the enclosure. A long life field replaceable battery provides power for a period of 4 years – depending on RT-Ex10 options enabled.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

RT-Ex10
Meter Mounted Flow Monitor



RT-Ex10 is not compatible with the JVHS, JV-01, JV-10 & JV-12

Monitor Technical Data

Flow Meter Compatability:
Positive Displacement: JV & HPM Series
Turbine: TR, TRG & TA Series
(linear flow range may vary)

Power:
Internal 3.6V "C" Cell Battery - field replaceable
4 Year Battery Power - estimated average life
(depending on RT-Ex10 options enabled)

Sensor/Monitor Frequency Range:
3,000 Hz max.

Temperature Rating:
-20° to 60°C (-4° to 140° F) Ambient
80° C (175° F) Maximum Fluid Temperature

Output Options:
4-20 mA, loop powered
Pulse output scaleable to 100 Hz.

Enclosure Certifications:
Class I, Groups A, B, C, D
Class II, Groups E, F, G
Class III
Atex: EExd IIC, IP68
NEMA 4X
FM Class No. 3615
CSA Ex'd' approval pending

RT-Ex10 Options available

Part #	Standard Nose	Fiber Optic Input*	Hub Nose	TR Nose	Battery Power	4-20 mA Loop	Fiber Optic Output**
RT-Ex10A	X				X		
RT-Ex10C	X				X	X	
RT-Ex10H	X				X		X
RT-Ex10D		X			X		
RT-Ex10F		X			X	X	
RT-Ex10L		X			X		X
RT-Ex10J			X		X		
RT-Ex10N			X		X	X	
RT-Ex10P			X		X		X
RT-Ex10R				X	X		
RT-Ex10T				X	X	X	
RT-Ex10U				X	X		X

*** All fiber optic input RT-Ex10's require the FOP Pick-up**

**** All fiber optic output RT-Ex10's require the OPTV converter**

Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

RT-Ex15
Meter Mounted Flow Monitor
with HART Communication Protocol

Technical Specifications:

- Digital meter mounted flow monitor
- Flow rate / total screens
- 4-20mA rate output and scaled pulse output
- Gate time function
- HART communication protocol
- Test Point for external frequency input
- Programmable outputs
- Magnetically select any key functions

What is a RT-Ex15 meter mounted flow monitor?

The RT-Ex15 is a meter mounted digital flow monitor housed in a Class I Hazardous Location rated enclosure that features HART communication protocol. A large, back-lighted LCD graphic display provides an easy to read indication of flow rate or total in user programmable engineering units. To change any key functions, simply use the magnet that is attached. No opening of the enclosure is required. To prevent the magnet from entering the programming mode inadvertently, an on board jumper controls ability to allow programming via external magnet. An isolated input also allows for remote reset of the totalizer. Programmable opto-isolated open-collector outputs provide flow rate limit indication or a pulsed total output for remote monitoring and recording of totals. A 4-20 mA rate output with user programmable filtering and scaling is also provided for remote indication.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

RT-Ex15
Meter Mounted Flow Monitor
with HART communication protocol

Monitor Technical Data

Power Requirement:
15-24 VDC/150mA. (customer supplied)

Analog Output 4-20 mA:
16-bit D/A Converter
3 wire or 2 wire plus seperate supply
Max. Load Impedance: 500 ohm.

Enclosure Certifications:

Class I, Groups A, B, C, D	NEMA 4X
Class II, Groups E, F, G	FM Class No. 3615
Class III	FM & CSA approval pending
Atex: EEx d IIC, IP68	Copper Free Standards

Sensor/Monitor Frequency Range:
0-4000 Hz

Temperature Ratings:
-20 to 60ºC (-4 to 140ºF) Ambient

Connection:
¾" NPT Conduit Provisions

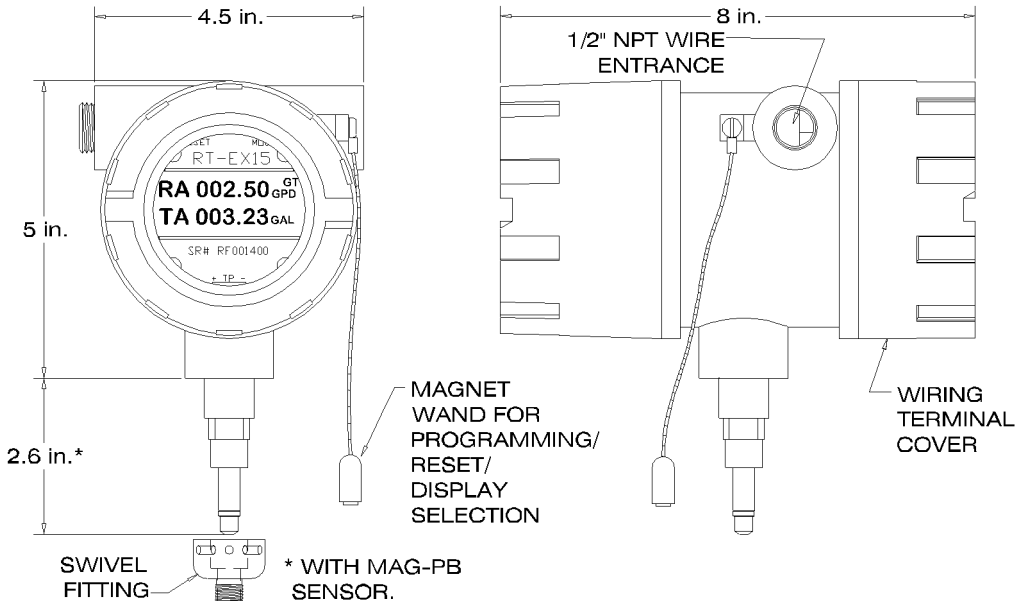
Two Opto-Isolated Open-Collector Outputs:
5-30 VDC Rating, 50 mA Max. (Minimum Load Impedance Required, 600 Ohm @ 30 VDC)

Opto-Isolated Reset Input:
5-30 VDC Input, 3.3Kohm Impedance

Part Number Configuration

RT-Ex15 Part Number	Option
RT-Ex15A	Standard Unit
RT-Ex15B	Infrared (JVK Only)
RT-Ex15C	High-Temperature Pick-up
RT-Ex15D	TR Nose (Turbine Only)

NOTE: All RT-Ex15 meter mounted flow meters are available with HART communication protocol. Contact the factory for HART communications protocol part availablility and part numbering information.



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

LLC-BA
Batch Controller

Technical Specifications:

- Nine programmable batch amounts
- Batch counter & totalizer
- 4-20 mA batch progess output
- Ability to count up or to count down
- Din panel mount enclosure
- Two relays for solenoid valve control
- Batch error compensator
- Good for small to medium sized systems

What is a LLC-BA Batch Controller?

The LLC-BA is a compact, easy to use batch controller designed as a central controller for small to medium sized fluid batching systems. Nine different batch amounts can be pre-programmed into long term memory and selected by the operator. Two relays provide control for either single or dual stage valve operation. Two totalizers are available, one acts as a batch totalizer and the other totals continuously with reset protection. The batch counter has a user selectable option to either count up from zero or count down to the batch amount. The unit's smart programming automatically compensates for variations from the selected batch amount. Inputs provide operator remote control for batch selection, start, stop and reset.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

LLC-BA Batch Controller

Controller Technical Data

Sensor Input:
Voltage triggered, 2.00 Vp-p, 0-4 Khz,
10 Kohm imp.

Enclosure:
Din# 4370016 panel mount, plastic, dust-proof, LEXAN front panel

Power Supply:
Supplied: 110 VAC wall plug unit - 12 VAC 500 mA output

Main Board:
87C51FB Microprocessor, EEPROM memory

Display:
16 Character alpha numeric LCD display
0.35 inch character height

Supply Output:
Approx. 20mA at 15 VDC

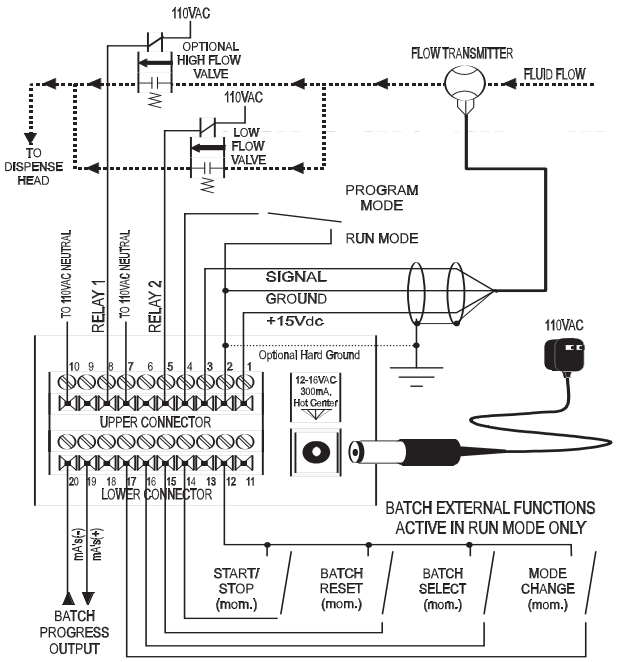
Two Form C Relay Outputs:

Relay Contact Ratings:
Maximum Switch Voltage: 220V DC, 250 VAC
Maximum Switch Current: 2A

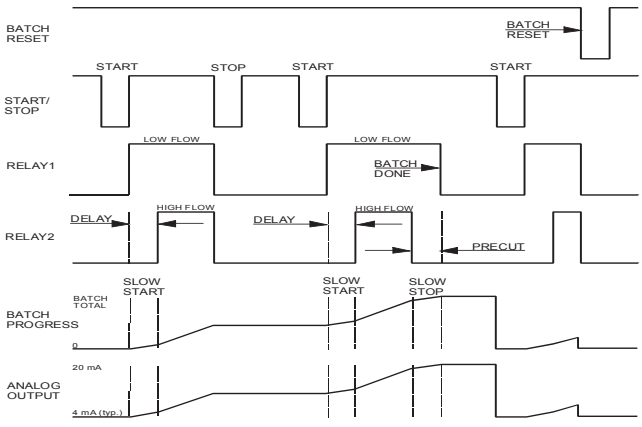
Maximum Switched Power
Resistive Load: DC 60W / AC 125 VA
Inductive Load: DC 30W / AC 60 VA

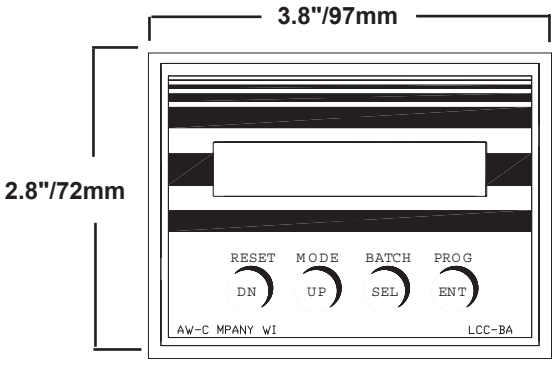
Rated Load
Resistive Load: DC 30V, 2A / AC 110V 0.5A
Inductive Load: DC 30V, 1A / AC 110V 0.3A

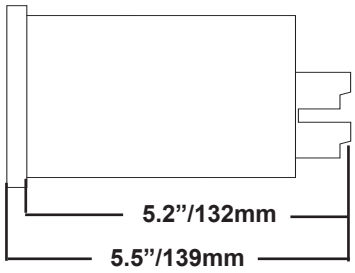
Typical Batch Application



Batch Function Timing Diagram







Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

LLC-E-BA
Batch Controller in an Industrial Enclosure

Technical Specifications:

- Nine programmable batch amounts
- 4-20 mA batch fill indicator
- NEMA 12 & 13 enclosure
- Ability to count up or to count down
- Batch counter & totalizer
- Two relays for solenoid valve control
- Batch error compensator
- Good for small to medium sized systems

What is a LLC-E-BA Batch Controller?

Mounted in a prewired NEMA 12 industrial enclosure, the LLC-E-BA is an easy to use batch controller designed as a central controller for small to medium sized fluid batching systems. Nine different batch amounts can be pre-programmed into long term memory and selected by the operator. Two relays provide control for either single or dual stage valve operation. Two totalizers are provided, one acts as the batch totalizer and the other totalizes continuously with reset protection. The batch counter has a user selectable option to either count up from zero or count down from the batch amount. The unit's smart programming automatically compensates for variations from the selected batch amount. Inputs provide operator remote control for batch selection, start, stop and reset.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

LLC-E-BA

Batch Controller in an Industrial Enclosure

Controller Technical Data

Power Supply:
110 VAC

Sensor Input:
Voltage triggered, 2.00 Vp-p min.
0-4 KHz, 10 Kohm imp.

Main Board:
87C51FB processor, EEPROM memory

Sensor Supply Output:
Approx. 20 mA at 15 VDC

Display:
LCD, 16 Character alpha-numeric
0.35 inch character height

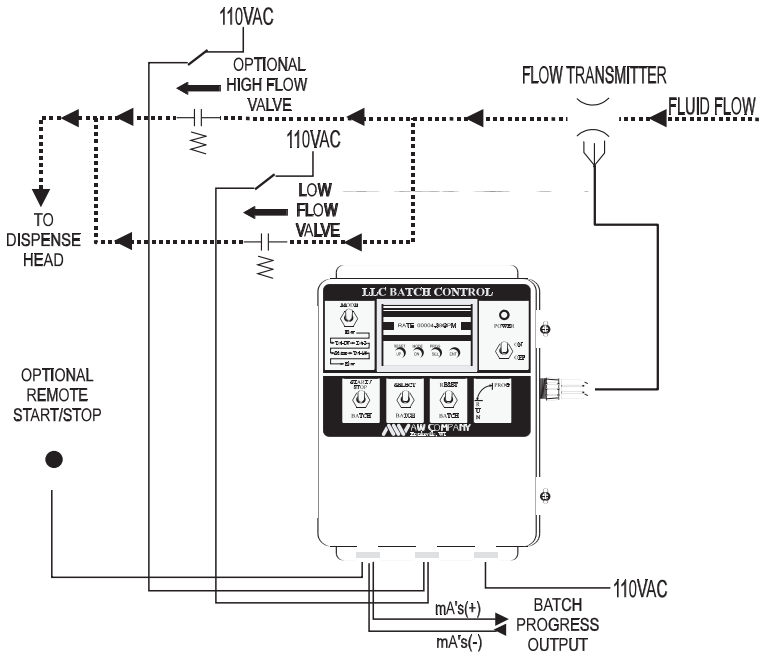
Enclosure:
NEMA 12 & 13

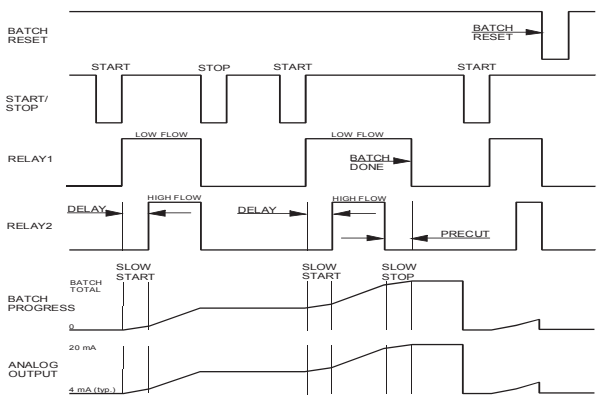
Two Form C Relay Outputs:

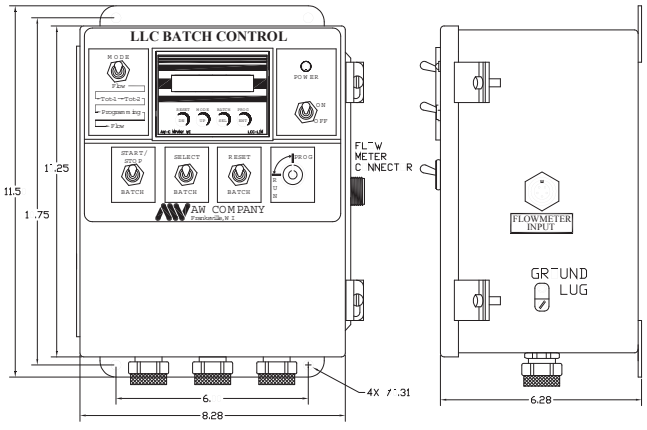
Relay Contact Ratings:
Maximum Switch Voltage: 220V DC, 250 VAC
Maximum Switch Current: 2A

Maximum Switched Power
Resistive Load: DC 60W / AC 125 VA
Inductive Load: DC 30W / AC 60 VA

Rated Load
Resistive Load: DC 30V, 2A / AC 110V 0.5A
Inductive Load: DC 30V, 1A / AC 110V 0.3A







Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

DVV System
Dispensing Volume Verification System

Technical Specifications:

- Fully automatic
- No external logic or wiring required
- Multiple display modes
- Improves process control
- NEMA 12 & 13 rating
- Qualifies dispensed volume
- Audible alarm for outside limit results
- Monitors dispense operation

What is a DVV System?

The Dispense Volume Verification system is a fully automatic dispense monitor. It compares the dispensed volume to a programmed minimum and maximum volume limit providing a pass or fail indication via a highly visible tower light and audible alarm. The DVV requires only the flowmeter signal to operate and does not require any external logic or additional wiring. The DVV senses the start of a dispense cycle by detecting flow and continues to totalize until flow has completely stopped for a user specified time. At this time the total is compared to the programmed limits. The DVV then indicates whether the dispensed volume falls within, below, or above the specified limits with a green, yellow or red light respectively. An audible alarm will sound for a result outside the limits. After a user specified time, the indicators clear and the system resets and waits for the flow to start again. A large, backlighted LCD graphic display provides easy to read indication of the dispensed total or flow rate in user programmable engineered units.

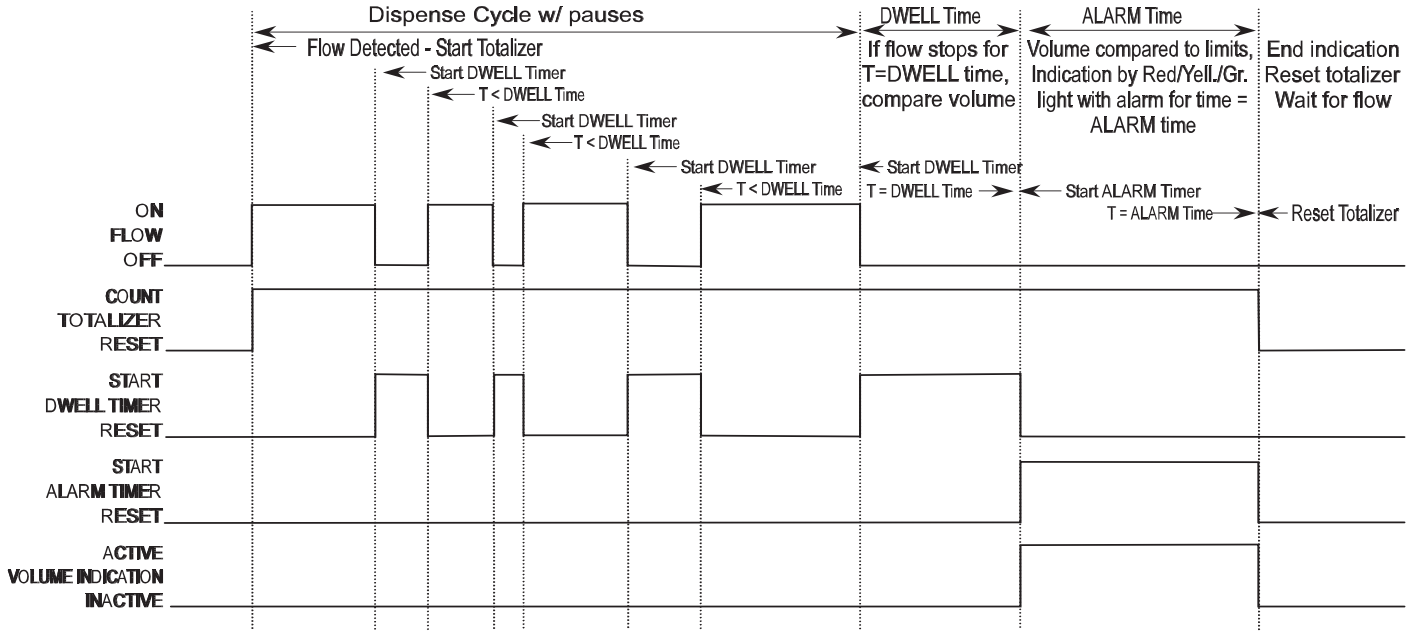
8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

DVV System

Dispensing Volume Verification System

Typical Timing Diagram



Specifications

System Timers:
DWELL Time: 0-99 Seconds Adjustable
Alarm Time: 0-99 Seconds Adjustable

Flowmeter Signal Input:
Frequency Input: 0-4 KHz, Sine, Square or Saw Tooth, 5 Volts minimum amplitude

Input Impedance: 10 Kohm

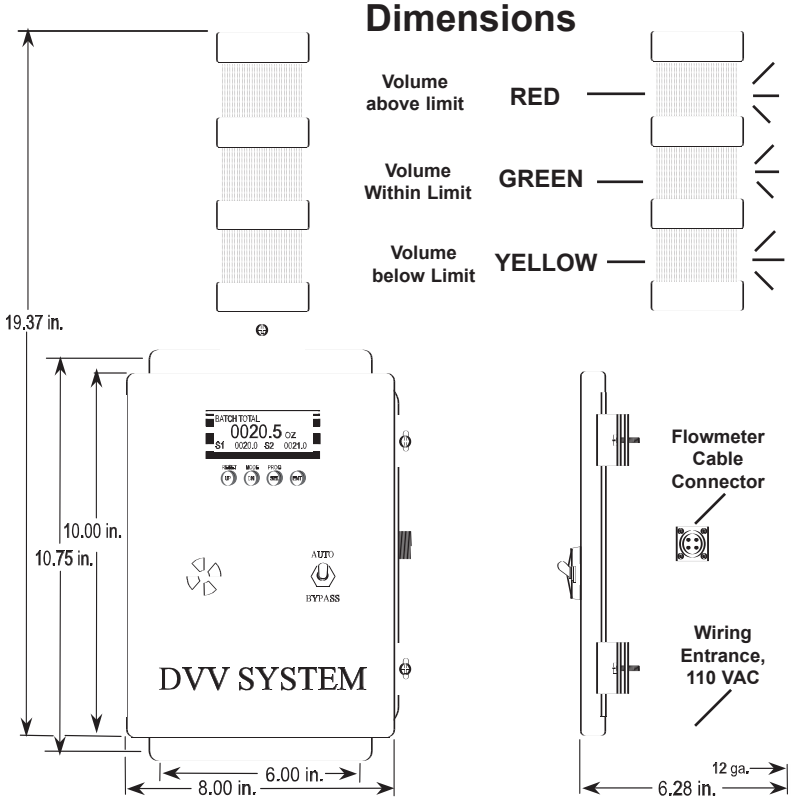
Flow Sensor Power Supply:
15 VDC, 40 mA
(Compatible with all AW Company Flowmeters)

Power Requirements:
Supply Voltage: 110-130 VAC, 2 Amps

Physical:
Operating Temperature Range:
32-158°F (0-70°C)

Enclosure: NEMA 12&13
IP 52 & 54

Dimensions



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-500
Two Component Ratio Monitor

Technical Specifications:

- Two signal component ratio monitor
- RS-232 or RS-485 serial communication
- Nine programmable units of measure
- Seven totalizers for reporting
- Display flow rate, total or ratio
- Net consumption display

What is an EMO-500 Monitor?

The EMO-500 is a two signal component ratio monitor designed for use in steady or pulsing flow streams. Signals from two flow meters can be displayed as independant flow rates or totals, or as an A/B, A + B or A - B relationship. In ratio mode, a programmable ideal ratio is compared to the actual ratio, and off ratio conditions are indicated via one of the four limit relays. These relays can be used to operate audible or visual alarms, or to terminate pump operation. The EMO-500 has seven different totalizers for reporting and record keeping. Other features include job resets, RS-232/485 Serial Communication and a 4-20 mA output.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-500 – Two Component Ratio Monitor

Key Programming Features:

Ideal Ratio: User defined, compared to actual ratio
Gate Time: Time before the flow rate display updates
Sample Size: Number of pulses counted before ratio updates
Limits: Ratio, Flow Rate and Total
Units of Measure: Liter, CC, Gal, Oz, gr, kg, Lb, RPM, Hz

Display Information:

Ratio: Ideal	Flow Rate A	Job Total A	Grand Total
Ratio: Actual	Flow Rate B	Job Total B	Grand Total B
Limit Settings	Flow Rate A+B	Job Total A+B	Grand Total A+B
Limit Status	Flow Rate A-B	Job Total A-B	

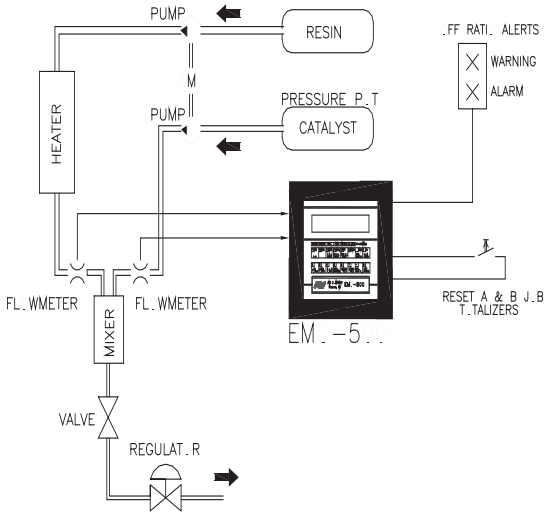
Technical Information:

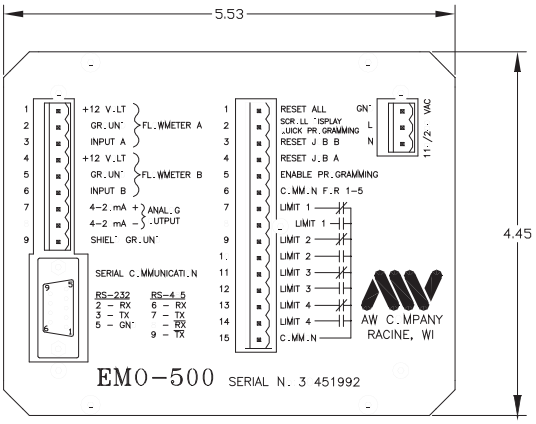
Power Supply Input: 110 VAC or 220 VAC
Consumption: 4 Watts

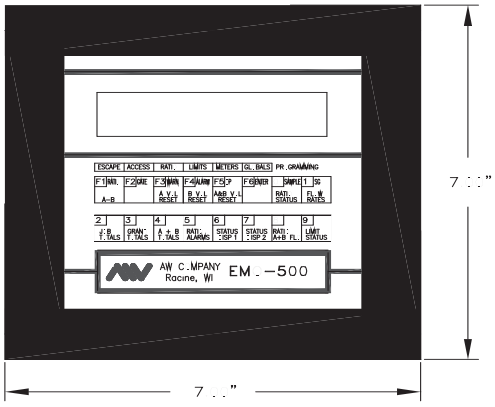
Communication: Type: RS-232 & RS-485
Protocol Type Similar to OPTO 323

Environmental: Storage: -40° C to 85°C
Operating: 0° C to 50° C
Humidity: 10 to 90% Noncondensing

Limits: 10 Amp, 110 V dry contact relays





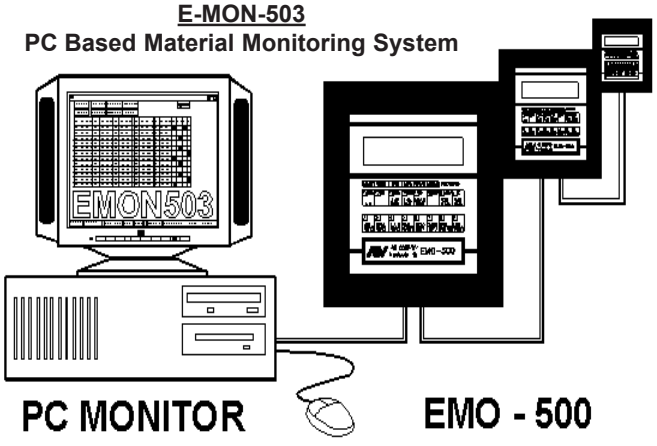


EMO-500/E Industrial Enclosure

- Dual Flow Meter Support
- Warning and Alarm Lights
- Alarm Siren and Silencer
- External Reset
- RS-232/485 Communications
- NEMA 12 Enclosure
- Industrial Push Button Control
- Pre-wired, ready to go

E-MON-503

PC Based Material Monitoring System



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-3000
Multi-Channel Flow Computer

Technical Specifications:

- Standard 4 channels - expandable to 12
- 10 point linearization per channel
- RS-232 or RS-485 serial I/O interface
- Maintain a steady flow rate
- Thirty engineering units selectable
- Ratio - Flow A, Flow B or Flow A/B
- 4-20 mA or 0-5 V Output
- Program channel for 4 alarm limits

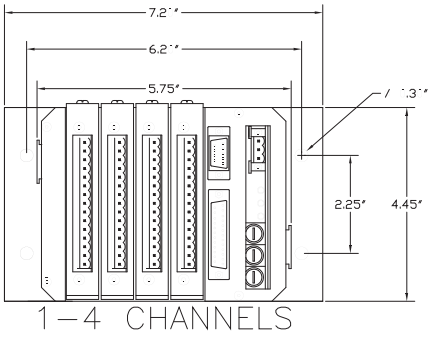
What is an EMO-3000 Multi-Channel Flow Computer?

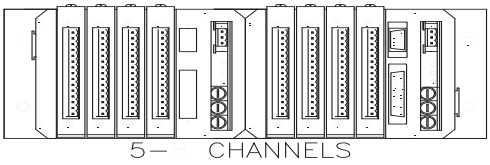
The standard EMO-3000 offers one to four channels, but is expandable to up to 12 channels. Each channel can be configured as a flow monitor or as a closed loop controller. Four alarm limits can be programmed for each channel indicating rate, total, or ratio conditions. The ratio function allows the display of flow rate A, flow rate B and ratio A/B up to 12 channels. The DM-3000 is a backlighted digital display that can show 12 channels simultaneously. The display values can be programmed in over 30 different selectable engineering units. The RS-232 or RS-485 Serial I/O interface allows for remote data collection, programming and PLC interface, allowing for multi-unit interfacing. Any channel card can be configured to provide closed loop feedback flow control. This is important in automatic systems where flow rate deviations can rapidly result in major rework, labor and material costs. The self teaching memory function remembers previous “learned” control values.

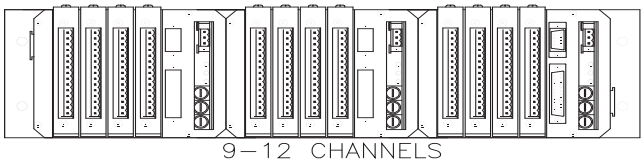
8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-3000
Multi-Channel Flow Computer







DM-3000 Display Screen Options

Display Screens

F1 *Action Display
F2 *Single Channel PID
F3 Single Channel Ratio
1 *Action Ratio
2 Quick Programming
F4 Full Programming
F5 Search Feature
F6 Utility Feature

*Featured Displays

Single Channel Display 1-PID Mode

```
P I D MODE  DSP 01      CHANNEL=03
RATE=000235.ccm       FLUID NBR=00
SET =000235.ccm      mA OUTPUT=11.81
TRANSPARENT--> OFF
HOLD ANALOG--> OFF
HOLD TOTAL --> OFF
SET REACHED--> ON
F1=ESC F2=CHNL UP F3=CHNL DOWN  F5=D+
```

Action Ratio Display

CHA	RATE_A	RATE_B	RATIO
01	023.7ccm	021.2ccm	01.12
02	045.4ccm	035.2ccm	01.41
03	000.0ccm	000.0ccm	01.00
04	000.0ccm	000.0ccm	01.00
05			
06			

F1=ESC F2=CH-SWAP F3=D+ F4=RESET TOT

Flow Rate Display

CHN	RATE	CHN	RATE
01	562.8ccm	07	498.7ccm
02	459.2ccm	08	000.0ccm
03	487.2ccm	09	000.0ccm
04	523.8ccm	10	482.4ccm
05	631.4ccm	11	607.4ccm
06	524.5ccm	12	000.0ccm

F1=ESC F2=RATE F3=TOTAL F4=GRAND TOTAL

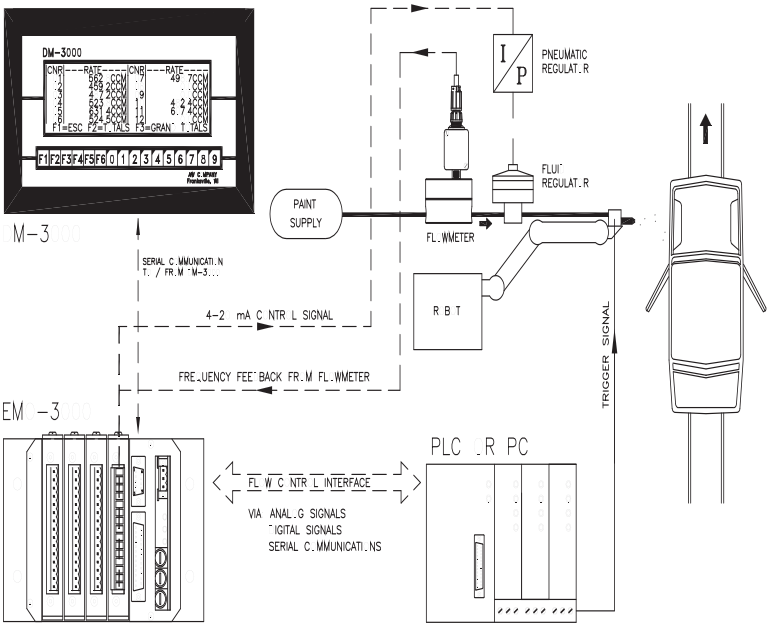
CLOSED LOOP CONTROL SYSTEM FOR PAINTS AND COATINGS

Objective: #1 Maintain a precise flow
#2 Monitor material quantities used
#3 Improve quality and reduce waste

Equipment: EMO-3000 or DM-3000
AW brand positive displacement meter

The PLC transmits fluid flow instructions to the EMO-3000 unit, which in turn controls an air-operated fluid regulator by regulating pneumatic pressure. The AW flow meter measures the flow to the paint nozzle by converting flow to a proportional pulse rate, which is then compared with the set value furnished by the PLC*. An error between the set value and the actual flow rate results in a corrective signal to the AW I/P convertor. An internal memory feature records flow values from earlier cycles which are continuously modified as new conditions occur. The EMO-3000 builds these adaptive data tables for up to 30 fluids or colors, ensuring a fast but highly precise response for a wide variety of fluids and conditions.

*Potentiometer and DM-3000 programmed set points are acceptable.



Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-3000 PID Series
Multi Channel Flow Computer

Technical Specifications:

- 1, 2, 3 or 4 Channels available
- Each channel is independent
- Wall mountable NEMA 12 enclosure
- Serial Interface for software
- Parameter storage in EEPROM
- Analog inputs for set point
- Includes I/P Converters
- 110 Volts AC

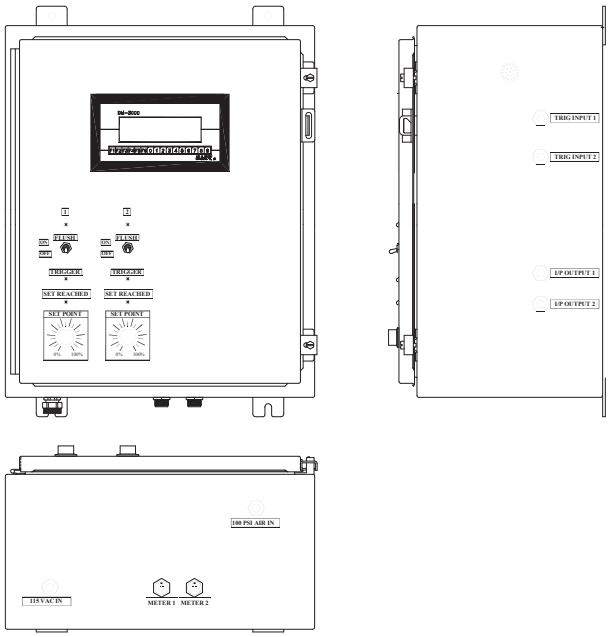
What is a EMO 3000 PID Multi Channel Flow Computer?

Precise, reliable control of fluid flow in industrial applications can result in significant material savings and a superior end product. But a sophisticated fluid control system can also be extremely complex and difficult to implement. The sales and engineering staff at AW Company has provided easy-to-use, cost-effective systems to the closed-loop fluid control industry for over 20 years. The EMO-3000/PID Controller provides an out-of-the-box flow control solution that allows you to control as many as 4 lines without the need for a PLC or other complicated system integration. The EMO-3000/PID features a micro-processor based controller, rheostat knobs for flow control, I/P converters for control of air pressure and a software package that allows you to control every parameter in the PID loop. The system is able to update the closed-loop control as often as 5 times per second. The EMO-3000/PID comes in a wall-mountable NEMA-12 industrial enclosure that features soft touch interface keys on the controller, setpoint knobs for the flow and switches for flush cycles.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

EMO-3000 PID Series
Multi Channel Flow Computer



PID Technical Data

EMO 3000/1/PID
1 Channel Closed Loop Controller in an enclosure with trigger pressure switch, lights, manual set point knob, manual flush switch, 1 I/P Converter, Heavy Duty Power Supply, Intrinsically Safe Barrier Card and a 2 AMP Fused Power Inlet

EMO 3000/2/PID
2 Channel Closed Loop Controller in an enclosure with trigger pressure switches, lights, manual set point knob, manual flush switches, 2 I/P Converters, Heavy Duty Power Supply, 2 Intrinsically Safe Barrier Cards and 2 AMP Fused Power Inlet

EMO 3000/3/PID
3 Channel Closed Loop Controller in an enclosure with trigger pressure switches, lights, manual set point knob, manual flush switches, 3 I/P Converters, Heavy Duty Power Supply, 3 Intrinsically Safe Barrier Cards and a 2 AMP Fused Power Inlet

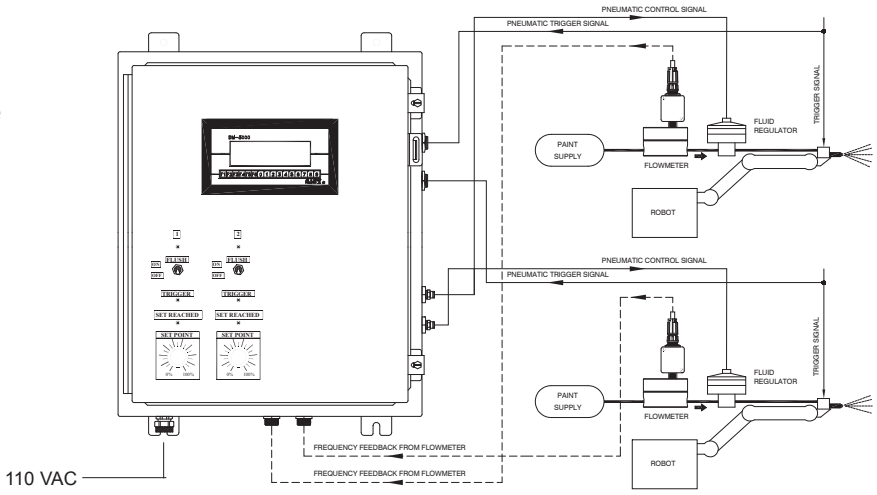
EMO 3000/4/PID
4 Channel Closed Loop Controller in an enclosure with trigger pressure switches, lights, manual set point knob, manual flush switches, 4 I/P Converters, Heavy Duty Power Supply, 4 Intrinsically Safe Barrier Cards and 2 AMP Fused Power Inlet

Optional Software Package:
The GR-3000 Flow Control Software will allow the user to upload and download PID parameters directly to the EMO-3000, format color tables and graph flow rates and trigger times.

Typical EMO 3000 PID Application

The diagram at right shows a typical 2 channel closed loop control scheme with the EMO-3000/2/PID. Each flow loop includes a paint supply line, flow meter, fluid regulator and spray gun.

The EMO-3000/2/PID receives a signal from each flow meter and, with its self-contained I/P converter, controls the fluid regulator to precisely and accurately deliver paint, air or other fluid.

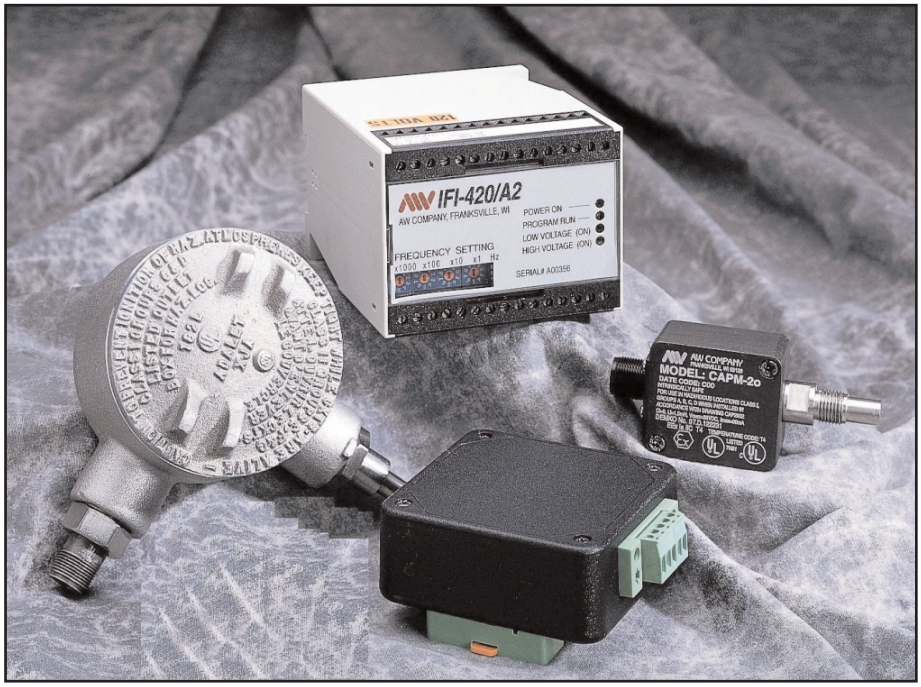


Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

Frequency to Analog Converters



Technical Specifications:

- Panel, Din Rail or Meter Mount models
- Linearity ± 0.01%
- Six output options available
- User adjustable frequency span
- Input frequency 5,000 Hz Maximum

What is a Frequency to Analog converter?

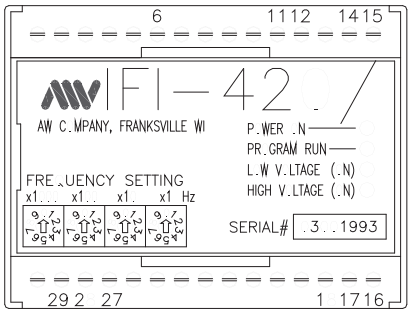
AW Flow Meter's frequency to analog converters are compact, rugged and easy to install with panel, din rail or meter mounted models. Input frequencies up to 5,000 Hz are accepted in sine, saw tooth or square wave form. Output signals are available in six types to meet preferred voltage, mA and zero offset choices. All models are microprocessor based to provide a fast and linear response.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

Frequency to Analog Converters

IFI-420

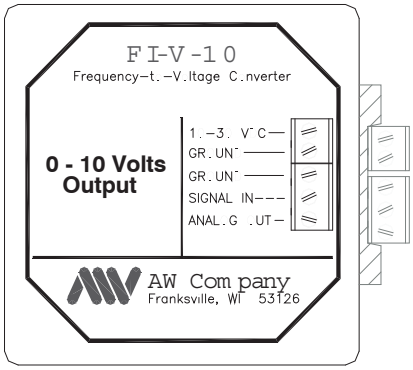


- *** State of the art, microprocessor based converter**
- *** User adjustable frequency span**
- *** AC or DC Power**
- *** Built in power supply to sensor or another device**
- *** Din Rail or panel mount**
- *** User selectable output signal**

Technical Specifications:

Supply Voltage:	AC: 110/220 VAC DC: 15-28 V	**Input:**	0.25 Hz to 5 KHz
		Amplitude:	500mVp-p to 40 Vp-p
Update Time:	1/F + 40 msec	**Output:**	0-20 mA, 0-5 V, 0-10 V,
Linearity:	±0.01% of reading		4-20 mA, 1-5 V, 2-10V

FI-V & FI-A



- *** Economical microprocessor based converter**
- *** User adjustable frequency span**
- *** DC Power**
- *** Six output options - factory set**
- *** Din Rail or panel mount**

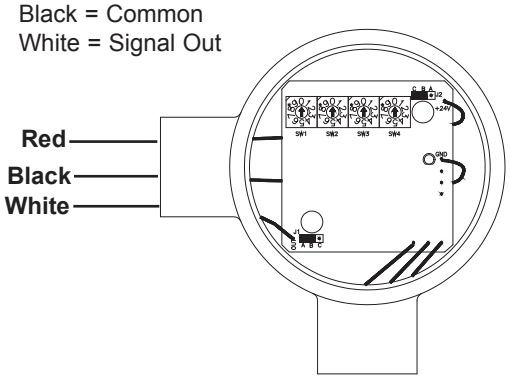
Technical Specifications:

Supply Voltage:	10-30 VDC*	**Input:**	0.25 Hz to 5 KHz
Update Time:	1/F + 25 msec	**Amplitude:**	1 Vp-p to 40 Vp-p
Linearity:	±0.01% of reading	**Output:**	0-20 mA, 0-5 V, 0-10 V,
			4-20 mA, 1-5 V, 2-10V

***Note: for supply voltage below 24V consult factory for maximum load recommendations**

FIP

Red = 10-30 VDC
Black = Common
White = Signal Out



- *** Meter mounted, microprocessor based converter**
- *** User adjustable frequency span**
- *** DC Power**
- *** Six output options - factory set**
- *** 3 pin electrical plug connector or 1/2" NPT conduit connection**

Technical Specifications:

Supply Voltage:	10-30 VDC*	**Input:**	0.25 Hz to 5 KHz
Update Time:	1/F + 25 msec	**Amplitude:**	1 Vp-p to 40 Vp-p
Linearity:	±0.01% of reading	**Output:**	0-20 mA, 0-5 V, 0-10 V,
			4-20 mA, 1-5 V, 2-10V

***Note: for supply voltage below 24V consult factory for maximum load recommendations**

Enclosure Certifications:

NEC Class I Groups C, D; Class II Groups E, F,G
UL Standard 886 - CSA Standard C22.2 No. 30

Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

DSV-100
I/P Converter

Technical Specifications:

- Digital processing
- Programmable set-up
- Pressure rating up to 100 PSI
- Din Rail or Panel Mount
- Integral LED display modes
- Lightweight compact design
- Multiple input modes
- Front touch key control

What is a DSV-100 I/P Converter?

The DSV-100 I/P Converter is a compact high performance digital servo pressure control valve. Accepting either current, voltage or touch key input, the I/P Converter precisely regulates air pressure for directing process control valves and air or fluid regulators. The microprocessor-based converter delivers high accuracy pressure regulation with extremely low dynamic response times for improved process control and high product quality. A highly visible integral LED display eliminates the need to any additional display components, providing a display of actual pressure, set point pressure or the actual pressure deviation from set point. Additional diagnostic test modes measure the system response time or checks for line leaks providing actual real-time data invaluable in commissioning, monitoring or troubleshooting an installation. User set-up of output pressure range and input voltage or current-span is accomplished quickly and easily via the two touch keys and display. The lightweight design and compact DIN rail mount package maximizes panel component density while the push-in type 1/4” pneumatic hose connectors and 5 pin style electrical connection with molded cable assemblies minimize installation time and cost.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

DSV-100 Series I/P Converter

Converter Technical Data

Power Requirements:

Supply Voltage	10 - 24 VDC
Supply Current	85 mA. @ 15 VDC

Signal Output:

Pressure Signal	0-5 VDC
(Actual pressure, 0 to 100% of programmed output range)	

Signal Inputs:

Voltage Input	0-5, 0-10 or 1-5 VDC
Voltage Input Impedance	10 Kohm
Current Input	0-20 mA, 4-20 mA
Current Input Impedance	250 ohm

Specifications:

Pressure Range	0-100 psig
Output Pressure	0-100% (programmable)
Flow Rate, 100 psig @ Inlet	0.6 SCFM max
Recommended Filtration	20 Micron
Min. Closed End Volume	2.13 cu. in. (35 ml)
Linearity (typical)	±0.1% F.S.
Hysteresis (typical)	±0.1% F.S.
Repeatability (typical)	±0.2% F.S.
Accuracy (typical)	±0.3% F.S.

Wetted Parts:

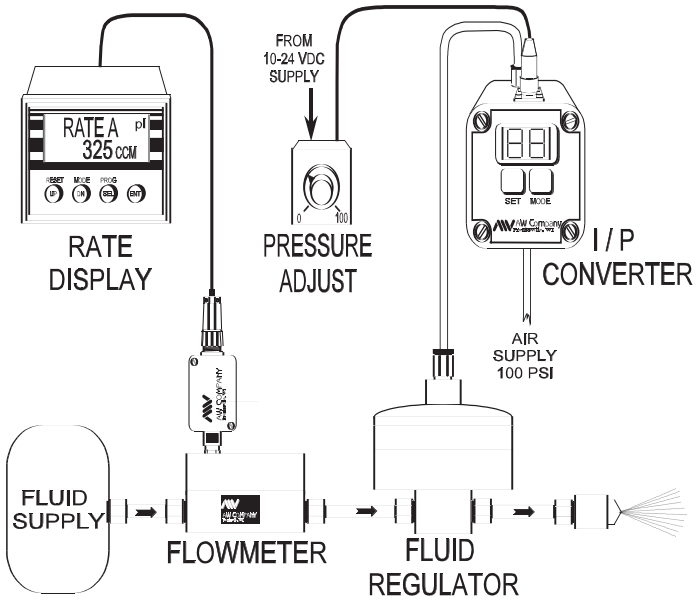
Elastomers	RTV, Glass
Manifold	Aluminum
Valves	Nickel Plated Brass
Press. Transducer	RTV, Aluminum, Plastic

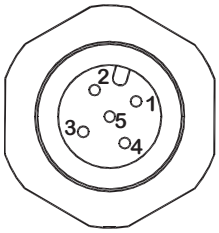
Physical:

Operating Temp. Range	32-158°F (0-70°C)
Weight	1.0 lb (.45 Kg.)
Housing	Polycarbonate
Protection Rating	NEMA 12 (IP55)

Dynamic Response:

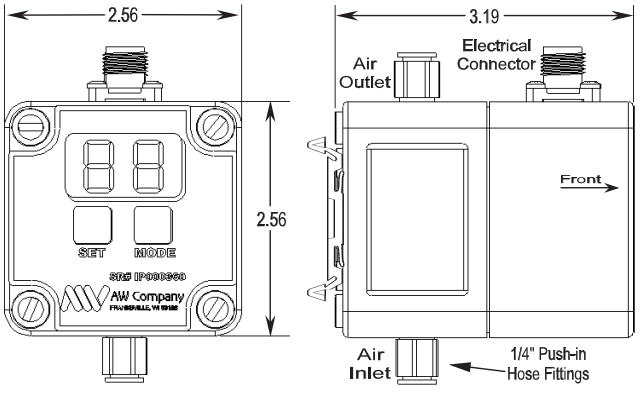
10 - 90% F.S. Rated Output	180 ms.
Response Test Volume	0.76 cu. in. (12.5 ml)

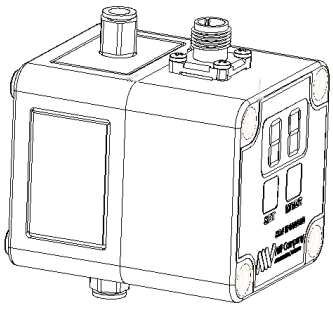




Electrical Connection for Voltage Input	Connector Pin
10-24 VDC Supply	1-Supply
Supply/Signal Common	2-Ground
Control Voltage Signal	3- +M/mA In
Not used	4-Not used
Analog Pressure Output	5-Analog Output 0-5V

Electrical Connection for Voltage Input	Connector Pin
10-24 VDC Supply	1-Supply
Supply Common	2-Ground
+ mA Control Signal	3- +V/mA In
-mA Control Signal	4- -mA
Analog Pressure Output	5-Analog Output 0-5V





Products may be subject to change without notice – Contact factory for current information

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

AW FLOW METERS

ProScan™
In-Line Process Sensor

Technical Specifications:

- Monitors turbidity and product concentration
- 4-20 mA output
- Detects phase transitions
- Registered with 3-A Sanitary Standards
- NEMA 6/ IP67 enclosure
- Sanitary clamp connections
- 316L Stainless steel construction
- Sapphire lens

What is a ProScan In-line Process Sensor?

ProScan is an in-line optical sensor that uses NIR technology to accurately and instantly detect product transitions, monitor turbidity and measure product concentrations at all stages of your liquid process. Utilizing advanced optical technology, ProScan sends a beam of light into the process and measures the backscatter. The intensity of this scatter is proportional to solids concentration. ProScan's internal microprocessor converts this scatter to a linearized 4-20 mA output which can easily link to a PLC, DCS or data logger. ProScan acts as an eye in your process to allow real-time process control and help improve product quality, improve automation, reduce BOD charges, reduce shrinkage and reduce water and utility charges. ProScan has a history of successful use with over 100 leading companies in North America, including applications in dairy, brewing, meat and juice processing. ProScan is registered with 3-A Sanitary Standards and features a sapphire lens and 316 stainless steel body.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

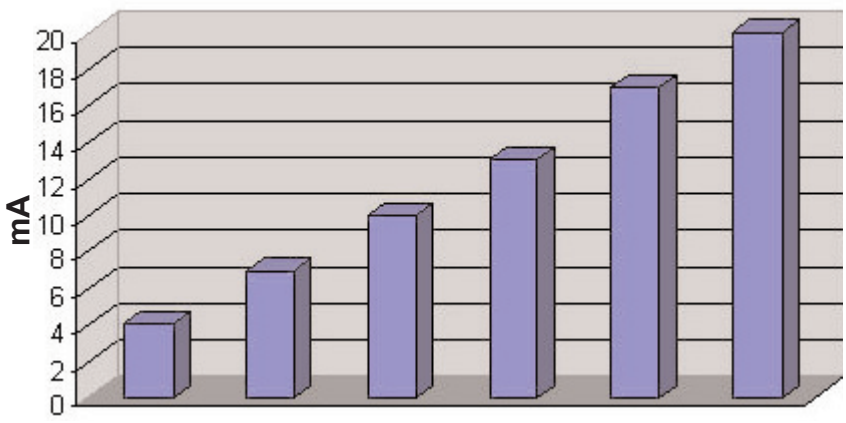
AW FLOW METERS

ProScan™
In-Line Process Sensor

Sensor Technical Data

Body & Connector:	316L Stainless Steel
Optical Lens:	Sapphire
Lens Seal:	FDA approved silcone rubber
Process Connections:	1 1/2", 2", 2 1/2" or 3" Sanitary Clamp
Output:	4-20 mA
Power Consumption:	0.45 Watts
Supply Voltage:	15-24 VDC
Temperature Rating:	32 ° to 212° F Constant 32 ° to 300° F Intermittent
Enclosure Protection:	NEMA 6/ IP67

Typical ProScan Response with Fluid Milk Products



Utilizing advanced optical and microprocessor technology, ProScan produces a linearized 4-20 mA output that can be tailored to a virtually limitless range of applications. The sensor attaches directly to the process line and allows real-time, in-line analysis of fluid streams. The sapphire lens and 316 stainless steel construction will withstand the high temperatures, rapid temperature fluctuations and chemical agents typical in food and pharmaceutical processes. The simple design allows plant personnel to install, tune and maintain it with ease.

Products may be subject to change without notice - Contact factory for current information

Don't Let Your Profits Go Down The Drain

ProScan acts as an eye in your process to provide critical information for process control. ProScan can be installed virtually anywhere in the production or waste stream where it is important to detect process interfaces, monitor turbidity or measure product concentrations. In pasteurizer lines, a popular installation site is downstream of the HTST. The ProScan signal can be used to switch valves and direct the liquid stream to the filler, recirculate it or divert to drain. ProScan is also a valuable tool to control CIP prerinse cycles and maximize product recovery. The simple NIR sensor helps processors recover as much product as possible before initiating cleaning and helps to ensure expensive chemicals are added at the appropriate time. Further, by monitoring the solids level and turbidity of the process, ProScan can help determine if the fluid should be added to product recovery tanks or sent to the drain. In addition, ProScan can act as an excellent monitor of BOD loading on waste lines. From receiving lines to pasteurizing lines to filling lines to waste lines, ProScan offers an economical solution to your process control needs.

8809 Industrial Drive, Franksville, WI 53126 Phone: (262) 884-9800 Fax: (262) 884-9810
Email: awinfo@aw-lake.com www.awflowmeters.com

SABRE

FLOW TURBINES

from AW-Lake Company

More than 50 Years in Turbine Flow Meters

STANDARD TURBINE FLOW METER (TRG SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications

MULTIPLE FLOW RANGES
.08 TO 5,000 GPM (gal/min)

PRESSURE
Working pressure up to 5,000 psi

ACCURACY
± 1% of reading or better

REPEATABILITY
± 0.1%

TURN DOWN RATIO
10:1

TEMPERATURE
Fluid temperature of -150° to 450°F

FILTRATION
300 microns

END CONNECTIONS
NPT

MATERIALS OF CONSTRUCTION
- Body & Rotor Support: 316 Stainless Steel
- Rotor: Stainless Steel
- Rotor Shaft: Tungsten Carbide

Turbine meter shown with Mag-PB sensor

Benefits

RUGGED AND COST-EFFECTIVE

The sturdy construction of this turbine flow meter means high performance and longer service life at an affordable price.

INDUSTRY STANDARD

The TRG Series flow meter comes with a standard NPT end connection for universal applications.

VERSATILE

This meter is capable of measuring flow in line sizes from 1/2" to 10".

ELECTRONIC INTEGRATION

This meter can provide displayed flow rate, totalization, current or voltage outputs through a variety of compatible electronics.

SIMPLIFIED MAINTENANCE

The TRG Series was designed with only one moving part for easy cleaning and maintenance.

STANDARD TURBINE FLOW METER (TRG SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

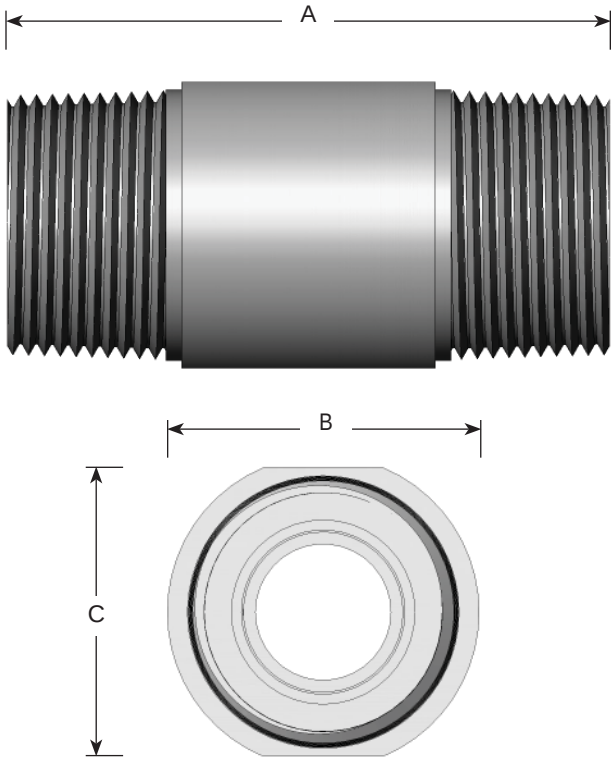
Meter Specifications

Part Number	Range (gal/min)	K-Factor * (Pulses/ gal)	Porting	Filtration (micron)	Pressure Rating (psi)	Weight (lbs)
TRG-11.250-5	0.08 to 0.4	125,000	1/2" Male NPT	100	5,000	0.75
TRG-11.300-5	0.13 to 1.06	91,500	1/2" Male NPT	100	5,000	0.75
TRG-11.375-5	0.3 to 3	48,000	1/2" Male NPT	100	5,000	0.75
TRG-11.500-5	0.9 to 9	15,000	1/2" Male NPT	100	5,000	0.75
TRG-11.750-5	1.6 to 16	10,500	1/2" Male NPT	300	5,000	0.75
TRG-11.750	1.6 to 16	10,500	1" Male NPT	300	5,000	1.25
TRG-11.875	3.2 to 32	1,450	1" Male NPT	300	5,000	1.50
TRG-1110	5.3 to 53	800	1-1/2" Male NPT	300	5,000	2.50
TRG-1120L	13 to 200	400	2" Male NPT	300	5,000	3.25

* K-Factors given are averaged. A calibration sheet accompanies every meter sold.

Meter Dimensions

Part Number	A	B	C
TRG-11.250-5	3.00"	1.35"	1.20"
TRG-11.300-5	3.00"	1.35"	1.20"
TRG-11.375-5	3.00"	1.35"	1.20"
TRG-11.500-5	3.00"	1.35"	1.20"
TRG-11.750-5	3.00"	1.35"	1.20"
TRG-11.750	3.00"	1.55"	1.40"
TRG-11.875	3.00"	1.55"	1.40"
TRG-1110	3.00"	2.15"	1.95"
TRG-1120L	4.00"	2.70"	2.55"



Compatible Electronics

Model	Sensor Type	Temp (ºF)
MAG-PB	Pulse Sensor - *No Amplifier Required*	40 to 185
FIP-4HS	4-20 mA Output Sensor	-40 to 185
Meter Mounted Displays:		
RT-Ex 10A	Battery-Powered Monitor	0 to 140
RT-Ex 15A	15-24 VDC Powered Monitor	0 to 140

* For additional sensors available, contact factory.

Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

BASIC TURBINE FLOW METER (TW SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications

FLOW RANGES
5 - 50 GPM (gal/min)
40 - 400 GPM

PRESSURE
Working pressure up to 5,000 psi

ACCURACY
± 1% of reading or better

REPEATABILITY
± 0.1%

TEMPERATURE
Fluid temperature of -150° to 325°F

FILTRATION
300 microns

END CONNECTIONS
NPT

MATERIALS OF CONSTRUCTION
- Body & Flow Straightener: 316 Stainless Steel
- Rotor: Stainless Steel
- Rotor Shaft: Tungsten Carbide
- Rotor Support: 316 Stainless Steel

Benefits

ACCURATE & RELIABLE

The TW Series turbine meter is accurate to ±1% of reading with repeatability of better than ±0.1%.

RUGGED AND COST-EFFECTIVE

All stainless steel construction and tight machining tolerances make for excellent durability/long life.

INDUSTRY STANDARD

This flow meter comes with a standard NPT end connections for universal applications.

VERSATILE

The meter or just the meter internals are perfect drop-in replacements for NuFlo/Haliburton and Blancett turbine flow meters.

ELECTRONIC INTEGRATION

This meter can accept a variety of existing electronics, such as the MCII, MCIII and BL2800.

SIMPLIFIED MAINTENANCE

Maintenance is easy with the rotor replacement kit. Rotor can be replaced in just 2-3 minutes.

BASIC TURBINE FLOW METER (TW SERIES)

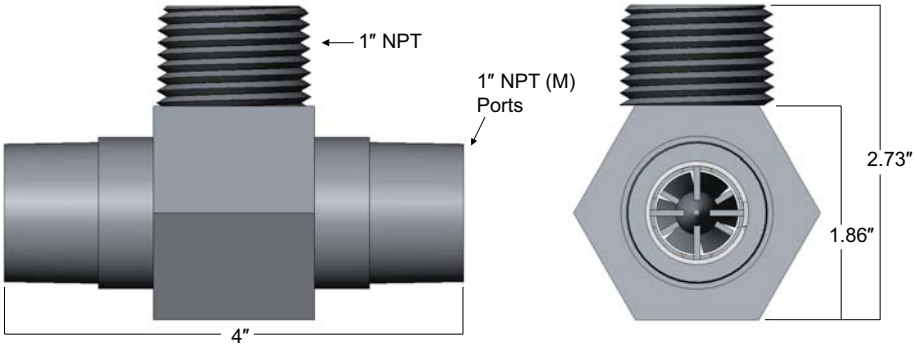
SABRE FLOW TURBINES
from AW-Lake Company

Meter Specifications

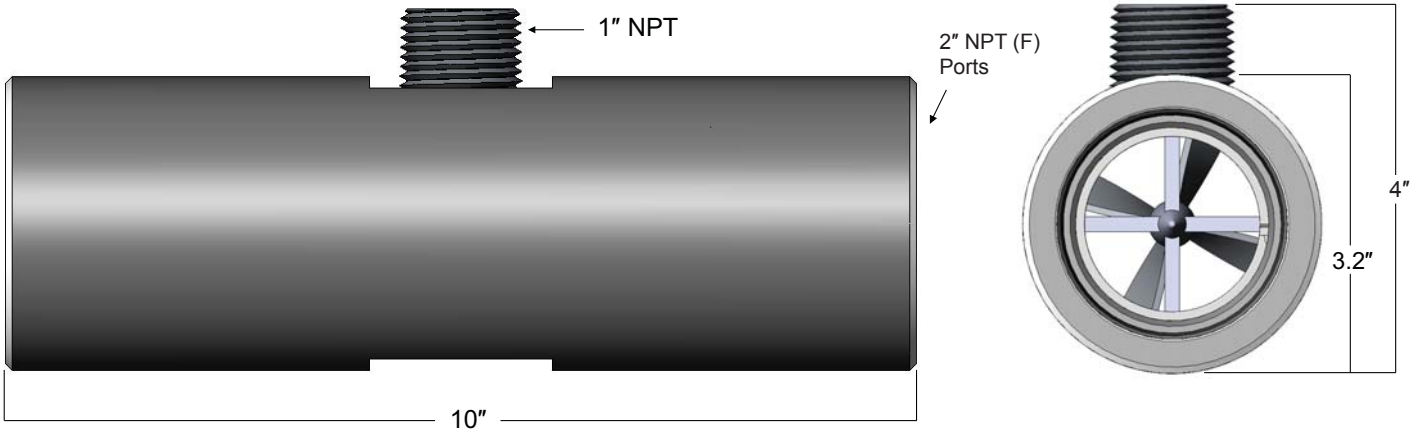
Part Number	Range (gal/min)	K-Factor * (Pulses/ gal)	Porting	Filtration (micron)	Pressure Rating (psi)	End to End Length	Repair Kit ** Part Number
TW-100-x	5-50	900	1" Male NPT	300	5,000	4" / 102 mm	TW-KIT-100
TW-200-x	40-400	45	2" Female NPT	300	5,000	10" / 254 mm	TW-KIT-200

* x=1 for 1 pickup collar, x=2 for 2 pickup collars
** K-Factors given are averaged. A calibration sheet accompanies every meter sold.
*** Repair Kits include retaining rings, flow straightener and rotor assembly.

Meter Dimensions



Turbine Flow Meter with 1" Connections



Turbine Flow Meter with 2" Connections

Sensor Options*

Model	Sensor Type	Temp (ºF)
MG-300	Magnetic Pick-up	-150 to 325
JV-400	Meter Mounted Amplifier	-40 to 185
FIP-4TS	4-20 mA output	-40 to 300
Meter Mounted Displays:		
TM-8A	no output	0 to 140
TM-8B	2 pulse output	0 to 140
TM-8C	4-20mA and pulse outputs	0 to 140

* For additional sensors available, contact factory.

Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

HIGH PRESSURE TURBINE FLOW METER (HM SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications

MULTIPLE FLOW RANGES
.08 to 16 GPM (gal/min)

PRESSURE
Working pressure up to 15,000 psi

ACCURACY
± 0.5% of reading or better

REPEATABILITY
± 0.1%

TURN DOWN RATIO
10:1

TEMPERATURE
Fluid temperature of -150° to 450°F

FILTRATION
300 microns

END CONNECTIONS
AutoClave

MATERIALS OF CONSTRUCTION
- Body & Rotor Support: 316 Stainless Steel
- Rotor: Stainless Steel
- Bearings: Tungsten Carbide

Benefits

INDUSTRY STANDARD

End connections available on this meter include AutoClave®, Graloc®, and Techlok®.

HIGH PRESSURE SUITABLE

The HM Series of turbine flow meters can handle low viscosity fluids flowing under extremely high pressures, such as hydraulic and fuel systems and offshore chemical injection systems.

HAZARDOUS AREA APPROVED SENSORS

A complete line of hazardous area approved sensors and displays are available for the HM Series meters.

DURABLE AND COST-EFFECTIVE

This meter's rugged 316 stainless steel construction provides a durable and economic flow metering solution to sanitary environments.

HIGH PRESSURE TURBINE FLOW METER (HM SERIES)

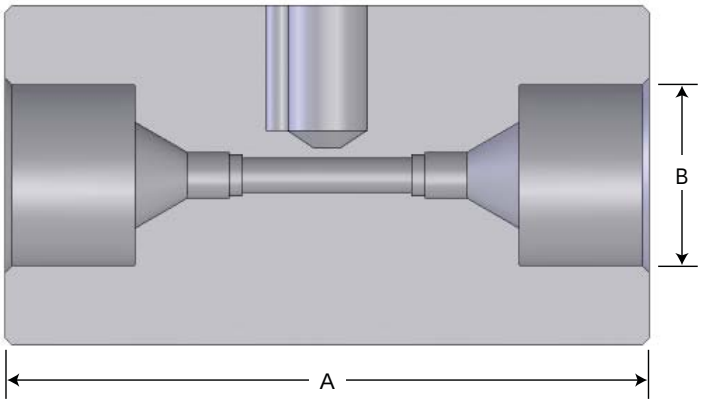
SABRE FLOW TURBINES
from AW-Lake Company

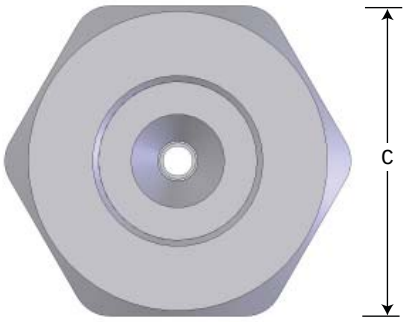
Meter Specifications

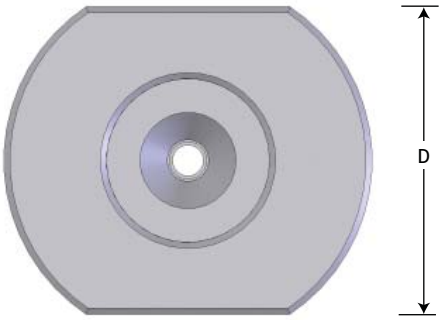
Part Number	Range (gal/min)	K-Factor * (Pulses/ gal)	Frequency (0-max. Hz)	Pressure Rating (psi)
HM 003/TC-AC/S	0.08 to 0.4	123,000	800	15,000
HM 004/TC-AC/S	0.13 to 1.05	94,600	1,650	15,000
HM 005/TC-AC/S	0.2 to 1.6	67,400	1,750	15,000
HM 006/TC-AC/S	0.3 to 2.6	39,000	1,750	15,000
HM 007/TC-AC/S	0.5 to 5	19,000	1,650	15,000
HM 009/TC-AC/S	0.9 to 9	19,000	2,750	15,000
HM 011/TC-AC/S	1.6 to 16	9,000	2,400	10,000

** Average figures, exact figures can be taken from the calibration record supplied with each flow meter. Linearity: +1.0% of actual flow, HM 009: +1.5% of actual flow at 1cSt.*

Meter Dimensions







HM 007 & HM 009

Part Number	A	B	C	D
HM 003/TC-AC/S	3.54”	1-3/16”	1.61”	-
HM 004/TC-AC/S	3.54”	1-3/16”	1.61”	-
HM 005/TC-AC/S	4.13”	1-1/32”	1.61”	-
HM 006/TC-AC/S	4.13”	1-1/32”	1.61”	-
HM 007/TC-AC/S	5.31”	1-3/8”	-	1.97”
HM 009/TC-AC/S	5.31”	1-3/8”	-	1.97”
HM 011/TC-AC/S	5.51”	1-3/8”	1.97”	-

Sensor Options*

Model	Sensor Type	Temp (ºF)
VTEK/P	Pulse output sensor	-150 to 325
VTEK/P-EX	1.5 pulse output sensor	-40 to 185

* For additional sensors available, contact factory.

Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

FLANGED TURBINE FLOW METER (HM...F SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications

MULTIPLE FLOW RANGES
.008 to 12,000 GPM (gal/min)

PRESSURE
Working pressure is flange dependent

ACCURACY
± 0.5% of reading or better

REPEATABILITY
± 0.1%

TURN DOWN RATIO
10:1

TEMPERATURE
Fluid temperature of -459° to 662°F

FILTRATION
300 microns

END CONNECTIONS
Equipped with flanges as per DIN or ANSI

MATERIALS OF CONSTRUCTION
- Body & Rotor Support: 316 Stainless Steel
- Rotor: Stainless Steel
- Bearings: Tungsten Carbide

Benefits:

FAST RESPONSE TIME & HIGH RESOLUTION

The Turbine wheel's low moment of inertia allows a fast acceleration from standstill up to full number of revolutions within 5 to 50 msec. For that reason, dynamic measurements can be made. The resolution can amount to as much as 35,000 pulses per liter.

WIDE TEMPERATURE RANGE

Standard turbine: -4 up to 248°F
Special models for cryogenic liquids: -459°F
Special models w/ hi-temp pickups: up to 662°F.

LOW CONTAMINATION RISK

The spacing of the turbine wheel and bearing mount is wide enough to protect against particles in fluid jamming the turbine wheel. And the Twist of flow in this area has a self-cleaning effect for the bearing.

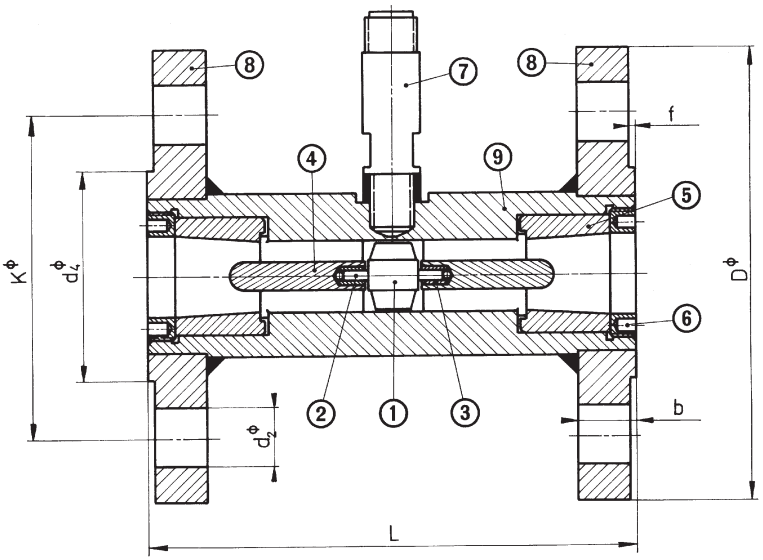
FLANGED TURBINE FLOW METER (HM...F SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Meter Specifications

Part Number	Range (gal/min)	K-Factor * (Pulses/ ltr)		Frequency (0-max. Hz)	
HM 9 EP	0.008 to 0.2	139,000		1970	
HM 3/1.5	0.08 to 0.4	32,000	32,500	1,000	1,000
HM 3/4	0.13 to 1.06	24,000	19,000	1,250	1,250
HM 5/6	0.2 to 1.6	17,800	17,800	1,740	1,780
HM 5/10	0.3 to 2.6	11,000	11,000	1,750	1,750
HM 7	0.5 to 5	5,200	5,200	1,800	1,800
HM 9	0.9 to 9	1,900	4,200	1,080	2,200
HM 11	1.6 to 16	1,300	2,730	1,350	2,700
HM 13	2.2 to 22	900	1,900	1,300	2,600
HM 17	3.2 to 32	380	840	800	1,650
HM 19	4 to 40	310	650	925	1,600
HM 22	5.3 to 53	217	450	800	1,600
HM 24	6.6 to 66	170	362	800	2,000
HM 28	7.9 to 95	155	320	960	2,000
HM 30	9.2 to 106	130	270	860	1,850
HM 36	10.6 to 132	60	135	600	1,200
HM 40	13.2 to 198	105	110	1,320	1,400
HM 50	18.5 to 317	65		1,400	
HM 65	26.4 to 528	25		850	
HM 80	42.8 to 845	11		615	
HM 100	66 to 1320	7		560	
		Pulses/ m^3			
HM 125	79 to 1744	4500		495	
HM 150	94 to 2642	3400		420	
HM 200	114 to 3540	415		134	
HM 250	219 to 6604	266		150	
HM 300	423 to 12,680	135		110	

** The wheel's axial pitch is halved for viscosities from 8 mm^2/s onwards, therefore pulse rates will double for dia 9 up to 36. All K-Factors and output signals are average values. Exact specifications can be taken from individual calibration records.*



1...4=Measuring Kit
1 = turbine wheel
2 = shaft
3 = bearing bush
4 = flow rectifier

5 = inlet cone
6 = ring nut
7 = pickup
8 = flange
9 = body

Sensor Options*

Model	Sensor Type	Temp (°F)
VTEK/P	Pulse output sensor	-150 to 325
VTEK/P-EX	Pulse output sensor	-40 to 185

* For additional sensors available, contact factory.

Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

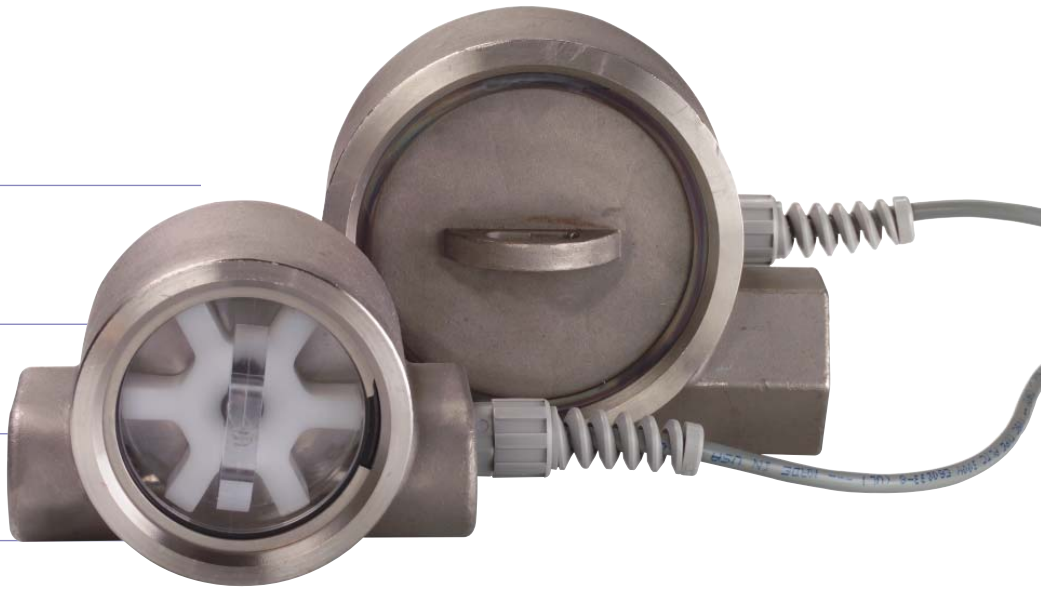
email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

STANDARD PADDLE WHEEL SENSOR (KW SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications:



FLOW RANGES
0.5 - 15 GPM (gal/min)
1.5 - 50 GPM

PRESSURE
Working pressure up to 500 psi
(up to 200 psi w/ optional clear cover)

ACCURACY
± 2% of full scale or better

REPEATABILITY
± 0.5% of full scale or better

LINEAR TURN DOWN RATIO
10:1

TEMPERATURE
Fluid temperature of 20° to 225°F

FILTRATION
150 microns

END CONNECTIONS
NPT(F)

MATERIALS OF CONSTRUCTION

Wetted Components:
- Body: 316 Stainless Steel
- Cover: 316 Stainless Steel (optional clear polycarbonate)
- Rotor: Acetal Copolymer
- Rotor Shaft: 316 Stainless Steel
- Bearing: PEEK
- Seal: Buna-N (others avail.)

Non-Wetted Components:
- Encapsulant: Epoxy
- Strain Relief: Nylon
- Lock Ring: Stainless Steel
- Wire Insulation: High-Temperature PVC

Benefits:

CHOICE OF THREE PORT SIZES
Select from 1/2" , 3/4" or 1" NPT(F) porting to meet system requirements.

EASY MAINTENANCE AND CLEANING
Has only one moving component, the impeller. Cleaning and maintenance may be performed without removing the sensor from the piping.

SEVERAL OUTPUTS AVAILABLE
The standard interface is a 2-wire, 4-20mA current loop. Sensor signal may be transmitted on a low cost wire without degradation. Pulse and 0-5 VDC are also available.

HERMETICALLY ENCAPSULATED CIRCUITRY
Withstands the harshest environments.

CONNECTS DIRECTLY TO YOUR FLOW MONITORING INSTRUMENTS
Can be connected directly to analog acquisition cards, chart recorders or other monitoring instruments, without external signal conditioning.

SIMPLY PLUMB AND APPLY POWER
Comes factory calibrated to your flow range specifications.

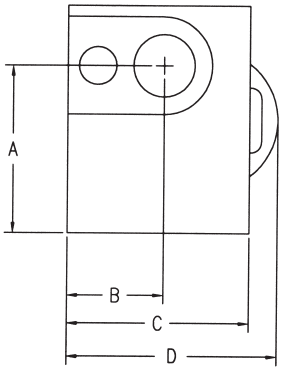
VALUE PRICING
Combined with low cost operation and maintenance, equals better bottom line savings for your operation.

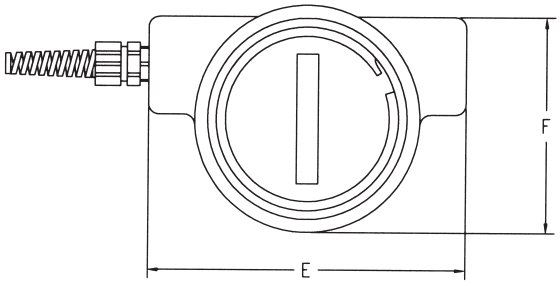
STANDARD PADDLE WHEEL SENSOR (KW SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Meter Dimensions

DIM	1/2" NPTF	3/4" - 1" NPTF
A	1.94" (49mm)	3.06" (78mm)
B	1.13" (29mm)	1.33" (34mm)
C	2.00" (51mm)	2.46" (62mm)
D	2.60" (66mm)	2.88" (73mm)
E	3.70" (94mm)	5.25" (133mm)
F	2.63" (67mm)	3.80" (97mm)

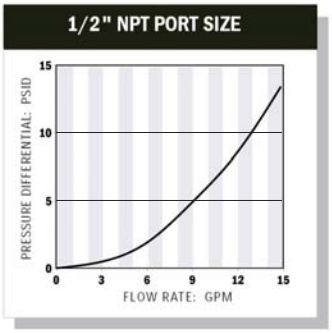


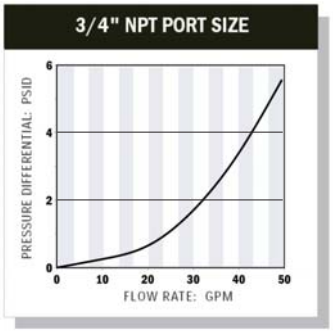


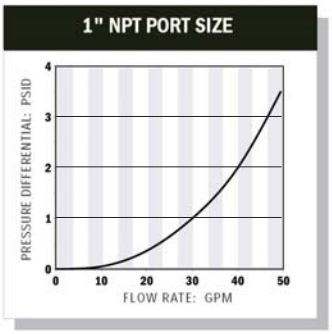
Electronic Specifications

4-20 mA Version:	
Power requirements:	12-35 VDC, loop powered
Load driving capacity:	1150 Ohms maximum
Maximum transmitting distance:	Limited only by wire resistance & supply voltage
Response time:	2 seconds to 90% (step change)
Resolution:	Infinite
Over-current limit:	Self limiting at 35 mA
Other protection:	Reverse polarity
0-5 VDC Version:	
Power requirements:	12-35 VDC
Maximum current:	25 mA DC
Minimum load resistance:	1000 Ohms
Maximum transmission distance:	200 feet recommended
Response time:	> 5 seconds to 90% (step change)
Resolution:	Infinite
Pulse Output Version:	
Power requirements:	5-24 VDC
Maximum current:	25 mA DC
Minimum load resistance:	1000 Ohms
Maximum transmission distance:	200 feet recommended
Response time:	< 100 mS
Protection:	Short circuit & reverse polarity
K-Factor:	1/2" port ≈ 200 pulses/gallon 3/4" & 1" ports ≈ 60 pulses/gallon
Relay Output Version:	
Power requirements:	12-35 VDC
Maximum transmission distance:	200 feet recommended
Switch contact:	Form C, 5A max @ 120 or 240 VAC
Hysteresis:	5% of set point maximum
Set point repeatability:	1% of full scale

Typical Pressure Differentials







Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

ECONOMIC PADDLE WHEEL SENSOR (KW-ES SERIES)

SABRE FLOW TURBINES
from AW-Lake Company

Technical Specifications:

FLOW RANGES
0.5 - 15 GPM (gal/min)
0.25 - 4.5 GPM (low-flow version - LF)

PRESSURE
Working pressure up to 150 psi

ACCURACY
± 2% of full scale or better

REPEATABILITY
± 0.5% of full scale or better

LINEAR TURN DOWN RATIO
10:1

TEMPERATURE
Fluid temperature of 20° to 150°F

FILTRATION
150 microns

END CONNECTIONS
1/2" NPT(F)

MATERIALS OF CONSTRUCTION

Wetted Components:
- Body: Glass-Filled Polypropylene
- Cover: Clear Polycarbonate
- Rotor: Acetal Copolymer
- Rotor Shaft: Stainless Steel
- Bearing: PEEK
- Seal: Buna-N (others avail.)

Non-Wetted Components:
- Encapsulant: Epoxy
- Strain Relief: Nylon
- Lock Ring: Glass-Filled Polypropylene
- Wire Insulation: High-Temperature PVC

Benefits:

CHOICE OF OUTPUTS
Select from 4-20 mA, 0-5 Vdc, pulse or relay outputs to meet system requirements.

EASY MAINTENANCE & CLEANING
Has only one moving component, the impeller. Cleaning and maintenance may be performed without removing the sensor from the piping.

SIMPLE INSTALLATION
Comes factory calibrated to your flow range specifications.

HERMETICALLY ENCAPSULATED CIRCUITRY
Withstands the harshest environments.

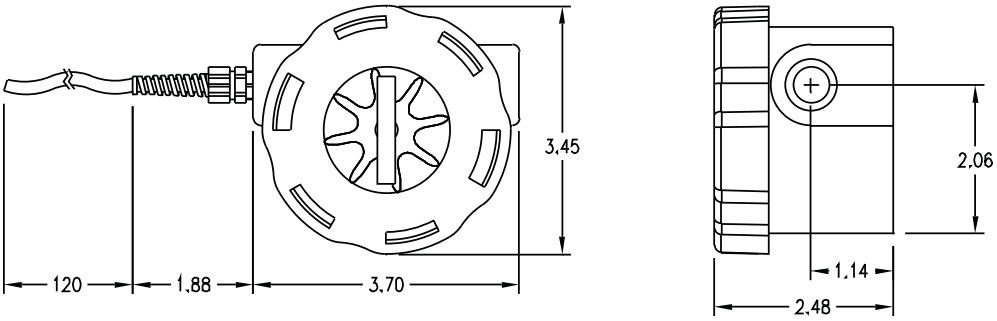
COMPATIBLE
Can be connected directly to analog acquisition cards, chart recorders or other monitoring instruments, without external signal conditioning.

VALUE PRICING
Combined with low cost operation and maintenance, equals better bottom line savings for your operation.

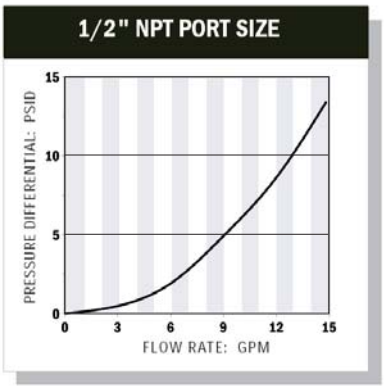
ECONOMIC PADDLE WHEEL SENSOR (KW-ES SERIES)

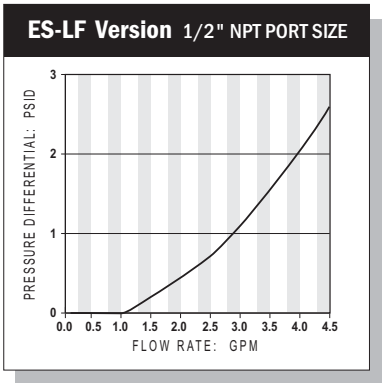
SABRE FLOW TURBINES
from AW-Lake Company

Meter Dimensions



Typical Pressure Drop





Electronic Specifications

4-20 mA Version:	
Power requirements:	12-35 VDC, loop powered
Load driving capacity:	1150 Ohms maximum
Maximum transmitting distance:	Limited only by wire resistance & supply voltage
Response time:	2 seconds to 90% (step change)
Resolution:	Infinite
Over-current limit:	Self limiting at 35 mA
Other protection:	Reverse polarity
0-5 VDC Version:	
Power requirements:	12-35 VDC
Maximum current:	25 mA DC
Minimum load resistance:	1000 Ohms
Maximum transmission distance:	200 feet recommended
Response time:	> 5 seconds to 90% (step change)
Resolution:	Infinite
Pulse Output Version:	
Power requirements:	5-24 VDC
Maximum current:	25 mA DC
Minimum load resistance:	1000 Ohms
Maximum transmission distance:	200 feet recommended
Response time:	< 100 mS
Protection:	Short circuite & reverse polarity
Average K-Factor:	≈ 200 pulses/gallon -LF version(low flow) ≈ 330 pulses/gallon
Relay Output Version:	
Power requirements:	12-35 VDC
Maximum transmission distance:	200 feet recommended
Switch contact:	Form C, 5A max @ 120 or 240 VAC
Hysteresis:	5% of set point maximum
Set point repeatability:	1% of full scale

Contact Sabre Turbine Meters:

toll-free: **800-850-6110**

fax: **262-884-9810**

email: **sabreinfo@aw-lake.com**

website: **www.sabreflow.com**

LAKE
MONITORS

Flow Measurement Instrumentation for a Wide Range of Applications & Industries

Process Cooling • Fluid Power • Industrial Lubrication • Hydraulics • Factory Automation • Agricultural Vehicles
Construction Equipment • Pneumatics • OEM Manufacturing • Fire Equipment • Mining • Pulp & Paper Mills • Machining
Industrial Robotics • Steel Mills • Petrochemical • Industrial Maintenance • Machine Monitoring • Power Distribution
Casting & Foundry • Process Control • Trucking Fleets • Power Steering Analyzers • HVAC • Medical Equipment OEMs
Telecommunications • Chillers • Oil & Gas Exploration • Fuel Usage Monitoring • Paints & Coatings • Construction
Snow-Making • Aerospace • Reverse Osmosis Systems • Military • High Pressure Pipe Cleaning • Mixing Paints & Inks
Drilling • Grouting • Power Transmissions • Case Drains • Marine • General Industrial [illegible]eration • Power

Excellence in Flow

Lake Monitors
Basic In-line Liquid Flow Rate Monitors

FOR 1/8" – 2" PIPE SIZES

Ideal for monitoring case drain flows, pump performance and media flows through hydraulic circuits and sub-circuits

STYLE B

CHOICE OF THREE MATERIALS OF CONSTRUCTION

Select from aluminum, brass or stainless steel to meet system and media compatibility requirements.

UNRESTRICTED MOUNTING

Allows the designer to install the monitor in any orientation – horizontal, vertical or inverted.

SUPERIOR EXTERIOR DESIGN

Weather-tight for use outdoors and/or on systems where wash downs are required.

GOOD VISCOSITY STABILITY

A sharp-edged stainless steel orifice provides excellent measurement stability for viscosities from 0-500 SSU.

RUGGED AND RELIABLE

Designed as a hydraulic service tool, this monitor will provide years of maintenance-free performance.

HIGH PRESSURE OPERATION

The magnetically coupled follower and rigid pressure vessel design allows operation to 6000 PSIG and use with opaque liquids.

24 DIFFERENT PORTS AVAILABLE

Standard selection of NPT, SAE and BSP ports reduces the amount of adapters required for installation.

LOW COST ACCURACY

±2.5% of range accuracy in center third of scale; ±4% in upper and lower thirds.

BI-DIRECTIONAL AND REVERSE FLOW OPTION OFFERED

Basic in-line monitors are also available in bi-directional and reverse flow versions. Contact Lake Monitors for more information.

ENGINEERING SPECIFICATION

THE IN-LINE FLOW RATE MONITOR SHALL:

- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower third.
- Have a stainless steel sharp-edged orifice.
- Have a weather-tight external construction.
- Be Lake Monitors No. B _ _ – _ _ _ – _ _

Basic In-line Liquid Flow Rate Monitors

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals	Buna-N (STD), EPR, Viton® or Kalrez®	Buna-N (STD), EPR, Viton® or Kalrez®	Viton® with Teflon® backup (STD), Buna-N, EPR or Kalrez®
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers

MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

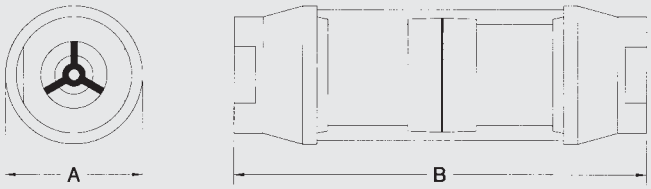
	ALUMINUM	BRASS	STAINLESS STEEL
Window Tube	Polycarbonate (STD)	Polycarbonate (STD)	Polycarbonate (STD)
Window Seals	Buna-N (STD), Teflon®	Buna-N (STD), Teflon®	Buna-N (STD), Teflon®

PERFORMANCE

Measuring accuracy*:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range:	.05-150 GPM (0.2-560 LPM)
Pressure differential:	See graphs on the right for typical pressure differentials. For specific differential information, refer to Lake data sheet PDDS-404.
Maximum operating pressure:	aluminum and brass monitors: 3500 PSIG (240 Bar) stainless steel monitors: 6000 PSIG (410 Bar)
Maximum operating temperature:	240ºF (116ºC) Note: for operation to 600ºF (316ºC), see our High Temperature data sheet.
Standard calibration fluids:	Oil monitors: DTE 25® @ 110ºF (43ºC), 0.873 sg Water monitors: tap water @ 70ºF (21ºC), 1.0 sg
Filtration requirements:	74 micron filter or 200 mesh screen minimum

**Accuracy is ±4% Full-scale across entire range for "BI" option.*
TE 25 is a registered trademark of Exxon Mobil

MECHANICAL SIZE CODE



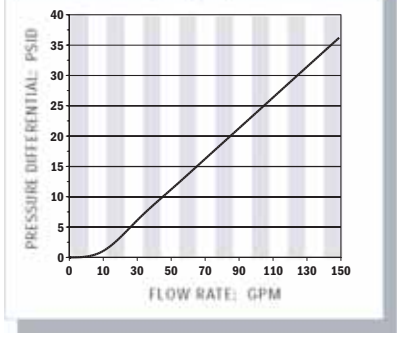
DIM	SERIES 2	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	1-1/4" (32mm)	1-7/8" (48mm)	2-3/8" (60mm)	3-1/2" (90mm)	3-1/2" (90mm)
B	4-13/16" (122MM)	6-9/16" (167MM)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
Port Sizes	NPTF: 1/8", 1/4"	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

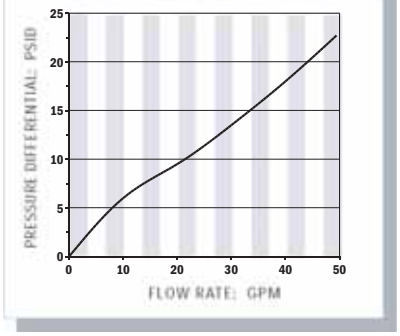
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

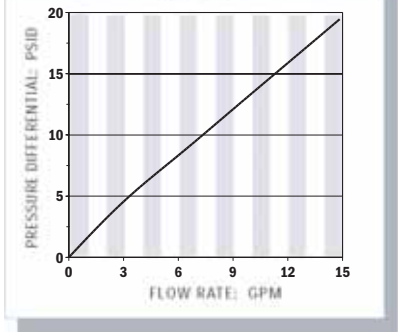
SERIES 5 MONITORS 1-1/4" - 2"



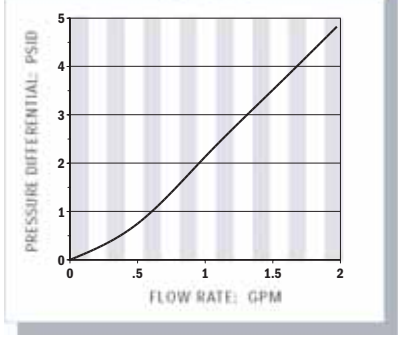
SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



SERIES 2 MONITORS 1/8" - 1/4"



AW-LAKE COMPANY INC., *A TASI Group Company*, 8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9805 / 800.850.6110

LAKE MONITORS

www.lakemonitors.com

Lake Monitors

ClearView™
VALUE FLOW METER

Economical way to monitor municipal pressure water flows, observe case drain flows and verify pump outputs.

FOR 1/2" – 1" PIPE SIZES

STYLE CV

For media compatibility, select from:

ClearView™ H_2O
VALUE FLOW METER
Polycarbonate body (ClearView H_20) or

ClearView™ +
VALUE FLOW METER
Polysulphone body (ClearView+).

UNRESTRICTED MOUNTING
Allows for horizontal, vertical or inverted installation of the meter.

COMPACT AND RUGGED DESIGN
Measures less than 8-1/4" long and 2-7/16" diameter with a rigid tube and union nut design.

VISUAL INSPECTION OF FLUID
The transparent body allows for visual inspection of fluid conditions. Diagnose problems at a glance.

MULTIPLE MATERIALS AND CALIBRATIONS AVAILABLE
With a variety of wetted materials of construction and media calibrations, the ClearView™ will be well suited to your process.

SENSING METHOD ASSURES ACCURACY
The proven variable-area piston metering assembly provides accurate, dependable flow rate indication.

SUPERIOR READABILITY
High contrast scale/indicator provides easy-to-read flow rate measuring resolution along with dual units of GPM and LPM.

MULTIPLE PORTING OPTIONS AVAILABLE
ClearView end ports are available in a variety of materials, sizes, and threading options to simplify installation.

LOW COST PRECISION
Measuring accuracy of ±5% of range and repeatability of ±1%.

ENGINEERING SPECIFICATION

THE CLEARVIEW FLOW METER SHALL:

- Use the variable area piston metering method to measure flow rate.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±5% of full scale with ±1% repeatability.
- Be Lake Monitors No. CV - _ _ - _ _

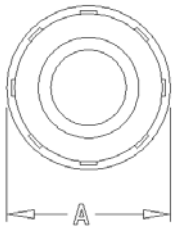
ClearView Flow Meter

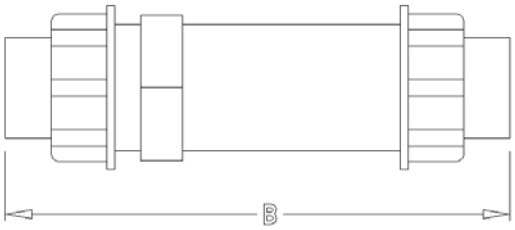
MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ClearView H_2O	ClearView +
End Ports	Brass, Polysulphone	Brass, Polysulphone
Seals	Buna-N	Buna-N
Spring	Stainless Steel	Stainless Steel
Body	Polycarbonate	Polysulphone
Indicator	Polysulphone	Polysulphone

PERFORMANCE

Measuring Accuracy:		±5% of full-scale
Repeatability:		±1% of full-scale
Flow Measuring Range:		1–30 GPM (5-110 LPM)
Turn Down Ratio (All Ranges):		10:1
Maximum operating pressure:		325 PSIG (22.4 Bar)
Maximum operating temperature:	ClearView H_2O	200°F (93°C)
	ClearView+	250°F (121°C)
Pressure Differential:		See graph on right
Filtration requirements:		74 Micron (200 U.S. mesh) minimum

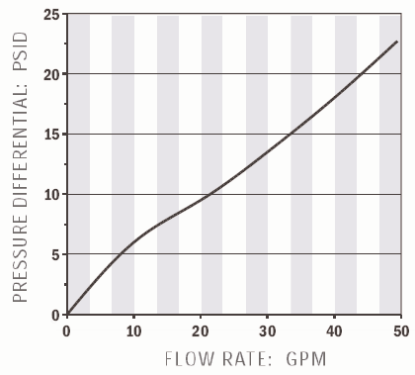




MECHANICAL SIZE CODE

DIM	1/2" Female	3/4" Female	1" Female
A	2-7/16" (62mm)	2-7/16" (62mm)	2-7/16" (62mm)
B	7-5/32" (182mm)	7-9/16" (192mm)	7-9/16" (192mm)
Port Type	NPTF, BSPP	NPTF, BSPP	NPTF, BSPP

TYPICAL PRESSURE DIFFERENTIALS



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors
High Temperature Flow Rate Monitors

FOR 1/8" – 2" PIPE SIZES

STYLE H & J

Enables flow monitoring of barrel heating fluids, thermal transfer fluids such as Syltherm® coolant flows through heat exchangers, as well as flows through hydraulic circuits and sub-circuits with elevated temps.

CHOICE OF THREE MATERIALS OF CONSTRUCTION

Select from aluminum, brass or stainless steel to meet system requirements.

UNRESTRICTED MOUNTING

Allows the designer to install the monitor in any orientation – horizontal, vertical or inverted.

GOOD VISCOSITY STABILITY

A sharp-edged stainless steel orifice provides excellent measurement stability for viscosities ranging from 0-500 SSU.

RUGGED AND RELIABLE

Designed as a hydraulic service tool, this monitor will provide years of maintenance-free performance.

HIGH PRESSURE OPERATION

The magnetically-coupled follower design allows operation to 6000 PSIG and use with opaque liquids.

24 DIFFERENT PORTS AVAILABLE

Standard selection of NPT, SAE and BSP ports reduces the amount of adapters required for installation.

LOW COST ACCURACY

±2.5% of range accuracy in center third of scale; ±4% in upper and lower thirds.

BI-DIRECTIONAL AND REVERSE FLOW OPTION OFFERED

High temperature monitors are also available in bi-directional and reverse flow versions. Contact Lake Monitors for more information.

ENGINEERING SPECIFICATION

THE HIGH TEMPERATURE IN-LINE FLOW RATE MONITOR SHALL:

- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a stainless steel sharp-edged orifice.
- Have a maximum temperature rating of: H-series 400ºF (204ºC) or J-series 600ºF (315ºC).
- Have a working pressure rating of 3500 PSIG.
- Be Lake Monitors No. H _ _ – _ _ _ – _ _ for 400ºF (204ºC) applications or J _ _ – _ _ _ – _ _ for 600ºF (315ºC) applications.

High Temperature Flow Rate Monitors

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals H-Series (400ºF) J-Series (600ºF)	 Viton® w/Teflon® backup Kalrez® w/Teflon backup	 Viton® w/Teflon® backup Kalrez® w/Teflon backup	 Viton® w/Teflon® backup Kalrez® w/Teflon® backup
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers.

MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
Window Tube	Pyrex	Pyrex	Pyrex
Window Seals	Teflon®	Teflon®	Teflon®

Teflon is a registered trademark of DuPont de Nemours & Co.

PERFORMANCE

Measuring accuracy:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range:	0.05-150 GPM (0.2 - 560 LPM)
Pressure differential:	See graphs on the right for typical pressure differentials. For specific differential information, refer to Lake data sheet PDDS-404.
Maximum operating pressure[1]:	aluminum and brass monitors: 3500 PSIG (240 Bar) stainless steel monitors: 6000 PSIG (410 Bar)
Maximum operating temperature:	H-Series 400ºF (204ºC) J-Series 600ºF (315ºC)
Standard calibration fluids:	Oil monitors: DTE 25® @ 110ºF (43ºC), 0.873 sg Water monitors: tap water @ 70°F (21°C), 1.0 sg Air monitors: air @ 70°F (21°C), 1.0 sg and 100 PSIG (6.8 Bar)
Filtration requirements:	74 micron filter or 200 mesh screen minimum

[1] *Note: Consult factory for Temperature/Pressure De-rating Chart.*
DTE 25 is a registered trademark of Exxon Mobil.

MECHANICAL SIZE CODE

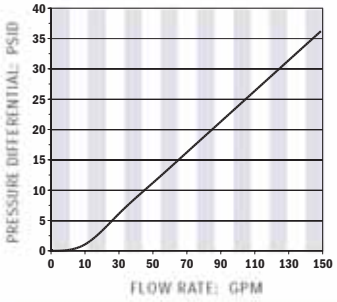
DIM	SERIES 2	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	1-1/4" (32mm)	1-7/8" (48mm)	2-3/8" (60mm)	3-1/2" (90mm)	3-1/2" (90mm)
B	4-13/16" (122MM)	6-9/16" (167MM)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
Port Sizes	NPTF: 1/8", 1/4"	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

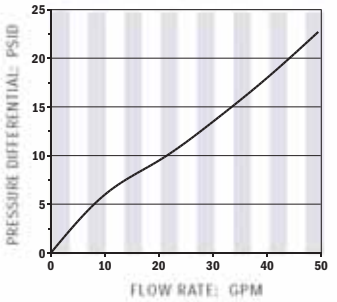
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

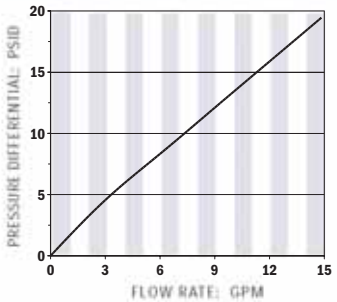
SERIES 5 MONITORS 1-1/4" - 2"



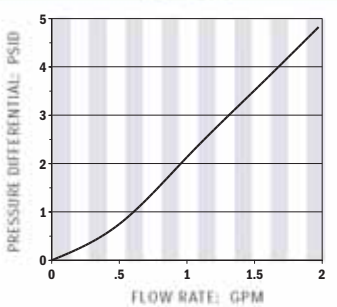
SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



SERIES 2 MONITORS 1/8" - 1/4"



AW-LAKE COMPANY, *A TASI Group Company*, 8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810 / 800.850.6110

LAKE MONITORS

www.lakemonitors.com

NEW FROM LAKE MONITORS

LAKE MONITORS

Top Performance... bottom line sense.

Case Drain MONITOR

Available for 1/2" to 1" pipe sizes, Lake's new Case Drain Monitor is the perfect alternative to using a standard flow meter for case drain applications. And it's priced considerably less.

Designed for convenient vertical, horizontal or inverted installation, it provides dependable measuring accuracy of ±5% of range. Durable aluminum construction makes it ideal for outdoor/exposed applications and where frequent wash-downs are required. AW-Lake Company backs its Case Drain Monitors with a One-Year Warranty.

www.lakemonitors.com

Case Drain MONITOR

STYLE C

When ordering use Lake Monitors No.

C_ _ – _ _ _ – _ _

MATERIALS OF CONSTRUCTION

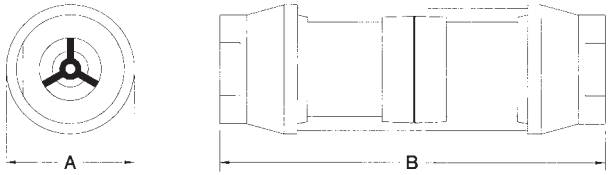
WETTED COMPONENTS

- High-pressure casing, end ports and tapered shaft: Aluminum
- Seals: Buna-N
- Transfer magnet: Teflon® coated Alnico
- Floating orifice disk: Stainless Steel
- All other internal parts: Stainless Steel

NON-WETTED COMPONENTS

- Window tube: Polycarbonate (STD)
- Window seals: Buna-N (STD), Teflon®

MECHANICAL SIZE CODE



SERIES 3	SERIES 4
Dimension A: 1-7/8" (48mm)	Dimension A: 2-3/8" (60mm)
Dimension B: 6-9/16" (167mm)	Dimension B: 7-5/32" (182mm)
Port Sizes (NPTF): 1/2"	Port Sizes (NPTF): 3/4" and 1"

SAE and BSP porting also available. Contact Lake for more information

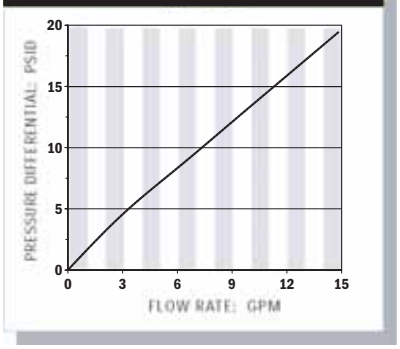
PERFORMANCE

- Measuring accuracy: ±5% of full-scale
- Repeatability: ±1% of full-scale
- Flow measuring range: .05-30 GPM
- Maximum operating pressure: 1000 PSIG (69 Bar)
- Maximum operating temperature: 240ºF (116ºC)
- Filtration requirements: 74 micron filter or 200 mesh screen minimum

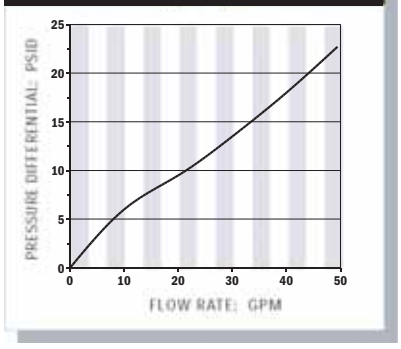
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404

SERIES 3 MONITORS
1/2"



SERIES 4 MONITORS
3/4" – 1



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors
FreeFlow™ Sensor

"Accurate & Economic Flow Sensor"

FOR 3/8" – 3/4" PIPE SIZES

Minimally invasive, low cost segmented wedge flow sensor. Used to monitor and control process water.

STYLE FF

NO MOVING PARTS

The segmented wedge element provides a simple and reliable restriction for sensing flow as related to pressure differential.

UNRESTRICTED MOUNTING

Allows the designer to install the meter in any orientation – horizontal, vertical or inverted.

COMPACT AND RUGGED DESIGN

Measures less than 10" long and 3-1/2" wide, with a flanged mounting base for simple installation.

MULTIPLE FLOW RANGES AVAILABLE

The FreeFlow™ Sensor is offered with several ranges of calibration to accommodate the requirements typical to process water applications.

MULTIPLE PORT SIZES OFFERED

Standard selection of NPT ports reduces the amount of adapters required for installation.

LOW-COST PRECISION

Measuring accuracy of ±2% of range and repeatability of ±1/2%.

ENGINEERING SPECIFICATION

THE FREEFLOW SENSOR SHALL:

- Use the segmented wedge differential producer to measure flow rate as related to pressure.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2% of full scale with ±1/2% repeatability.
- Be Lake Monitors No. FF– _ _ _– _ _ _– _ _

FreeFlow Sensor

MATERIALS OF CONSTRUCTION

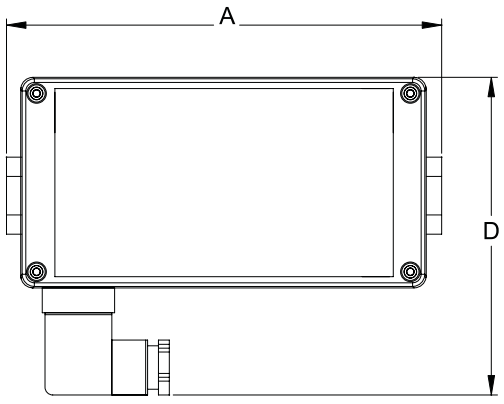
End Ports	PVC
Wedge Element	PVC
Pressure Sensor	Polyetherimide
Electrical Enclosure	Polycarbonate

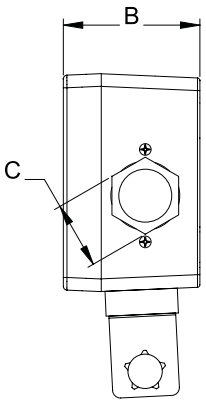
PERFORMANCE

Measuring Accuracy:	±2% of full-scale
Repeatability:	±1/2% of full-scale
Full Scale Flow Measuring Range:	5-15 GPM (19-57 LPM)
Turn Down Ratio (All Ranges)	8:1
Maximum Operating Pressure:	125 PSIG (8.6 bar)
Maximum Operating Temperature:	170°F (76°C)
Pressure Differential:	See graph on right
Standard Calibration Media:	Tap Water @ 70° F

ELECTRONIC SPECIFICATIONS

Electronic output:	0-5 VDC (Standard) - 0-10 VDC (Optional)
Power Requirements:	12-35 VDC
Maximum Current Consumption:	<50mADC
Minimum load resistance:	1000 Ohms
Maximum transmission distance:	≤ 200 feet
Resolution:	Infinite
Response Time:	<500 mS to 90% (step change)
Protection:	Short circuit, transient and reverse polarity

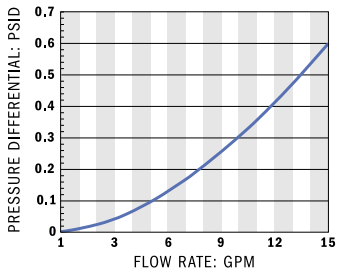




MECHANICAL SIZING CODE

DIM	3/8" Female NPTF	1/2" Female NPTF	3/4" Female NPTF
A	7-3/4" (197mm)	7-3/4" (197mm)	10" (254mm)
B	3-1/2" (89mm)	3-1/2" (89mm)	3-1/2" (89mm)
C	6-13/64" (158 mm)	6-13/64" (158 mm)	6-13/64" (158 mm)
D	2" (51mm)	2" (51mm)	2" (51mm)

FREEFLOW FLOW METER



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors
Pneumatic Flow Rate Monitors

FOR 1/8" – 2" PIPE SIZES

STYLE G

Ideal for monitoring air compressor outputs, pneumatic tool air consumption and industrial gas flows.

CHOICE OF THREE MATERIALS OF CONSTRUCTION

Select from aluminum, brass or stainless steel to meet system and media compatibility requirements.

UNRESTRICTED MOUNTING

Allows the designer to install the monitor in any orientation — horizontal, vertical or inverted.

SUPERIOR EXTERIOR DESIGN

Weather-tight for use outdoors and/or on systems where wash downs are required.

RUGGED AND RELIABLE

These monitors are constructed with all metal pressure vessels, allowing safe, permanent installation in industrial systems.

HIGH PRESSURE OPERATION

The magnetically coupled follower and rigid pressure vessel design allows operation to 1000 PSIG.

24 DIFFERENT PORTS AVAILABLE

Standard selection of NPT, SAE and BSP ports reduces the amount of adapters required for installation.

LOW COST ACCURACY

±2.5% of range accuracy in center third of scale; ±4% in upper and lower thirds

BI-DIRECTIONAL AND REVERSE FLOW OPTION OFFERED

Pneumatic monitors are also available in bi-directional and reverse flow versions. Contact Lake Monitors for more information.

ENGINEERING SPECIFICATION

THE PNEUMATIC IN-LINE FLOW RATE MONITOR SHALL:

- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a stainless steel sharp-edged orifice.
- Have a weather-tight external construction.
- Be Lake Monitors No. G _ _ – _ _ _ – _ _

Pneumatic Flow Rate Monitors

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals	Buna-N (STD), EPR, Viton® or Kalrez®	Buna-N (STD), EPR, Viton® or Kalrez®	Viton® with Teflon® backup (STD), Buna-N, EPR or Kalrez®
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers.

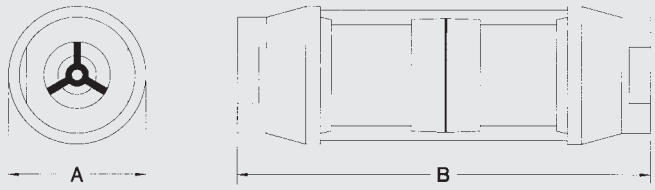
MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
Window Tube	Polycarbonate (STD) Pyrex	Polycarbonate (STD) Pyrex	Polycarbonate (STD) Pyrex
Window Seals	Buna-N (STD), Teflon®	Buna-N (STD), Teflon®	Buna-N (STD), Teflon®

PERFORMANCE

Measuring accuracy:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range:	1.5-1300 SCFM @ 100 PSIG (1-610 LPS)
Pressure differential:	See graphs on the right for typical pressure differentials. For specific differential information, refer to Lake data sheet PDDS-404.
Maximum operating pressure:	aluminum and brass monitors: 600 PSIG (40 Bar) stainless steel monitors: 1000 PSIG (70 Bar)
Maximum operating temperature:	240ºF (116ºC) Note: For operation to 600ºF (316ºC), see our High Temperature data sheet.
Standard calibration fluids:	Air @ 70°F (21°C), 1.0 sg and 100 PSIG (6.8 Bar)
Filtration requirements:	74 micron filter or 200 mesh screen minimum

MECHANICAL SIZE CODE



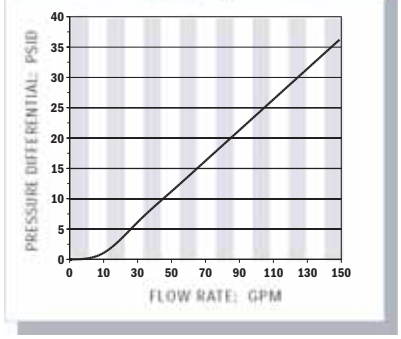
DIM	SERIES 2	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	1-1/4" (32mm)	1-7/8" (48mm)	2-3/8" (60mm)	3-1/2" (90mm)	3-1/2" (90mm)
B	4-13/16" (122mm)	6-9/16" (167mm)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
Port Sizes	NPTF: 1/8", 1/4"	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

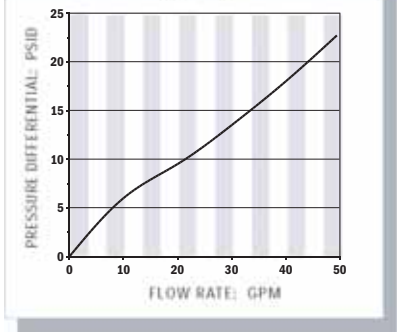
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

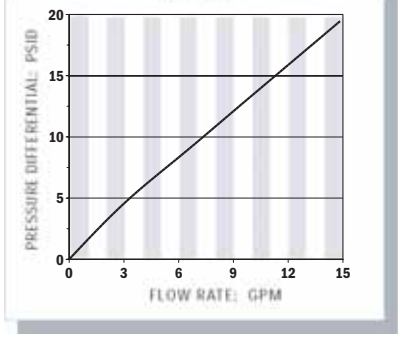
SERIES 5 MONITORS 1-1/4" - 2"



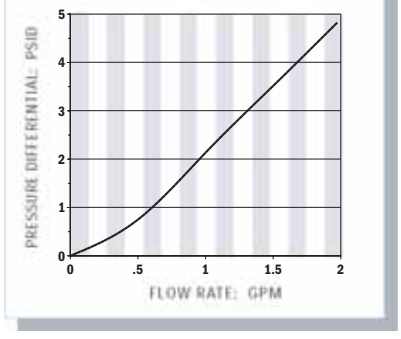
SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



SERIES 2 MONITORS 1/8" - 1/4"



AW-LAKE COMPANY, *A TASI Group Company*, 8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810 / 800.850.6110

LAKE MONITORS

www.lakemonitors.com

Lake Monitors
Pneumatic Monitor Uses and Operating Theory

Lake's rugged, high pressure, pneumatic monitors are designed for permanent installation in compressed gas systems. These products provide a low cost means to measure compressor volumetric outputs, pneumatic tool consumptions and other industrial gas flow rates.

Lake Monitors operate using the variable annular orifice method with compression spring return – the identical method used in our field proven liquid flow rate monitors. The product's follower, where the measurement is indicated, is magnetically coupled through a high pressure casing to the monitor's internal orifice assembly.

Benefits of these design features are:

- *high operating pressure*
- *linear displacement of the follower with respect to flow rate*
- *high turn-down ratios*
- *measuring accuracy within ±4% of full-scale*
- *operation in any mounting orientation*

Lake Monitors are available in three standard materials of construction:

- *aluminum for standard monitoring applications to 600 PSIG*
- *brass for media/material compatibility*
- *stainless steel for compatibility and operation to 1000 PSIG.*

Measuring ranges cover 1.5-12 SCFM through 150-1300 SCFM. Twenty-four port sizes from 1/8" through 2" in NPT, SAE and BSP can be ordered to meet specific plumbing requirements. Lake's pneumatic monitors are also available in alarm and transmitter configurations for electronic monitoring applications.

Standard Cubic Feet

Lake's monitors are calibrated to measure the flow of compressible media (gases) in SCFM – standard cubic feet per minute. A "standard" cubic foot is defined as a cubic foot of dry air at standard atmospheric conditions: 70ºF and 14.7 PSIA (0 PSIG) measured at sea level.

When a standard cubic foot of air is compressed, its actual volume will decrease proportionally as absolute pressure increases. For example, a standard cubic foot of air's actual volume will decrease by 50% and density will increase by 100% as the air is compressed from atmospheric pressure 14.7 PSIA (0 PSIG) to 29.4 PSIA (14.7 PSIG). See FIGURE 1 on back.

There are three factors that affect the Flow Meter Calibration: specific gravity, pressure and temperature. Lake Monitors are calibrated for air (specific gravity of 1.0) at 70ºF and 100 PSIG. Most low pressure rotameters are calibrated at 0 PSIG and require corrections for use at any other pressure.

Lake products are designed for pneumatic systems where pressures between 90-110 PSIG are used. In these common applications, a Lake monitor with a standard calibration can be read directly without applying corrections.

Correction Factors

If a Lake monitor is installed in a system where conditions differ from the standard listed above, correction factors will need to be applied to retain the design accuracy of the monitor. The appropriate correction factor equations are detailed in Chart 1 on the back of this page. To assure the best monitoring accuracy, pressure and temperature measurements should be taken directly at the monitor's inlet port.

Special Scales

Special calibrations can be performed by Lake Monitors to correct for the following system characteristics:

- *system pressure*
- *system temperature*
- *media specific gravity*
- *various measuring units (i.e. LPM, LPS, m3/hr, etc.)*
- *any combination of the above*

Consult Lake's factory or your distributor for details and prices.

Selecting the Proper Monitor

To order a pneumatic flow rate monitor the following information is required:

- *pipe size and port style*
- *media (air, nitrogen, argon, etc.) – for material compatibility and specific gravity considerations*
- *approximate flow range required*[1]
- *system pressure: nominal, maximum, minimum*
- *system temperature*

Pneumatic Monitor Uses and Operating Theory

Flow Range[1]

Estimating the flow rate in a compressed gas system may seem complicated, but with some research and a few simple equations an educated guess can be made. Two suggested methods are:

Method 1

A compressor is typically rated in SCFM output at a certain pressure and efficiency. If the rating cannot be located or is unknown, an estimate of compressor output can be obtained by the following formulas:

- **1-stage compressors**: motor HP/0.179 = SCFM @ 100 PSIG
- **2-stage compressors**: motor HP/0.164 = SCFM @ 100 PSIG
- **3-stage compressors**: motor HP/0.159 = SCFM @ 100 PSIG

Method 2

If all of the potential of a compressor is not being used (the unit cycles on and off) or if flow rate in excess of compressor capacity is being consumed (the compressor cannot meet the demand), a summation of machine usages can be totaled to determine the maximum flow rate. Most machine tools that use compressed air specify the maximum consumption of the tool.

INSTALLATION DOS AND DON'TS

To obtain satisfactory operation from a Lake pneumatic flow rate monitor, the following points should be considered:

DO…

- *install a pressure gauge near the inlet of the monitor*
- *place throttling valves at the outlet of the monitor*
- *use pipe sealer on the connections*
- *install a union on one side of the monitor for easy removal for maintenance and calibration*
- *install solenoid valves at the monitor outlet (as far downstream as possible)*
- *mount in any orientation: vertical, horizontal or upside down*

DO NOT…

- *install restrictions between pressure gauges and the monitor inlet*
- *install solenoid valves at the monitor inlet*
- *place restrictions between the monitor's pressure gauge and the monitor inlet*
- *use in systems where reverse flow is possible*
- *place monitor in non-aligned piping*
- *over-flow the monitor by more than 150% of maximum reading*
- *operate at pressures and temperatures greater than specified*

Density Correction Factors

SCFM (indicated) X (CF) = SCFM (actual) CF = (f_1) X (f_2) X (f_3) Note: all correction factors need not be used.

Table 1. **(f_1) PRESSURE CORRECTION FACTORS** (inlet pressure)

psig	25	50	75	100	125	150	175	200
f_1	.56	.75	.88	1.0	1.11	1.2	1.29	1.37

$$f_1 = \sqrt{\frac{14.7 + \text{psig}}{114.7}}$$

Table 2. **(f_2) TEMPERATURE CORRECTION FACTORS**

°F	10°	30°	50°	70°	90°	110°	130°	150°
f_2	1.08	1.04	1.02	1.0	.98	.96	.95	.93

$$f_2 = \sqrt{\frac{530}{460 + °F}}$$

Table 3. **(f_3) SPECIFIC GRAVITY CORRECTION FACTOR**

$$f_3 = \sqrt{\frac{1}{\text{Sp. Gr.}}}$$

f_1 = correction factor for other than 100 PSI inlet.

f_2 = correction factor for other than 70° F.

f_3 = correction factor for other than air at 1.0 Sp. Gr.

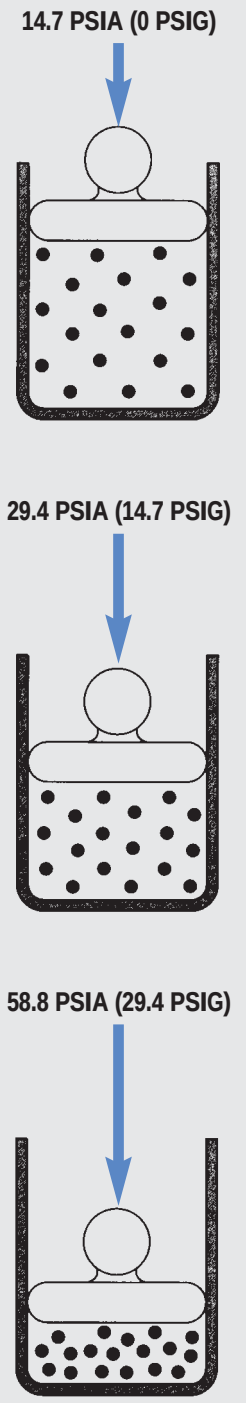


FIGURE 1.
A diagram illustrating the effect of different pressures on the volume of gas.

AW-LAKE COMPANY, *A TASI Group Company*, 8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810 / 800.850.6110

GOTS-1106 7.5M MR / WGD / MAS

LAKE MONITORS

www.lakemonitors.com

Lake Monitors
Phosphate Ester Flow Rate Monitors

FOR 1/8" – 2" PIPE SIZES

Compatible with aviation lubricants such as Skydrol®, as well as fire-retardant fluids such as Pydraul®, Fyrquil® and Houghton 900 series.

STYLE P

CHOICE OF THREE MATERIALS OF CONSTRUCTION

Select from aluminum, brass or stainless steel to meet system requirements.

UNRESTRICTED MOUNTING

Allows the designer to install the monitor in any orientation — horizontal, vertical or inverted.

MULTI-USE

Factory calibrated for phosphate esters, these versatile monitors can be used to verify hydraulic power unit outputs, as well as test machinery and tools for proper fluid flow rates.

RUGGED AND RELIABLE

These monitors are constructed with all metal pressure vessels that allow safe, permanent installation in industrial systems.

HIGH PRESSURE OPERATION

The magnetically coupled follower design allows operation to 6000 PSIG.

24 DIFFERENT PORTS AVAILABLE

Standard selection of NPT, SAE and BSP ports reduces the amount of adapters required for installation.

LOW COST ACCURACY

±2.5% of range accuracy in center third of scale; ±4% in upper and lower thirds.

BI-DIRECTIONAL AND REVERSE FLOW OPTION OFFERED

Phosphate ester monitors are also available in bi-directional and reverse flow versions. Contact Lake Monitors for more information.

ENGINEERING SPECIFICATION

THE PHOSPHATE ESTER IN-LINE FLOW RATE MONITOR SHALL:

- Include a direct-reading scale corrected for phosphate ester media.
- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a stainless steel sharp-edged orifice.
- Be Lake Monitors No. P _ _ – _ _ _ – _ _

Phosphate Ester Flow Rate Monitors

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals	EPR, w/Teflon® backup Virton® or Kalrez®	Teflon® coated Alnico	EPR, w/Teflon® backup Virton® or Kalrez®
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers.

MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
Window Tube	Pyrex	Pyrex	Pyrex
Window Seals	Teflon®	Teflon®	Teflon®

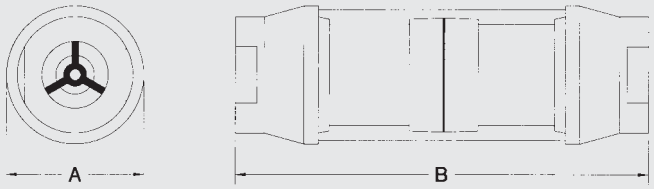
PERFORMANCE

Measuring accuracy:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range [1]:	0.1-130 GPM (0.4 – 490 LPM)
Pressure differential:	See graphs on the right for typical pressure differentials. For specific differential information, refer to Lake data sheet PDDS-404.
Maximum operating pressure:	aluminum and brass monitors: 3500 PSIG (240 Bar) stainless steel monitors: 6000 PSIG (410 Bar)
Maximum operating temperature:	240ºF (116ºC) Note: For operation to 600ºF (316ºC), Note: For operation to 600°F (316°C) alternate o-ring material will be required.
Standard calibration fluids:	DTE 25® @ 110ºF (43ºC), 0.873 sg Monitors are density corrected to 1.15 sg
Filtration requirements:	74 micron filter or 200 mesh screen minimum

*[1] To determine approximate measuring ranges multiply the range listed in the Liquid Flow Rate section of Lake's Guide to standard monitor numbers by 0.93. For example, a P3A6WB10 would have a scale range to 10 GPM *0.93 = 9.3 GPM at full scale.*

DTE 25 is a registered trademark of Exxon Mobil.

MECHANICAL SIZE CODE



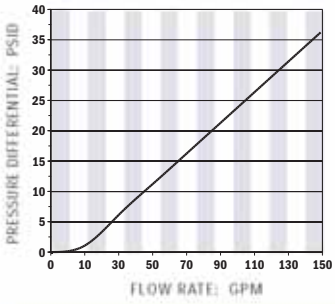
DIM	SERIES 2	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	1-1/4" (32mm)	1-7/8" (48mm)	2-3/8" (60mm)	3-1/2" (90mm)	3-1/2" (90mm)
B	4-13/16" (122mm)	6-9/16" (167mm)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
Port Sizes	NPTF: 1/8", 1/4"	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

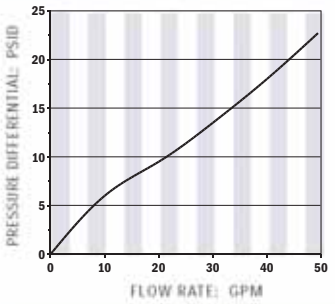
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

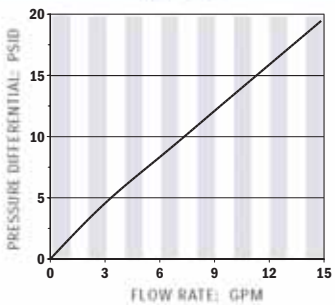
SERIES 5 MONITORS 1-1/4" - 2"



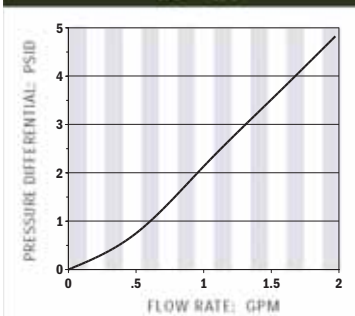
SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



SERIES 2 MONITORS 1/8" - 1/4"



AW-LAKE COMPANY, *A TASI Group Company*, 8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810 / 800.850.6110

LAKE MONITORS

www.lakemonitors.com

Lake Monitors
Flow Rate Transmitters

FOR 1/4" – 2" PIPE SIZES

Ideal for batching, industrial process control, mobile hydraulic equipment and computer/PLC-controlled hydraulic system monitoring applications.

STYLE R

SIMPLE TO INSTALL

All transmitters are factory calibrated and ship fully assembled. Simply install the transmitter into your system and apply power.

INDUSTRY STANDARD OUTPUTS

Transmitters provide proportional analog outputs of 4-20mA, 0-5 Vdc and 1-5 Vdc[1], 20-2000 Hz square-wave pulse. These outputs will drive popular data acquisition devices, meters and analog input cards.

DIRECT READING

All transmitters provide a visual indication of flow rate integral to the transmitted output.

WEATHER-TIGHT CONSTRUCTION

The rugged cast aluminum NEMA type 4X enclosure allows installation in outdoor applications and in environments where liquid tight seals are required.

RUGGED AND RELIABLE

Without delicate internal components to break, abrade or corrode, the Lake flow transmitter will provide many years of low-maintenance service.

COMPATIBLE WITH LAKE MONITORS' R/T100 AND R100 FLOW ANALYZERS

The Lake flow rate transmitter combines with these Lake analyzers to make a powerful flow instrument capable of remote monitoring of rate and total flows.

[1]The 1-5Vdc output requires an external 249 ohm resistor (not included with transmitter) to be wired at the receiving device.

ENGINEERING SPECIFICATION

THE IN-LINE FLOW RATE MONITOR/ TRANSMITTER SHALL:

- Be factory calibrated for 4-20mA, 0-5Vdc, 1-5Vdc, and square wave pulse outputs.
- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical orientation.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a stainless steel sharp-edged orifice
- Have a maximum working pressure rating of 3500 or 6000 PSIG for liquids.
- Have a maximum working pressure rating of 600 or 1000 PSIG for gasses.
- Have a weather-tight external construction.
- Be Lake Monitors No. R _ _ – _ _ _ – _ _.

Flow Rate Transmitters

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals	Buna-N (STD), EPR, Viton® or Kalrez®	Buna-N (STD), EPR, Viton® or Kalrez®	Viton® with Teflon® backup (STD), Buna-N, EPR or Kalrez®
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers.

MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
Enclosure & Cover	Aluminum	Aluminum	Aluminum
Seals	Buna-N	Buna-N	Buna-N
Window	Pyrex®	Pyrex®	Pyrex®
Din Connector	Polyamide	Polyamide	Polyamide

Pyrex is a registered trademark of Corning Inc.

MONITOR PERFORMANCE

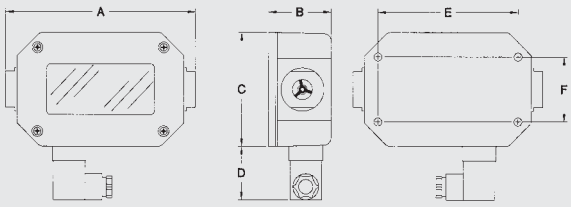
Measuring accuracy:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range:	0.05-150 GPM (0.2-560 LPM); 1.5-1300 SCFM (0.75-610 SLPS)
Maximum operating pressure:	aluminum and brass monitors: 3500 PSIG (240 Bar) Stainless steel monitors: 6000 PSIG (410 Bar)
Maximum operating temperature:	media: 240ºF (116ºC), ambient: 180ºF (82ºC)
Pressure differential:	Liquid: see graphs. Gases: see Pneumatic data sheet
Standard calibration media:	Oil monitors: DTE 25® @ 110ºF (43ºC), 0.873 sg Water monitors: tap water @ 70ºF (21ºC), 1.0 sg Air monitors: air @ 70ºF (21ºC), 1.0 sg and 100 PSIG (6.8 Bar)
Filtration requirements:	74 micron filter or 200 mesh screen minimum

DTE 25 is a registered trademark of Exxon Mobil.

ELECTRONIC TRANSMITTER PERFORMANCE

Power requirements:	12-35 Vdc
Load driving capacity:	4-20mA: Load resistance is dependent on power supply voltage. Use the following equation to calculate maximum load resistance: Max Loop Load (Ω) = 50(Power supply volts – 12). 0-5 VDC: Minimum load resistance 1000Ω. 1-5 VDC: Minimum load resistance 25 K Ω Square Wave Pulse: Minimum load resistance 1000 Ω
Transmission distance:	4-20mA and 1-5 VDC are limited only by wire resistance and power supply voltage. <200 feet recommended for 0-5 VDC and square wave pulse.
Over-current protection:	self limiting at 35mA
Resolution:	10 bit (0.1%)
Isolation:	Inherently isolated from the process
Response time:	<100 milliseconds

MECHANICAL SIZE CODE



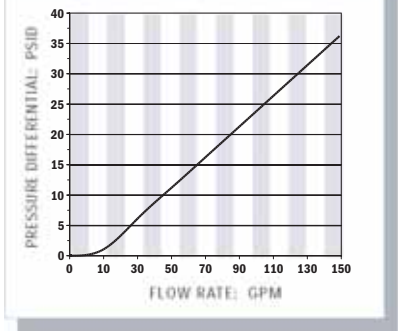
DIM	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	6-9/16" (167mm)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
B	2-3/16" (56mm)	2-15/16" (75mm)	3-13/16" (97mm)	3-13/16" (97mm)
C	4" (101mm)	4-1/2" (114mm)	5-5/16" (135 mm)	5-5/16" (135mm)
D	1-7/8" (47mm)	1-7/8" (47mm)	1-7/8" (47mm)	1-7/8" (47mm)
E	4-7/8" (128mm)	5" (127mm)	6-3/4" (172mm)	6-3/4" (172mm)
F	2-1/4" (57mm)	2-7/8" (73mm)	3-3/4" (95mm)	3-3/4" (95mm)
Port Sizes	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

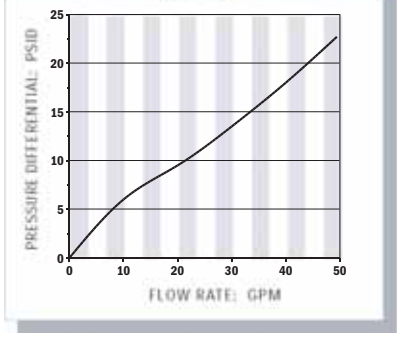
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

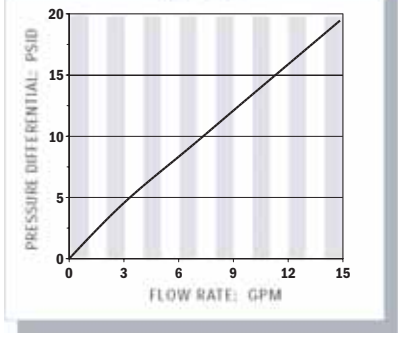
SERIES 5 MONITORS 1-1/4" - 2"



SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

RDS-1106 7.5M MR / WGD / MAS

Lake Monitors
Flow Rate Alarms

FOR 1/4" – 2" PIPE SIZES

Utilized in applications such as mobile hydraulic equipment and industrial process control, ensures sufficient flows of coolants and lubricants.

STYLE M & N

FIELD ADJUSTABLE ALARM SETTING

Only an allen wrench is required to change the flow alarm setting.

WEATHER-TIGHT CONSTRUCTION

Rugged cast aluminum NEMA type 4X enclosure allows installation in outdoor applications and in environments where liquid tight seals are required.

SIMPLE ON/OFF LOGIC

Positive alarm points using 10 A., dry-contact, SPDT switches, reduce the complexity found in standard rotameter OFF/ON/OFF circuits.

PRE-WIRED WITH CABLE DISCONNECT

The standard Hirschmann interconnection provides easy installation and maintenance of the FLOW ALARM and the system it is a part of.

UNRESTRICTED MOUNTING

Allows the designer to install the monitor in any orientation – horizontal, vertical or inverted.

ECONOMICAL PROTECTION

This monitor rapidly pays for itself as it “sounds the alarm” on incorrect pneumatic, lubrication or cooling volumes, protecting expensive equipment and reducing downtime.

QUALITY ASSURANCE

Can be an integral part of a quality control system, yielding consistent system operation.

ENGINEERING SPECIFICATION

THE IN-LINE FLOW RATE MONITOR/ALARM SHALL:

- Have field adjustable, dry-contact, alarm setting(s).
- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical pipe mounting.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a maximum working pressure rating of 3500 or 6000 PSIG for liquids.
- Have a maximum working pressure rating of 600 or 1000 PSIG for gasses.
- Have a stainless steel sharp-edged orifice.
- Have a weather-tight NEMA type 4X external construction.
- Be Lake Monitors No. M _ _ – _ _ _ – _ _ for single alarm applications, or N _ _ – _ _ _– _ _ for dual alarm applications.

Flow Rate Alarms

MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
High-pressure casing, end ports and tapered shaft	Aluminum	Brass	#303 Stainless Steel
Seals	Buna-N (STD), EPR, Viton® or Kalrez®	Buna-N (STD), EPR, Viton® or Kalrez®	Viton® with Teflon® backup (STD), Buna-N, EPR or Kalrez®
Transfer Magnet	Teflon® coated Alnico	Teflon® coated Alnico	Teflon® coated Alnico
Floating Orifice Disk	Stainless Steel	Stainless Steel	Stainless Steel
All other internal parts	Stainless Steel	Stainless Steel	Stainless Steel

Teflon is a registered trademark of DuPont de Nemours & Co.
Viton and Kalrez are registered trademarks of Dow DuPont Elastomers

MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

	ALUMINUM	BRASS	STAINLESS STEEL
Enclosure & Cover	Aluminum	Aluminum	Aluminum
Seals	Buna-N	Buna-N	Buna-N
Window	Pyrex®	Pyrex®	Pyrex®
Din Connector	Polyamide	Polyamide	Polyamide

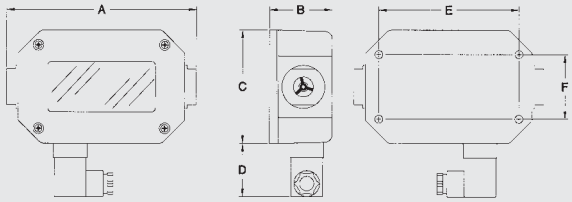
Pyrex is a registered trademark of Corning Inc.

PERFORMANCE

Measuring accuracy:	±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
Repeatability:	±1% of full-scale
Flow measuring range:	0.05-150 GPM (0.2-560 LPM); 1.5-1300, SCFM (0.75-610 SLPS)
Maximum operating pressure:	aluminum and brass monitors: 3500 PSIG (240 Bar) stainless steel monitors: 6000 PSIG (410 Bar)
Maximum operating temperature:	media: 240ºF (116ºC), ambient: 180ºF (82ºC)
Pressure differential:	See graphs on the right for typical pressure differentials.
Standard calibration fluids:	Oil monitors: DTE 25® @ 110ºF (43ºC), 0.873 sg Water monitors: tap water @ 70ºF (21ºC), 1.0 sg Air monitors: air @ 70ºF (21ºC), 1.0 sg and 100 PSIG (6.8 Bar)
Enclosure:	NEMA type 4X (UL Approved)
Alarm switch dead-band:	4% of full scale
Alarm switch contacts:	SPDT (dry contact), UL/CSA rating: 10 amps and 1/4 hp, 125 or 250 VAC. 1/2 amp, 125 VDC; 1/4 amp, 250 VDC; 3 amps, 125 VAC "L" (lamp load)
Filtration requirements:	74 micron filter or 200 mesh screen minimum

DTE 25 is a registered trademark of Exxon Mobil

MECHANICAL SIZE CODE



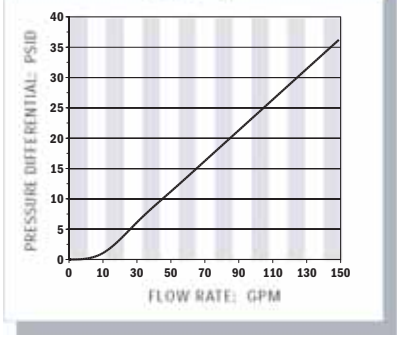
DIM	SERIES 3	SERIES 4	SERIES 5	SERIES 5
A	6-9/16" (167mm)	7-5/32" (182mm)	10-1/8" (258mm)	12-5/8" (322mm)
B	2-3/16" (56mm)	2-15/16" (75mm)	3-13/16" (97mm)	3-13/16" (97mm)
C	4" (101mm)	4-1/2" (114mm)	5-5/16" (135 mm)	5-5/16" (135mm)
D	1-7/8" (47mm)	1-7/8" (47mm)	1-7/8" (47mm)	1-7/8" (47mm)
E	4-7/8" (128mm)	5" (127mm)	6-3/4" (172mm)	6-3/4" (172mm)
F	2-1/4" (57mm)	2-7/8" (73mm)	3-3/4" (95mm)	3-3/4" (95mm)
Port Sizes	NPTF: 1/4", 3/8", 1/2" SAE: #6, #8, #10 BSP: 3/8", 1/2"	NPTF: 3/4", 1" SAE: #12, #16 BSP: 3/4", 1"	NPTF: 1-1/4", 1-1/2" SAE: #20, #24 BSP: 1-1/4", 1-1/2"	NPTF: 2" SAE: #32 BSP: 2"

Note: Consult factory for SAE brass monitor requirements.

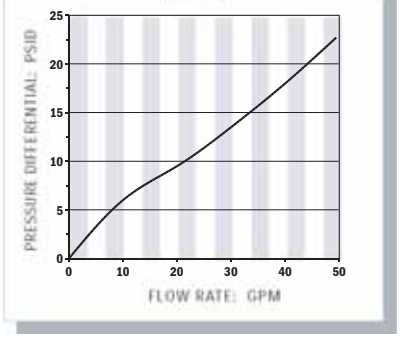
TYPICAL PRESSURE DIFFERENTIALS

For specific differential graphs, refer to Lake data sheet PDDS-404.

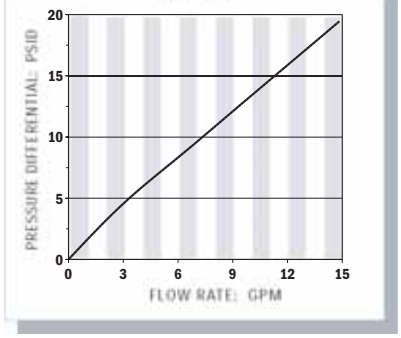
SERIES 5 MONITORS 1-1/4" - 2"



SERIES 4 MONITORS 3/4" - 1"



SERIES 3 MONITORS 1/4" - 1/2"



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

MNDS-1106 7.5M MR / WGD / MAS

NEW FROM LAKE MONITORS

A Flow Sensor that's compatible with your Application and your Budget.

Whether it's a unique flow monitoring application, a limited budget or both, the FlowStat ES is a perfect fit. A new addition to Lake's line of popular FlowStat® Sensors, the ES version features a durable polypropylene body for cost savings and compatibility with a variety of fluids. The ES sensor also offers a flow measuring accuracy of ±2% of full scale, and is capable of handing pressures up to 150 PSIG and temperatures up to 150°F. For additional compatibility, the FlowStat ES Sensor offers 4-20 mA, 0-5 VDC, pulse or relay outputs. And like most of its products, AW-Lake Company backs the FlowStat ES/Economy Flow Sensor with a 5-year warranty.

www.lakemonitors.com

FlowStat ES / Economy Flow Sensor

FlowStat® ES/Economy Series

MATERIALS OF CONSTRUCTION

WETTED COMPONENTS:	Sensor Body:	Glass-Filled Polypropylene
	Cover:	Clear Polycarbonate
	Seal:	Buna-N (standard)
	Turbine:	Acetal Copolymer
	Bearing:	PEEK
	Shaft:	Stainless Steel
NON-WETTED:	Encapsulant:	Epoxy
	Strain Relief:	Nylon
	Lock Ring:	Glass-Filled Polypropylene
	Wire Insulation:	High-Temperature PVC

PERFORMANCE

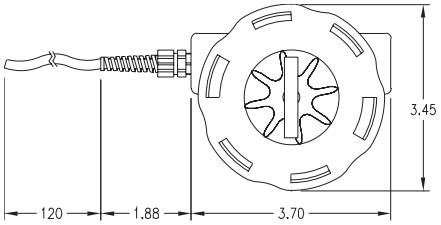
Measuring Accuracy:	± 2% of full-scale
Repeatability:	± 0.5% of full-scale
Turndown ratio:	10:1
Flow Measuring Range:	0.5-15 GPM (2-60 LPM) With optional low-flow adapter: 0.1-4.0 GPM (0.4-15 LPM)
Temperature Range:	20-150°F
Maximum Pressure:	150 PSIG
Pressure differential:	See graph on right
Standard calibration media:	Tap water @ 70°F Temperature

ELECTRONIC SPECIFICATIONS

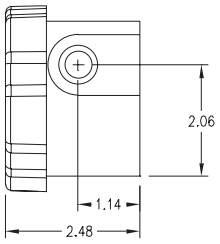
4-20 mA version:	Power Requirements:	12-35 VDC, loop powered
	Load driving capacity:	1150 Ohms maximum
	Maximum transmitting distance:	Limited only by wire resistance & supply voltage
	Response time:	2 seconds to 90% (step change)
	Resolution:	Infinite
	Over-current limit:	Self limiting at 35 mA
	Other protection:	Reverse polarity
0-5VDC Version:	Power Requirements:	12-35 VDC
	Maximum current:	25 mA DC
	Minimum load resistance:	1000 Ohms
	Maximum transmission distance:	200 feet recommended
	Resolution:	Infinite
	Response time:	< 5 seconds to 90% (step change)
Pulse Output Version:	Power Requirements:	5-24 VDC
	Response Time:	< 100 mS
	Maximum current:	25 mA DC
	Maximum transmission distance:	200 feet recommended
	Minimum load resistance:	1000 Ohms
	Protection:	Short circuit & reverse polarity
Relay Output:	Power Requirements:	12-35 VDC
	Maximum transmission distance:	200 feet recommended
	Switch Contact:	Form C, 5A max @120 or 240 VAC
	Hysteresis:	5% of set point maximum
	Set point repeatability:	1% of full scale

NOTE: *Standard Interface for all version is a 10' pigtail, 22 AWG multi-conductor cable (electrical connector optional)*

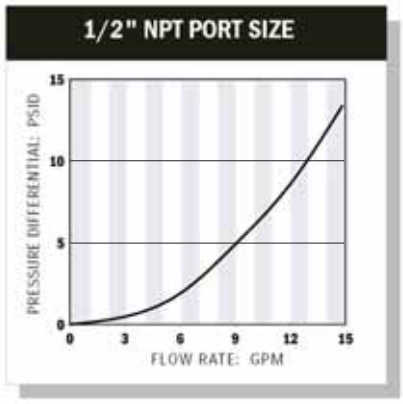
For ordering information refer to Lake's current Price and Part Number Guide, which is available on-line or by calling Lake Monitors.



Measurements shown are in inches.



PRESSURE DIFFERENTIAL



LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors FlowStat®–Turbine Flow Sensor

Perfect monitoring solution for Chillers/Cooling Circuits, HVAC, Medical Equipment, Batching and Industrial process control applications.

FlowStat® Flow Sensor

CHOICE OF THREE PORT SIZES

Select from 1/2" , 3/4" or 1" porting to meet system requirements.

EASY MAINTENANCE AND CLEANING

Has only one moving component, the impeller. Cleaning and maintenance may be performed without removing the sensor from the piping.

HERMETICALLY ENCAPSULATED CIRCUITRY

Withstands the harshest environments.

SEVERAL OUTPUTS AVAILABLE

The standard interface is a 2-wire, 4-20mA current loop. Sensor signal may be transmitted on a low cost wire without degradation. Pulse and 0-5 VDC are also available.

CONNECTS DIRECTLY TO YOUR FLOW MONITORING INSTRUMENTS

Can be connected directly to analog acquisition cards, chart recorders or other monitoring instruments, without external signal conditioning.

SIMPLY PLUMB AND APPLY POWER

Comes factory calibrated to your flow range specifications.

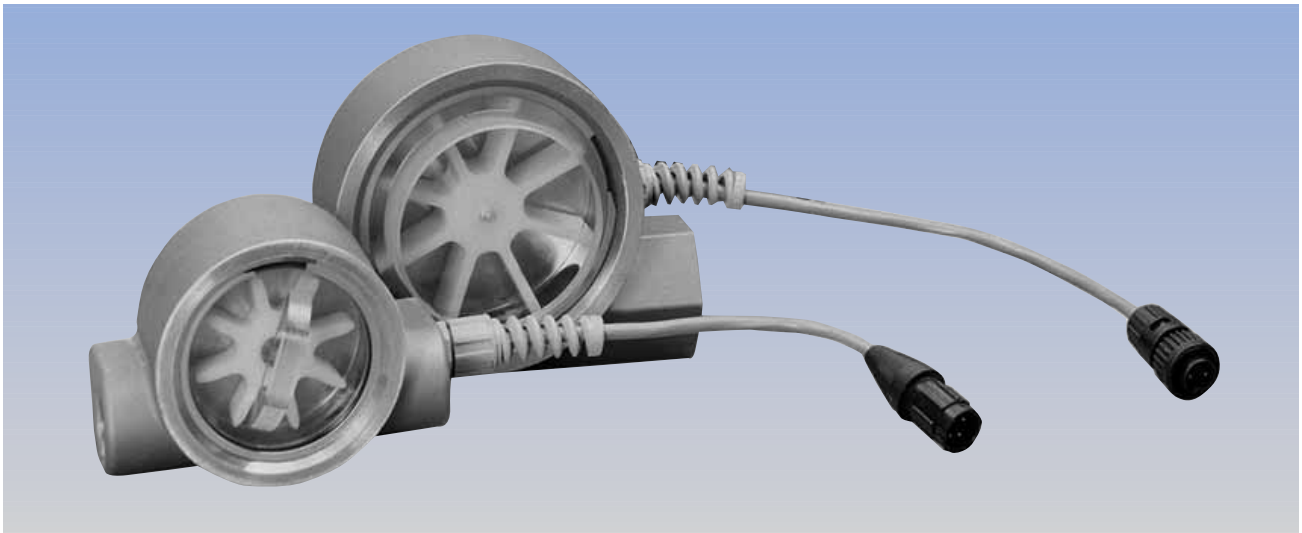
VALUE PRICING

Combined with low cost operation and maintenance, equals better bottom line savings for your operation.

ENGINEERING SPECIFICATION

THE FLOWSTAT SENSOR SHALL:

- Have only one moving component.
- Be calibrated to user specified flow range.
- Have a measuring accuracy of 2% of full scale.
- Have hermetically encapsulated circuitry.
- Be Lake Monitors Number C_ _ - _ _ - _ _ for the Current output, Number P_ _ - _ _ - _ _ for the pulse Output version, and Number V_ _ - _ _ - _ _ for the 0-5 VDC option.



FlowStat® – Turbine Flow Sensor

MATERIALS OF CONSTRUCTION

WETTED COMPONENTS:	Casing:	Stainless Steel #316
	Cover:	Stainless Steel #316 (optional clear polycarbonate)
	Seal:	Buna-N (other options available)
	Turbine:	Acetal copolymer
	Bearing:	PEEK (Polyetheretherketone)
	Shaft :	Stainless steel
NON-WETTED COMPONENTS:	Encapsulant:	Epoxy
	Strain relief:	Nylon
	Lock Ring:	Stainless steel
	Wire insulation:	High temperature PVC

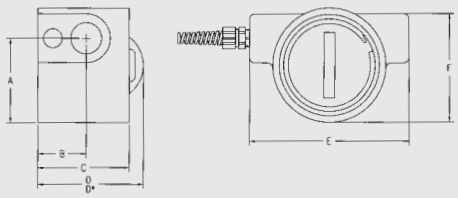
PERFORMANCE

Measuring accuracy:	±2% of full-scale
Repeatability:	±0.5% of full-scale
Flow Measuring Range:	1/2" porting, 0.5–15 GPM [2–60 LPM]
	3/4" – 1" porting, 1.5–50 GPM [60–200 LPM]
Turndown Ratio:	10:1
Temperature Range:	20-225ºF [-7 to 107ºC]
Pressure Range:	to 500 PSIG [34 bar]
W/optional clear cover	to 200 PSIG [14 bar]
Pressure Differential:	See graphs on the right for typical pressure differentials.
Filtration requirements:	150 micron filter recommended

ELECTRONIC SPECIFICATIONS

4-20 mA VERSION:	Power Requirements: 12–35 VdC, loop-powered
	Load driving capacity: 1150 Ohms max
	Maximum transmitting distance: Limited only by wire resistance & supply voltage
	Response time: 2 seconds to 90% (step change in flow rate)
	Resolution: Infinite
	Over-current limit: Self limiting at 35mA
	Other protection: Reverse polarity
0-5 VDC VERSION:	Power Requirements: 12-35 VDC
	Maximum Current: 25 mA DC
	Minimum Load Resistance: 1000 Ohms
	Maximum transmission distance: ≤200 ft. recommended
	Resolution: Infinite
	Response time: 2 seconds to 90% (step change in flow rate)
PULSE OUTPUT VERSION:	Type: 3 wire, hall effect
	Power Requirements: 5-24 VDC
	Maximum current: 25mADC
	Maximum transmission distance: ≤200ft. recommended

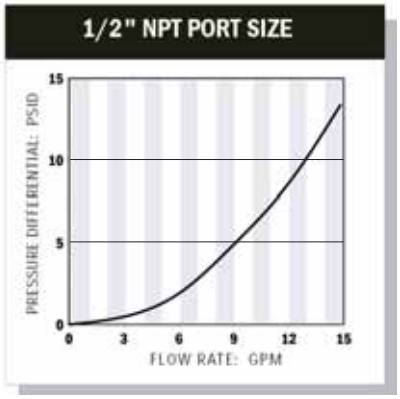
MECHANICAL

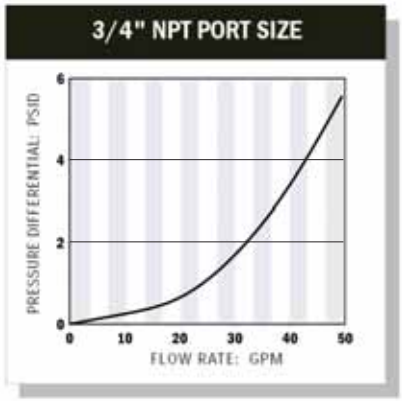


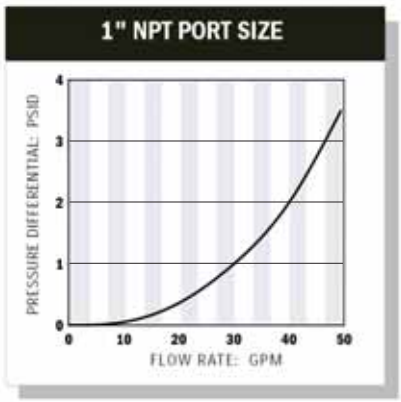
DIM	1/2" NPTF	3/4" NPTF – 1" NPTF
A	1.94" (49mm)	3.06" (78mm)
B	1.13" (29mm)	1.33" (34mm)
C	2.00" (51mm)	2.46" (62mm)
D	2.45" (62mm)	2.78" (71mm)
D*	2.45" (62mm)	2.88" (73mm)
E	3.70" (94mm)	5.25" (133mm)
F	2.63" (67mm)	3.80" (97mm)

** Dimensions with optional clear polycarbonate cover installed.*

TYPICAL PRESSURE DIFFERENTIALS







LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors
Hydraulic System Test Analyzers

FOR 3/8" – 1-1/2" PIPE SIZES

STYLE K Flow & Pressure

STYLE T Flow, Pressure & Temperature

Used to diagnose faults in hydraulic circuits, determine horsepower and test for component wear such as hydraulic valve and cylinder leakage.

A COMPLETE TROUBLESHOOTING SYSTEM

The analyzer consists of a flow meter, glycerine-filled pressure gauge (Style "K"), bi-metal temperature gauge/dry pressure gauge (Style "T") and a precision needle-type load valve. A comprehensive operator's manual describes testing of various system components.

MATERIALS OF CONSTRUCTION

Kits offer choice of flow meters in aluminum for pressure up to 3000 PSIG or stainless steel for pressures up to 5000 PSIG. All stainless steel #303/304 kits available for pressure up to 6000 PSIG. *Contact Lake for more information.*

PLANNED COMPONENT REPAIRS

This system analyzer can be part of a predictive maintenance program, allowing strategized pump, valve, motor and cylinder rebuilding.

COMPACT AND RUGGED

The complete hydraulic system test analyzer is small enough to fit in a tool box and built to withstand rigorous industrial use.

NON-ELECTRICAL

Without batteries to fail or other electrical power connections to make, this system will provide a lifetime of simple and reliable operation.

METRIC AND US / STANDARD MEASURING RANGES

These multi-measurement analyzers simultaneously measure flow in GPM and LPM, pressure in PSIG and Bar, and temperature in degrees F and C.

UNRESTRICTED MOUNTING

Accurate measurements can be taken in any mounting orientation, without the straight pipe required with other analyzer systems.

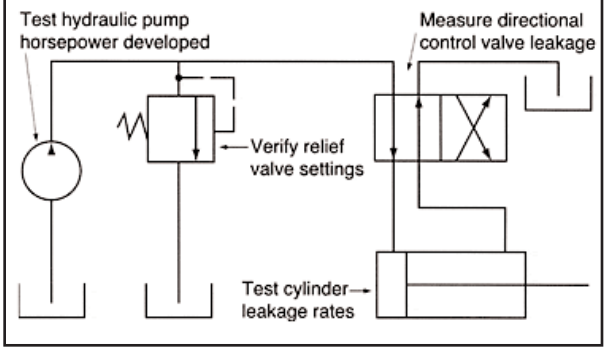
SYSTEM PROBLEMS PIN-POINTED

The hydraulic system analyzer and comprehensive troubleshooting manual will save time and money by testing discrete components within the system, eliminating trial and error approaches.

REVERSE FLOW OPTION AVAILABLE

Built-in reverse bypass mechanism prevents potential damage from mis-installation or backflow.

Hydraulics Diagnostics Tool Kit Applications



www.lakemonitors.com

LAKE MONITORS

Hydraulic System Test Analyzers

MATERIALS OF CONSTRUCTION

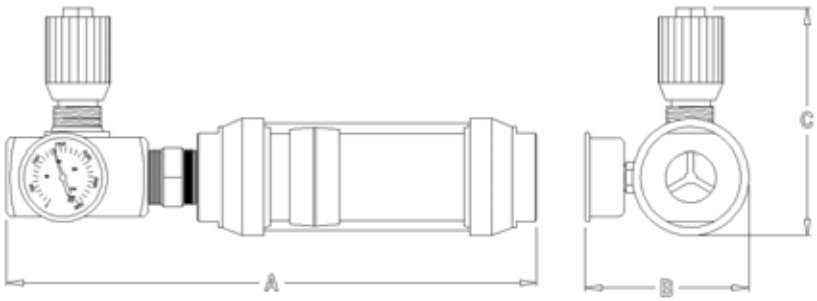
WETTED COMPONENTS		NON-WETTED COMPONENTS	
COMPONENT	MATERIALS	COMPONENT	MATERIALS
High-pressure casing, end ports and tapered shaft	Aluminum (3000 PSIG version Stainless Steel (5000 PSIG version)	Window Tube	Polycarbonate
Seals	Buna-N (STD), Viton, EPR, Neoprene optional	Window TubeSeals	Buna-N
Transfer Magnet	Teflon® coated Alnico	Gauge Window	Acrylic
Floating Orifice Disk	Stainless Steel		
All other internal parts	Stainless Steel		
Needle Valve	Carbon Steel (Stainless optional)		
Gauge	Brass and Stainless Steel		

Teflon is a registered trademark of DuPont de Nemours & Co.

PERFORMANCE

Measuring Accuracy:	Flow: ±4% of full-scale (±2.5% in center third of measuring range); Pressure: ±2.5% of full-scale; Temperature: ±2.5% of full-scale
Repeatability:	±1% of full-scale – all measurements
Measuring Range:	Flow: 0.05–150 GPM (0.2-560 LPM) See guide to standard meters for specific ranges; Temperature: 0–250°F (-20–120°C)
Maximum Operating Pressure:	Aluminum meters: 3000 PSIG (200 Bar); Stainless Steel Meters: 5000 PSIG (340 Bar); All stainless version: 6000 PSIG (410 Bar)
Maximum Operating Temperature:	240ºF (116ºC)
Standard Calibration Fluids:	Oil meters: DTE 25® @ 110ºF (43ºC), 0.873 sg
Filtration Requirements:	74 micron filter or 200 mesh screen minimum

DTE 25 is a registered trademark of Exxon Mobil.



MECHANICAL SIZE CODE

DIM	SERIES 3	SERIES 3	SERIES 4	SERIES 4	SERIES 5	SERIES 5
Port Sizes	3/8" NPTF	1/2" NPTF	3/4" NPTF	1" NPTF	1-1/4" NPTF	1-1/2" NPTF
A	9-1/2" (242mm)	10-1/8" (257mm)	11-1/8" (283mm)	12-1/2" (318mm)	15-5/8" (397mm)	15-25/32" (401mm)
B (K-Style)	3-1/2" (89mm)	3-9/16" (91mm)	4-1/16" (103mm)	4-1/8" (105mm)	4-7/8" (124mm)	5-3/32" (130mm)
B (T-Style)	3-7/32" (82mm)	3-5/16" (85mm)	3-25/32" (96mm)	3-7/8" (99mm)	4-5/8" (118mm)	4-13/16" (123mm)
C	3-5/8" (92mm)	4-3/16" (107mm)	4-31/32" (127mm)	6-1/4" (159mm)	7" (178mm)	7-3/16" (183mm)

DIM	SERIES 3	SERIES 3	SERIES 4	SERIES 4	SERIES 5	SERIES 5
Port Sizes	#6 SAE	#8 SAE	#12 SAE	#16 SAE	#20 SAE	#24 SAE
A	9-7/16" (240mm)	9-9/16" (243mm)	11-3/32" (282mm)	12-9/32"(312mm)	15-3/8" (391mm)	15-3/8" (391mm)
B (K-Style)	3-1/2" (89mm)	3-19/32" (92mm)	4-1/16" (103mm)	4-1/8" (105mm)	4-29/32" (127mm)	5-3/32" (130mm)
B (T-Style)	3-7/32" (82mm)	3-5/16" (85mm)	3-25/32" (96mm)	3-7/8" (99mm)	4-5/8" (118mm)	5-13/16" (148mm)
C	3-5/8" (92mm)	4-3/16" (107mm)	4-31/32" (127mm)	6-1/4" (159mm)	7" (178mm)	7-3/16" (183mm)

LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

Lake Monitors
Hydraulic Diagnostic Tool Kit with Bi-Directional Flow Meter

FOR 1/2" PIPE SIZES

STYLE BBK

Diagnose faults in hydraulic circuits, determine horsepower and test for component wear such as hydraulic valve and cylinder leakage. Ideal for large-scale use in hydrostatic applications.

A COMPLETE TROUBLE-SHOOTING SYSTEM

The tool kit consists of a bi-directional flow needle-type meter, glycerin-filled pressure gauges and a precision needle load valve. A comprehensive operator's manual describes testing of various system components.

PLAN COMPONENT REPAIRS

This tool kit can be part of a predictive maintenance program, allowing strategized pump, valve, motor and cylinder rebuilding.

COMPACT AND RUGGED

The complete hydraulic diagnostic tool kit comes with a variety of fittings and a rugged case to simplify use and safely transport the device.

NON-ELECTRICAL

Without batteries to fail or other electrical power connections to make, this system will provide a lifetime of simple and reliable operation.

METRIC AND US/STANDARD MEASURING RANGES

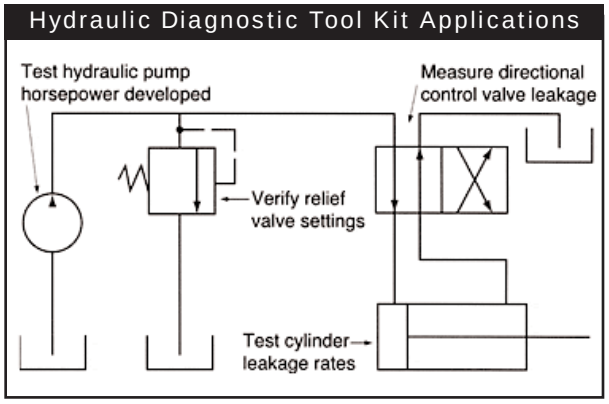
This multi-measurement diagnostic device simultaneously measures flow in GPM and LPM, and pressure in PSIG and Bar.

COMPREHENSIVE FITTING KIT

The standard fitting kit offers the ability to adapt the kit for use with NPT, JIC, SAE-ORB and O-Ring Face Seal process connectors. The standard kit provides two male fittings for each variety offered.

PIN-POINT SYSTEM PROBLEMS

The hydraulic diagnostic tool kit and comprehensive diagnostic manual will save time and money by testing discrete components within the system, eliminating trial and error approaches.



Hydraulic Diagnostic Tool Kit

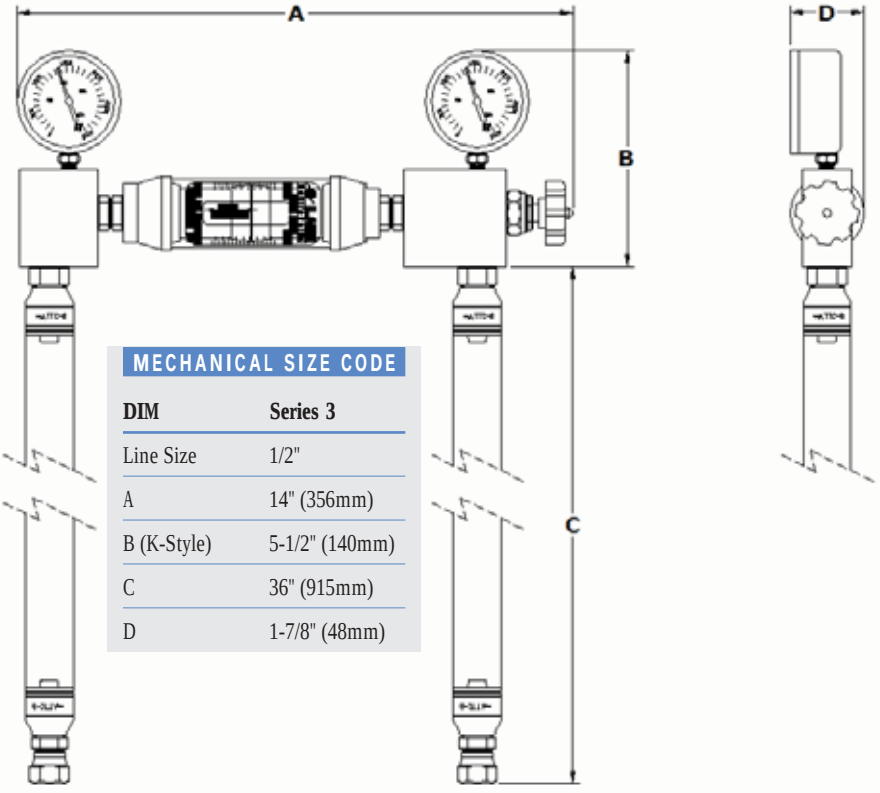
MATERIALS OF CONSTRUCTION

WETTED COMPONENTS		NON-WETTED COMPONENTS	
COMPONENT	MATERIALS	COMPONENT	MATERIALS
High-pressure casing, end ports and tapered shaft	Aluminum and Stainless Steel	Window Tube	Polycarbonate
Seals	Buna-N (STD)	Window Tube Seals	Buna-N
Transfer Magnet	Teflon® coated Alnico	Gauge Window	Acrylic
Floating Orifice Disk	Stainless Steel		
All other internal parts	Stainless Steel		
Needle Valve	Carbon Steel		
Gauge	Brass and Stainless Steel		
Hose Lengths, Fittings	SBR Rubber, Zinc Plated Steel		

PERFORMANCE

Measuring Accuracy:	Flow: ±4% of full scale (±2.5% in center third of measuring range); Pressure: ±2.5% of full scale
Repeatability:	±1% of full scale – all measurements
Measuring Range:*	Flow: 0.05–50 GPM (0.2-57 LPM) See guide to standard meters for specific ranges; Pressure: 0–3000 PSIG (0–200 Bar)
Maximum Operating Pressure:	Aluminum meters: 3000 PSIG (200 Bar)
Maximum Operating Temperature:	240ºF (116ºC)
Standard Calibration Fluids:	Oil meters: DTE 25® @ 110ºF (43ºC), 0.873 sg
Filtration Requirements:	74 micron filter or 200 mesh screen minimum

**Please consult the Lake factory for flow rates greater than 15 GPM or line sizes greater than 1/2".*
DTE 25 is a registered trademark of Exxon Mobil.



MECHANICAL SIZE CODE

DIM	Series 3
Line Size	1/2"
A	14" (356mm)
B (K-Style)	5-1/2" (140mm)
C	36" (915mm)
D	1-7/8" (48mm)

LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

LAKE MONITORS

STYLE BBK

Hydraulics Diagnostic Tool Kit with Bi-Directional Flow Meter

FOR 1/2" PIPE SIZES

Used to diagnose faults in hydraulic circuits, determine horsepower and test for component wear such as hydraulic valve and cylinder leakage. The bi-directional flow monitoring capability is ideal for large scale use in hydrostatic applications.

A COMPLETE TROUBLE-SHOOTING SYSTEM

The tool kit consists of a bi-directional flow meter, glycerin-filled pressure gauges and a precision needle load valve. A comprehensive operator's manual describes testing of various system components.

PLAN COMPONENT REPAIRS

This tool kit can be part of a predictive maintenance program, allowing strategized pump, valve, motor and cylinder rebuilding.

COMPACT AND RUGGED

The complete hydraulics diagnostic tool kit comes with a variety of fittings and a rugged case to simplify use and transport the device.

NON-ELECTRICAL

Without batteries to fail or other electrical power connections to make, this system will provide a lifetime of simple and reliable operation.

METRIC AND US/STANDARD MEASURING RANGES

This multi-measurement diagnostic device simultaneously measures flow in GPM and LPM, and pressure in PSIG and Bar.

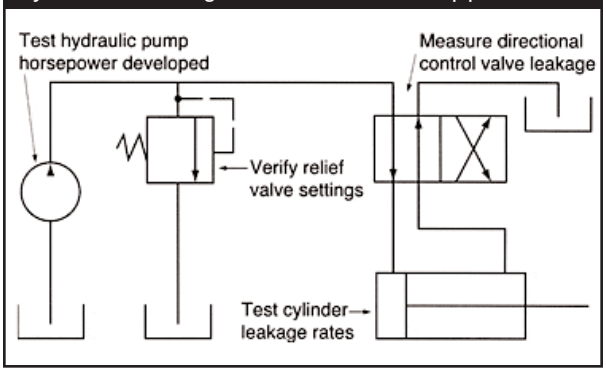
COMPREHENSIVE FITTING KIT

The standard fitting kit offers the ability to adapt the kit for use with NPT, JIC, SAE-ORB and O-Ring Face Seal process connectors. The standard kit provides two male glands for each variety offered.

PIN-POINT SYSTEM PROBLEMS

The hydraulics diagnostic tool kit and comprehensive diagnostic manual will save time and money by testing discrete components within the system, eliminating trial and error approaches.

Hydraulics Diagnostics Tool Kit Applications



LAKE MONITORS INC
Division of Total Automated Solutions, Inc.

www.lakemonitors.com

Hydraulics Diagnostic Tool Kit

MATERIALS OF CONSTRUCTION

WETTED COMPONENTS		NON-WETTED COMPONENTS	
Component	**Materials**	**Component**	**Materials**
High-pressure casing, end ports and tapered shaft	Aluminum and Stainless Steel	Window Tube	Polycarbonate
Seals	Buna-N (STD)	Window Tube Seals	Buna-N
Transfer Magnet	Teflon® coated Alnico	Gauge Window	Acrylic
Floating Orifice Disk	Stainless Steel		
All other internal parts	Stainless Steel		
Needle Valve	Carbon Steel		
Gauge	Brass and Stainless Steel		
Hose Lengths, Fittings	SBR Rubber, Zinc Plated Steel		

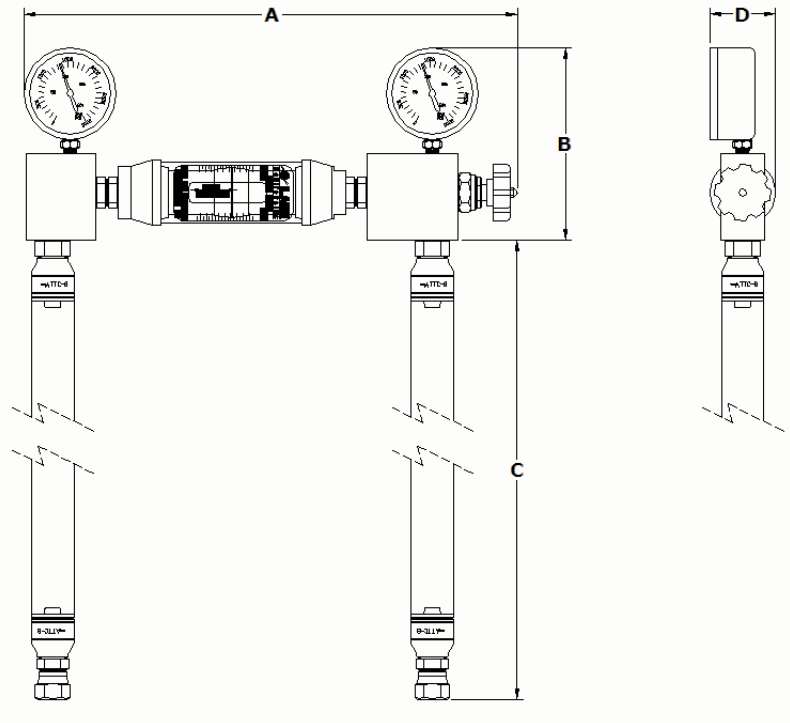
PERFORMANCE

Measuring Accuracy:	Flow: ±4% of full-scale (±2.5% in center third of measuring range); Pressure: ±2.5% of full-scale
Repeatability:	±1% of full-scale - all measurements
Measuring Range:	Flow: 0.05-50 GPM (0.2-57 LPM) See guide to standard meters for specific ranges; Pressure: 0-3000 PSIG (0-200 Bar)
Maximum Operating Pressure:	Aluminum meters: 3000 PSIG (200 Bar);
Maximum Operating Temperature:	240°F (116°C)
Standard Calibration Fluids:	Oil meters: DTE 25® @ 110°F (43°C), 0.873 sg
Filtration Requirements:	74 micron filter or 200 mesh screen minimum

DTE 25 is a registered trademark of Exxon Mobil

MECHANICAL SIZE CODE

DIM	Series 3
Line Size	1/2"
A	14" (356 mm)
B (K-Style)	5-1/2" (140 mm)
C	36" (915 mm)
D	1-7/8" (48 mm)



LAKE MONITORS, 2013 South 37th Street, Milwaukee, WI 53215
414.671.3577 / 800.850.6110 / Fax: 414.671.5253

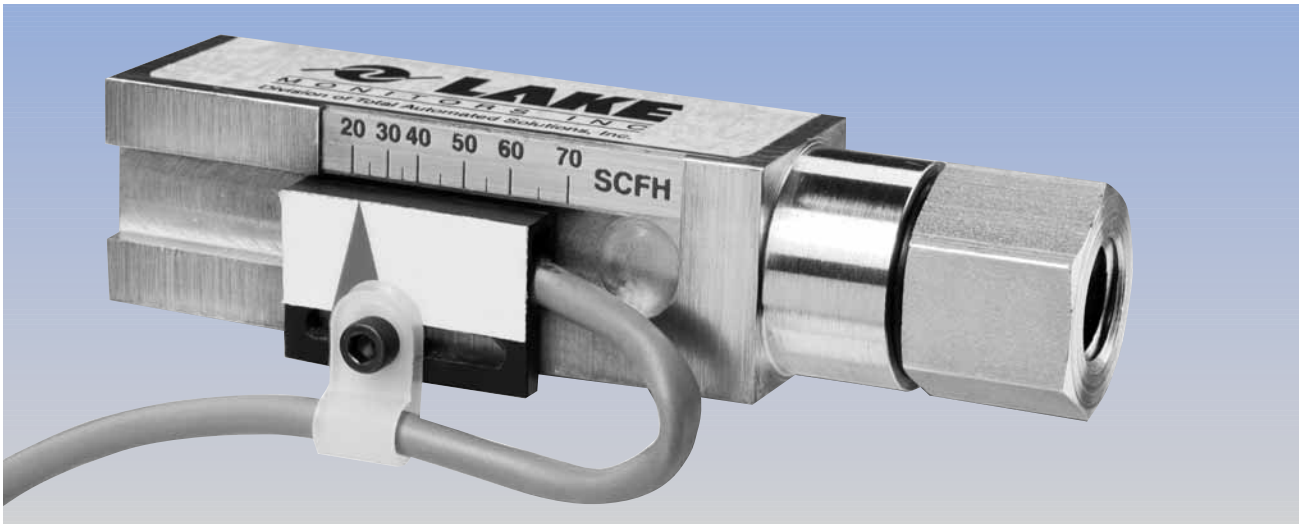
LAKE MONITORS INC
Division of Total Automated Solutions, Inc.

www.lakemonitors.com

Lake Monitors
Weld Shield Gas Flow Switch

FOR 1/2" – 3/8" PIPE SIZES

Used to detect insufficient flow conditions for automated or controlled shielded welding processes.



AN APPLICATION SPECIFIC PRODUCT OFFERING

Lake's Weld Shield Gas Flow Switch has been developed specifically for use in harsh welding applications and will hold up to the typical conditions of the welding environment.

DETECT SYSTEM FLOW PROBLEMS

Use the Weld Shield Gas Flow Switch to give your PLC or control system a signal that allows for simple detection of flow problems.

FIELD ADJUSTABLE

The Weld Shield Gas Flow Switch has a low/no flow "fault" indicator set-point that is adjustable within the lower two thirds of the range in question.

NON-POWERED

Without batteries to fail or other electrical power considerations, the switch will provide a lifetime of simple and reliable operation.

METRIC AND US / STANDARD INDICATING RANGES

These indicators are offered with metric and standard units of measure.

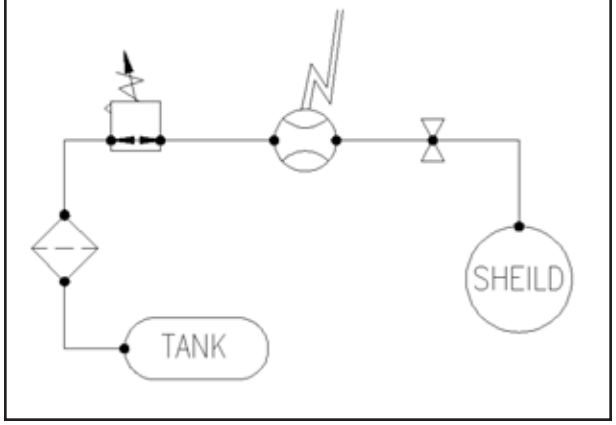
MULTIPLE CALIBRATIONS AVAILABLE

This blind switch is offered with various gas calibrations and in two ranges to complement the variety of shielding gases and flow rates commonly used.

UNRESTRICTED MOUNTING

Accurate detection can be achieved in any mounting orientation, without the straight pipe required with other analyzer systems.

WELD GAS SWITCH APPLICATION



Weld Shield Gas Flow Switch

MATERIALS OF CONSTRUCTION

WETTED COMPONENTS		NON-WETTED COMPONENTS	
COMPONENT	MATERIALS	COMPONENT	MATERIALS
Casing	Brass CA360	Switch Element	ABS / Epoxy
Seal	Buna-N (STD)	Cable	PVC
Transfer Magnet	Bonded PPS / Ferrite	Cord Grip	Nylon
Floating Orifice	Brass CA360	Retainer Screw	Stainless Steel
All other internal parts	Stainless Steel	Scale	Brass / Epoxy

PERFORMANCE

Flow Measuring Accuracy:	±5% of range
Repeatability:	±2% of range
Flow Measuring Range:	See Lake's guide to standard flow meters for specific range
Maximum Operating Pressure:	150 PSIG (10.3 Bar)
Maximum Operating Temperature:	240ºF (116ºC)
Standard Calibration Fluids:	Nitrogen, CO_2, Argon C25 @ 70°F (43ºC), 30 PSIG
Filtration Requirements:	74 micron filter or 200 mesh screen minimum
Response Time:	<50 mS
Switch Type:	Reed, Form A
Switch Logic:	Fault Open
Maximum Switch Current:	1A

DIMENSIONS

DIM	1/4" NPTF	3/8" NPTF
A	4.28" (109 mm)	4.43" (113 mm)
B	1.48" (38 mm)	1.48" (38 mm)
C	1.42" (36 mm)	1.48" (36 mm)

LAKE MONITORS

www.lakemonitors.com

AW-LAKE COMPANY
A TASI Group Company
8809 Industrial Dr., Franksville, WI 53126
262.884.9800 / Fax: 262.884.9810
800.850.6110

