

WE KNOW FLOW

Liquids • Gases • Steam • Bulk Solids

Flow Technologies for Every Application

- Coriolis Mass Flow
- DP Mass Flow
- Insertion Impeller Flowmeters
- Magnetic Flowmeters
- Orifice Plates
- Oval Gear Flowmeters
- Paddlewheel Switches
- Pitot Tubes
- Rotameters
- Thermal Dispersion
- Turbine Flowmeters
- Ultrasonic Clamp-On Flowmeters
- Ultrasonic Systems for Open Channel Flow
- Venturi Flow Elements
- Vortex Mass Flowmeters

Learn more on page 2.



**LESMAN
UNIVERSITY**

Learning Flow

Free flow technology webinars.
Lecture and hands-on sessions
taught by our factory-trained
product specialists.

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If you can flow it, we can show it!



Need help? Call Lesman inside sales at 800-953-7626.

What's the Right Flow Technology for Your Process?

Need help figuring out which flow measurement instrumentation to use in your process? Start with the reference charts below. Find your media type to help narrow down your choices. Then, take a look at the comparative specifications in the chart at the right. Depending on your application, there may be more than one technology for you.

Key			
▲ Recommended		H	High
◆ Depends on application		M	Medium
▼ Do not use		L	Low

Technology	Media Type									Specifications							See Page(s)
	Clean Liquid	Dirty Liquid	Viscous Liquid	Corrosives	Slurries	Clean Gas	Dirty Gas	Steam	Cryogenics	Turndown Ratio	Sizes	Accuracy (%FS)	Repeatability (%)	Upstream Pipe Diameter	Permanent PSI Drop	Relative Cost	
Accelabar with Averaging Pitot Tube	▲	◆	◆	◆	▼	▲	◆	▲	▲	60:1	3"-12"	0.75	0.05	0	M	H	Call
Coriolis Flowmeter	▲	▲	▲	▲	▲	◆	◆	◆	◆	25:1	0.1"-6"	0.15	0.1	0	L	H	32
DP Mass Flowmeter	▲	▲	▲	◆	◆	▲	▲	▲	▼	40:1	—	0.1	0.1	—	—	H	24-27, 46
DP Orifice Plate	▲	◆	◆	▲	▼	▲	◆	▲	▲	4:1	>1"	1	0.1	10-30	H	L	19-21
DP Pitot Tube	▲	▼	▼	◆	▼	▲	◆	▲	▼	4:1	0.5"-72"	0.75	0.1	10	L	L	21
DP Wedge	▲	▲	▲	▲	▲	▲	▲	▲	▼	10:1	0.5"-30"	3	0.5	12	H	H	Call
DP Venturi	▲	▲	◆	◆	▼	◆	◆	▲	▼	10:1	0.5"-72"	1	0.1	10	M	L	22
Insertion Impeller	▲	◆	▼	◆	▼	▼	▼	▼	▼	—	1.5"-100"	1.5	—	0	L	L	12
Laminar Flow Element	▼	▼	▼	▼	▼	▲	▼	▼	▼	20:1	2"-8"	0.72	0.1	10	L	H	23
Magnetic Flowmeter	▲	▲	▲	▲	▲	▼	▼	▼	▼	10:1	>0.1"	0.5	0.2	5	L	M	3, 28-31
Oval Gear Flowmeter	▲	▲	▲	◆	▼	▲	◆	▼	◆	20:1	0.125"-4"	1	0.3	0	H	M	10-11
Paddle Switch	▲	◆	▼	◆	▼	▲	◆	▼	▼	N/A	0.25"-8"	N/A	3	0	L	L	15-16
Paddlewheel	▲	▼	◆	◆	▼	◆	◆	▼	▼	3:1	0.1"-1.5"	2.5	1	0	H	L	18
Rotameter	▲	▼	◆	◆	▼	▲	▼	◆	▼	5:1	0.2"-3"	4-8	2	0	M	L	17
Shuttle Switch	▲	▼	▼	◆	▼	▼	▼	▼	▼	N/A	0.25"-1.5"	N/A	1-3	0	L	L	18
Thermal Dispersion	▲	◆	◆	◆	◆	▲	▲	▼	◆	100:1	0.2"-72"	0.5	0.2	10	L	H	14, 17
Turbine Flowmeter	▲	▼	◆	◆	▼	▲	◆	▲	◆	10:1; 50:1	0.5"-4"	0.5	0.1	10-20	H	H	4-9
Ultrasonic Clamp-On	▲	◆	▲	▲	▼	◆	▼	▼	▼	40:1	0.25"-360"	0.5-1.0	0.15	10	L	H	34-37
V-Notch	▲	◆	▼	◆	◆	▼	▼	▼	▼	300:1	—	2-5	2	4H	0	L	Call
Verabar with Averaging Pitot Tube	▲	◆	◆	◆	▼	▲	◆	▲	▼	10:1	2"-192"	1.0%	0.10	10	L	L	21
Vortex Flowmeter	▲	◆	◆	◆	▼	▲	◆	▲	▼	H	>1"	1	0.2	20-30	M	L	39
Weir	▲	◆	▼	◆	◆	▼	▼	▼	▼	300:1	—	2-5	2	4H	0	L	38

Don't see what you need? Call Lesman sales at 800-953-7626.

Find Your Instrumentation for Bulk Solids Flow Measurement



Belt Scales

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Weighfeeders

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Solids Flowmeters

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Dispensing Valves

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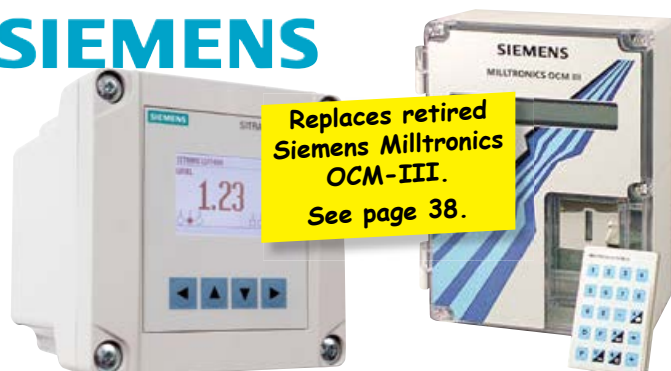


Radiametric Weighing Systems

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New Flow Products Available from Lesman

SIEMENS



Siemens SITRANS LUT400 Ultrasonic Controller for Open Channel Flow

- Accuracy to $\pm 0.04"$ (1 mm)
- Improved Sonic Intelligence for better performance in noisy environments
- Energy-saving algorithms and real time clock help you reduce pump operation cost by avoiding peak energy periods
- Front interface with four-button programming, menu-driven parameters, and graphical quick-start wizards
- Echo profile and trend displays for enhanced diagnostics
- Datalogger records performance and alarm events
- HART® communications with access via panel interface, SIMATIC PDM, Emerson handhelds, and web browser
- Built-in wall, pipe, and DIN rail mounting
- Removable terminal strips for hassle-free wiring

SITRANS FC430 Coriolis Flowmeter NTEP Approved for Custody Transfer

- Sizes available from 1.2" to 3"
- 0.1% accuracy, 0.05% repeatability, resistant to external vibration
- Now NTEP approved for custody transfer applications in the U.S. and Canada, for measurement of volume and mass liquid flow
- High accuracy measurement with minimal pressure loss
- Can be used in fiscal or custody transfer metering applications in oil and gas, petrochemical, and food and beverage processes
- Install anywhere, fit multiple units into tight spaces
- Flange, pipe thread, hygienic thread or clamp connections
- 4-20 mA analog output with HART® 7.2 standard. I/O options include analog, pulse, frequency, relay, or status
- Can be validated and configured for SIL2 or SIL3 operation
- Meets all IEC Ex, ATEX, and FM hazardous area requirements
- Avoids cavitation and separation of fragile fluids; EHEDG/3A approved for hygienic use
- Remote FCS400 model's digital sensor link guarantees high-speed data transfer, even up to 200 meters between sensor and transmitter
- FM-approved models with 150# ANSI flanges available from Siemens Quick Ship



See page 33.

GPI Flomec QSE Plastic Case Magnetic Flowmeter

- Non-intrusive, no moving parts to wear out, virtually maintenance free, and tolerates high flows without damaged
- Wide turndown ratio: 0.25 to 15.0 FPS
- Good in temperatures 32° to 210°F (180°F for flanged models)
- Open collector pulse output
- Noryl® housing, 316L stainless steel electrodes, NBR O-rings
- Modified bore permits unobstructed flow, minimizes flow disturbances and straight pipe requirements
- Compatible with FLOMEC Android app and Bluetooth for meter operation, real-time data viewing, and data downloads
- NSF certification pending



Flowmeter Size		1/2"	3/4"	1"	1-1/2"	2"	3"	4"
Fitting Type		NPT Male	NPT Male	NPT Male	NPT Male	NPT Male	ANSI Flanged	ANSI Flanged
Flow Range		0.15 to 10 GPM 0.56 to 38 LPM	0.3 to 20 GPM 1.13 to 76 LPM	0.6 to 40 GPM 2.27 to 151 LPM	1.2 to 80 GPM 4.54 to 303 LPM	2.25 to 150 GPM 8.5 to 568 LPM	4.5 to 300 GPM 17 to 1136 LPM	9 to 600 GPM 34 to 2271 LPM
Accuracy	±2.0%	0.15 to 0.6 GPM	0.3 to 1.2 GPM	0.6 to 2.4 GPM	1.2 to 4.8 GPM	2.25 to 9.0 GPM	4.5 to 18.0 GPM	9 to 36.0 GPM
	±0.5%	0.61 to 10 GPM	1.21 to 20 GPM	2.41 to 40 GPM	4.81 to 80 GPM	9.01 to 150 GPM	18.01 to 300 GPM	36.01 to 600 GPM
Typical K Factor		4347 PPG 1158.5 PPM	1937 PPG 511.8 PPL	1089 PPG 287.7 PPL	484.1 PPG 127.9 PPL	400 PPG 105.7 PPL	121 PPG 32.0 PPL	68.1 PPG 18.0 PPL

NPT versions start at \$650. Flanged models start at \$850.

GPI FLOMEC® G2 Industrial Grade Turbine Flowmeters



Stainless Steel for General Service

Flomec's stainless steel meters are suited for most chemical applications including ammonium, plating solutions and fuel products. They're also available for high pressure applications like in spray washers and hydraulic systems.

PVDF for Harsh Chemicals 1/2" and 1" only.

G2 plastic body meters offer great chemical compatibility. Choose a PVDF meter for aggressive or abrasive chemical applications including bleach, ferric chloride, phenol, sulfuric acid, or phosphoric acid.



Brass for Water Applications

Flomec G2 brass meters are compatible with fluids for most water applications, like glucose, lacquer thinners, and vegetable juices. They are designed for fluids thinner than 100 cp.

Tri-Clover for Food Applications

Flomec stainless steel meters with Tri-Clover fittings can be used for the food and beverage industry in pre-process applications.



Aluminum for Petroleum Applications

Flomec's aluminum meters are best suited for petroleum based products. Their modular design allows for maximum flexibility in meeting custom applications.

ANSI Flanged for Easy Installation

Choose the flanged stainless steel G2 flowmeter model when you need a meter that installs in-line quickly. These meters can be easily installed or removed using eight bolts.



Features

- Meter sizes from 1/2" to 2"
- Modular design for use with output modules, sensors, and remote transmitters
- Two totals (batch=resettable, cumulative=non-resettable); rate of flow; included non-volatile totals
- Factory calibrated in gallons and liters; field calibratable
- Easy maintenance — internal parts simple to replace
- Five year lithium battery life, field-replaceable batteries
- Turbine choice depends on flow rate, line size, pressure rating, fitting type, chemical compatibility, and temperature range

Specifications

Repeatability: ± 0.1%; PVDF: 0.3%

Pressure Rating: 1,500 PSI; High Pressure: 3,000 PSI; Flanged: Class 150#; Tri-Clover: Limited by fitting size, clamp size, and temperature; Aluminum and Brass: 300 PSI; PVDF: 100 PSI

Operating Temperature: -40° to 250°F; PVDF: -20° to 180°F; With Display: 0° to 140°F

Materials: SS, Aluminum, Brass Housing: Bearings: 96% Alumina Ceramic; Shaft: Tungsten Carbide; Rotor: PVDF; Rings: 316 SS; PVDF (5% carbon fiber filled) Housing: Bearings and Shaft: Ceramic (98% Alumina); Rotor: PVDF; Rings: Fluorocarbon; Optional O-Ring: PTFE

Calibration Report: Comes standard; NIST certification available

Approvals: FM, CE, ATEX, IECEx; PVDF: FM, CE, ATEX Ex

Need help with turbine flowmeters? Fill out the application datasheet from Lesman.com/datasheets/ and return it to Lesman.

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**TURBINE
FLOWMETERS**

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Key Specifications

Meter Size	Tri-Clover Fittings	Flow Range (GPM)	Max. Flow (GPM)	Typical K-Factor (PPG)	Accuracy (% of Reading)		Frequency	Strainer Size	Wrench Flat Size
					Turbine Only	w/ Display			
1/2"	3/4"	1 to 10	15	2,500	±2.0%	±1.5%	42 to 420 Hz	60 mesh	1-1/16"
3/4"	1"	2 to 20	30	1,100	±1.5%	±1.0%	37 to 370 Hz	60 mesh	1-5/16"
1"	1-1/2"	5 to 50	75	565	±1.5%	±1.0%	47 to 470 Hz	60 mesh	1-5/8"
1-1/2"	2"	10 to 100	150	215	±1.0%	±0.75%	36 to 360 Hz	30 mesh	2-3/8"
2"	3"	20 to 200	300	100	±1.0%	±0.75%	33 to 330 Hz	30 mesh	3"
1/2" (PVDF)	-	1.5 to 12	15	2,400	±2.0%	±1.5%	48 to 480 Hz	60 mesh	
1" (PVDF)	-	5 to 50	75	540	±1.5%	±1.0%	45 to 450 Hz	30 mesh	

Build Your G2 Turbine Flowmeter

Ordering Instructions

Select one option from each table section below. Be sure to make your required choices in sections 1 and 2. Add accessories in section 3. A complete catalog number looks like this: **G2-A05-N-09-GM-A**

1) Select Your Turbine Material and Size

Description		Stainless Steel		High Pressure SS		Aluminum		Brass		PVDF	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
Turbine Size	1/2"	G2-S05-	\$476.80	G2-H05-	\$552.00	G2-A05-	\$353.60	G2-B05-	\$455.20	G2-P05-	\$580.00
	3/4"	G2-S07-	493.60	G2-H07-	568.00	G2-A07-	368.80	G2-B07-	471.20	—	
	1"	G2-S10-	509.60	G2-H10-	583.20	G2-A10-	379.20	G2-B10-	503.20	G2-P10-	587.20
	1-1/2"	G2-S15-	801.60	G2-H15-	911.20	G2-A15-	620.80	G2-B15-	755.20	—	
	2"	G2-S20-	1149.60	G2-H20-	1313.60	G2-A20-	866.40	G2-B20-	998.40	—	

2) Choose Your Fitting Type and Electronics

Description		Catalog Number	Price
Fitting Type	150# ANSI Flange — Available on 1/2", 1" and 2" Meters Only	F-	\$342.40
	NPTF	N-	0.00
	Tri-Clover Sanitary Clamp	T-	141.60
	Electronics Only for Metal Meters	X-	0.00
	Electronics Only for Plastic (PVDF) Meters	Z-	0.00
Electronics	No Electronics	XX-XX	0.00
	Turbine Only		
	Turbine with Local Display	09- 19-	347.20 413.60
Calibration	Factory-Set to Gallons/Minute; Reads in Both GPM and LPM	GM-	0.00
	Factory-Set to Liters/Minute; Reads in Both GPM and LPM	LM-	0.00
Packaging	For Turbine Only or Turbine with Display (1/2" to 1" Meters)	A	0.00
	For Turbine Only or Turbine with Display (1-1/2" and 2" Meters). Not Available with Plastic (PVDF) Meters	B	0.00
	For Turbine without Local Display or with Remote Transmitter	C	0.00
	For 150# ANSI Flange Turbine Only (1" Meters)	D	0.00
	For 150# ANSI Flange Turbine Only (1-1/2" and 2" Meters or 1" Meter with Remote Transmitter)	E	0.00

3) Add a Module and Accessories

Description		Catalog Number	Price
Modules	FM Approved Remote Kit Assembly (Readout Up to 100 Ft.)	113275-1	\$297.60
	Conditioned Signal Output Module for Turbine Only Model	113435-1	325.60
	FM Approved Sensor Kit for Turbine Only Model *	120077-01	425.60
	4-20 mA Module	125100-1	425.60
	Pulse Access Module	125060-1	116.00
	External Power Module	125070-1	112.00
Accessories	Conduit Adapter Kit	113437-01	84.80
	Connector Kit for FM-Approved Sensor (120077-01)	113524-01	76.00
	90° Display Adapter Kit for Vertically Mounted Meters	125260-01	64.80
	Pulse Access Dust Cover: Replaces Dust Cover on Electronic Display	125080-1	115.20

* Requires Connector Kit 113524-01



GPI FLOMEC® G Series High Precision Turbine Flowmeters



High temperature sanitary clamp models are 3A rated for use in CIP and SIP applications

Features

- Low flow, standard, high temperature, and extended range models
- Threaded, flanged or Tri-Clover sanitary process connections
- $\pm 0.5\%$ accuracy; 0.1% repeatability
- High-temperature models for processes to 800°F
- Flow ranges 0.6 to 600 GPM (model dependent)
- Local or remote electronics available

Turbine Size	Fitting Size (Clamp Models)	Flow Range GPM (LPM)	Typ. K-Factor PPG (PPL)	Strainer Size	Frequency Output (Hz)
1/2"	3/4"	0.6 – 6.0 (2.2 – 22)	10,000 (2642)	40 mesh	100 – 1000
1/2"	1"	0.8 – 6.0 (3.0 – 22)	10,000 (2642)	40 mesh	125 – 1000
3/4"	1-1/2"	1.6 – 16 (6.0 – 60)	3,750 (991)	40 mesh	100 – 1000
1"	1-1/2"	6.7 – 67 (25.2 – 252)	896 (237)	40 mesh	100 – 1000
1-1/2"	1-1/2"	17.7 – 177 (67.0 – 670)	340 (90)	18 mesh	100 – 1000
2"	2"	33 – 330 (125.0 – 1250)	181 (48)	14 mesh	100 – 1000
3"	—	60 – 600 (227.1 – 2271)	50 (13)	14 mesh	50 – 500

Specifications

Linearity: $\pm 0.5\%$ of the mean K-Factor throughout the linear range

Pressure Rating: Threaded: 5,000 PSI; 3": 2,500 PSI; Flanged: Class 150#; Sanitary Clamp: Limited by fitting size, clamp size and temperature

Materials: CD4MCu SS rotor; 316 SS rotor supports, SS retaining rings; GSCP: SS shaft, PTFE sleeve bearings, 404C SS thrust bearings; GSCPS: PEEK bearings and bushings; Ra32 finish

Temperature Range: Tungsten Carbide and 3A Approved Sanitary: -100° to 225°F; High Temperature: -450° to 800°F; Stainless Steel: -100° to 185°F; SIP up to 1 hour (GSCPS models only): Up to 285°F

Calibration Report: Comes standard; NIST certification available

Approvals: CE; GSCPS models: 3A Sanitary Rating, CIP, SIP

Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this: G _ _ - _ _ - _ _


Model Selection Guide

Description		Catalog Number	Price	
G Series Precision Turbine Flowmeter		G _ _ -		
Fitting	NPTM Taper 150# ANSI Flange	_ N _ - _ F _ -	↓	↓
Shaft & Bearings	Tungsten Carbide	_ _ T -	\$0.00	\$0.00
	Stainless Steel/PTFE/440C SS	_ _ P -	0.00	0.00
Standard Turbine and Sensor (Pick Electronics)	1/2"	051S1-_	1004.80	—
	3/4"	075S2-_	1004.80	1683.20
	1"	100S2-_	1056.00	1905.60
	1-1/2"	150S2-_	1216.80	1907.20
	2"	200S2-_	1555.20	2836.00
	3"*	300S2-_	3106.40	4731.20
High Temp Turbine, Body Only*	1/2"	051HX-X	1216.80	—
	3/4"	075HX-X	1216.80	2000.00
	1"	100HX-X	1303.20	2220.00
	1-1/2"	150HX-X	1534.40	2634.40
	2"	200HX-X	1874.40	3130.40

*Stainless steel model not available in high temperature version or 3" turbine size.

Call for low flow, extended flow range, or extended flow range/high temperature models.

Model Selection Guide for 3A Sanitary Flowmeters

Description	Catalog Number	Price
3A Approved High Temp (SIP) Sanitary Turbine		
 1" Fitting, 1-1/2" Clamp	GSCPS-100	\$1780.00
	GSCPS-150	1924.00
	GSCPS-200	2125.60
Low Profile Adapter	-L	0.00

Model Selection Guide for Sanitary Meters (High Accuracy, No 3A Approval)

Description	Catalog Number	Price
Precision Turbine Flowmeter with Sanitary Clamp		
Turbine and Sensor (Pick Electronics)	1/2" with 3/4" Fitting	051751- \$1300.00
	1/2" with 1" Fitting	051101- 1300.00
	3/4" with 1-1/2" Fitting	075152- 1359.20
	1" with 1-1/2" Fitting	100152- 1359.20
	1-1/2" with 1-1/2" Fitting	150152- 1592.80
	2" with 2" Fitting	200202- 1747.20

Economy Series Digital Flowmeters



Nylon Water Meter

The nylon meter is a simple electronic digital flowmeter for water applications. It mounts on the end of a hose or in-line in a water pipe.



Aluminum Fuel Meter

The electronic fuel meter is lightweight with rugged housing and sealed electronic circuitry. It is factory calibrated for petroleum applications.

Economy flowmeters are not field serviceable. For flowmeters with advanced features, please see the GPI Flomec G2 series on page 4.

Specifications

Compatibility: Pump or gravity feed systems with at least 3 GPM flow rate

Fittings: 1" NPT threaded

Accuracy: $\pm 5.0\%$ reading; **Repeatability:** $\pm 0.5\%$

Pressure Rating: Nylon: 150 PSIG; Aluminum: 300 PSIG

Operating Temperature: Nylon: 14° to 131°F; Aluminum: 14° to 130°F

Wetted Material: *Bearings:* Ceramic; *Shaft:* Tungsten Carbide; *Rotor:* Nylon; *Signal Generators:* Ferrite; *Rings:* 316 SS

Local Display: Two totals (1 cumulative, 1 batch); Permanent factory calibration for water

Approvals: Nylon: CE; Aluminum: FM, CE

Model Selection Guide

Flow Range	Nylon		Aluminum	
	Catalog Number	Price	Catalog Number	Price
3 – 30 GPM	113255-4	\$215.20	113255-1	\$156.00
10 – 100 LPM	113255-5	215.20	113255-2	156.00

FM-300 Electronic Disc Flowmeter for Chemical Applications



Features

- Designed for use with agricultural chemicals
- Simple electronic disc flow meter with rugged PBT housing
- Mount on the end of a hose or in-line on a pipe
- Keeps both cumulative and batch totals
- Factory calibrated for thin, medium, thick fluids and oils

Specifications

Accuracy: $\pm 2.0\%$ reading factory calibrated; Field-calibration to $\pm 0.5\%$

Wetted Materials: *Housing:* Aluminum; *Bearings:* Ceramic; *Shaft:* Tungsten Carbide; *Rotor:* Nylon; *Signal Generators:* Ferrite; *Rings:* 316 SS

Pressure Rating: 50 PSIG

Operating Temp: 15° to 130°F

Fitting: 1" NPTF inlet, NPTM outlet

Display: Optional. Flow rate, batch and cumulative totals; factory and field calibration

Model Selection Guide

Flow Range	Catalog Number	Price
2 – 20 GPM	120000-17	\$257.60
7 – 75 LPM	120000-15	257.60

Positive Displacement Meters for Engine Oils or Lube Fluids

Features

- 0.26 to 7.8 GPM (1-30 LPM) flow range
- 1000 cP maximum viscosity
- Aluminum enclosure
- 1/2" NPT connection

The GPI Flomec positive displacement LM51DN lube flowmeter is specifically designed to dispense motor oils (SAE 5 to SAE 50), gear oils (SAE 80 to SAE 240), automatic transmission fluid, antifreeze (ethylene glycol), brake fluid, windshield wiper fluid and engine coolant solutions.

This unit comes factory-set to read in gallons per minute, but can display either GPM or LPM.



Specifications

Accuracy: $\pm 0.5\%$ reading

Working Pressure: 1500 PSI max.

Operating Temperature: -4° to 140°F

Wetted Materials: Aluminum, stainless steel, rubber, BUNA N

Enclosure: Aluminum

Display: 6-Digits, batch, reset total, non-reset total

Units: Field-selectable gallons, liters, pints, and quarts

Power: Lithium battery

Model Selection Guide

Flow Range	Catalog Number	Price
0.25–8 GPM 1–30 LPM	LM51DN	\$340.80

GPI FLOMEC™ TM Series Turbine Flowmeters for Water



Features

- Available in sizes 1/2" to 4" with spigot, NPT or ANSI flanged fittings
- Displays in gallons, liters, and cubic feet
- Indicates batch, cumulative totals and flow rate
- 5 year lithium battery life
- Field calibration available

Specifications

Fitting Type: Schedule 80 spigot (pipe), NPTF, 150# ANSI or DIN 100 flange (3" and 4" only)

Accuracy: ± 3.0% reading

Pressure Rating: 225 PSI at 73°F; DIN: 135 PSI at 73°F

Typical Applications: OEM water treatment equipment/skids, sub-metering facility water usage, waste water treatment equipment, water based cooling systems, chemical feed systems, irrigation

Operating Temperature: 32° to 140°F

Wetted Materials: 1/2" to 2": Housing: PVC; Bearings: Ceramic; Shaft: Tungsten Carbide; Rotor: PVDF; Rings: 316 SS; 3" to 4": Housing: PVC; Bearings: PEEK; Shaft and Thrust Washers: SS; Rotor and Nose Cone: Acetal; Signal Generator: Ferrite

Pulse Output: Open collector (NPN)

Calibration Report: Standard with -P (pulse out); NIST certification available

Approval: CE

Model Selection Guide for 1/2" to 2" Flowmeters

Size	Flow Rate (GPM)	Typical K-Factor PPG (PPL)	Spigot Fitting		NPT Fitting	
			Catalog Number	Price	Catalog Number	Price
TM Series PVC Meter with Computer Display						
1/2"	1 – 10	2,500 (660)	TM050	\$313.60	TM050-N	\$336.80
3/4"	2 – 20	1,100 (291)	TM075	344.80	TM075-N	368.00
1"	5 – 50	565 (149)	TM100	400.00	TM100-N	424.00
1-1/2"	10 – 100	215 (57)	TM150	447.20	TM150-N	483.20
2"	20 – 200	100 (26)	TM200	484.80	TM200-N	520.80
TM Series PVC Meter with Digital Pulse						
1/2"	1 – 10	2,500 (660)	TM050-P	313.60	TM050-N-P	336.80
3/4"	2 – 20	1,100 (291)	TM075-P	344.80	TM075-N-P	368.00
1"	5 – 50	565 (149)	TM100-P	400.00	TM100-N-P	424.00
1-1/2"	10 – 100	215 (57)	TM150-P	447.20	TM150-N-P	483.20
2"	20 – 200	100 (26)	TM200-P	484.80	TM200-N-P	520.80
TM Series PVC Meter with Display and Digital Pulse						
1/2"	1 – 10	2,500 (660)	TM050-LP	376.00	TM050-N-LP	400.00
3/4"	2 – 20	1,100 (291)	TM075-LP	407.20	TM075-N-LP	431.20
1"	5 – 50	565 (149)	TM100-LP	463.20	TM100-N-LP	487.20
1-1/2"	10 – 100	215 (57)	TM150-LP	509.60	TM150-N-LP	546.40
2"	20 – 200	100 (26)	TM200-LP	548.00	TM200-N-LP	584.00

Model Selection Guide for 3" and 4" Flowmeters

Size	Flow Rate (GPM)	Typical K-Factor PPG (PPL)	Spigot Fitting		NPT Fitting		150# ANSI Flange		DIN Flange	
			Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
TM Series PVC Meter with Computer Display										
3"	40 – 400	43 (11)	TM300	\$741.60	TM300-N	\$938.40	TM300-F	\$938.40	TM300-D	\$938.40
4"	60 – 600	17 (4.5)	TM400	791.20	TM400-N	997.60	TM400-F	997.60	TM400-D	997.60
TM Series PVC Meter with Digital Pulse										
3"	40 – 400	43 (11)	TM300-P	741.60	TM300-N-P	938.40	TM300-F-P	938.40	TM300-D-P	938.40
4"	60 – 600	17 (4.5)	TM400-P	791.20	TM400-N-P	997.60	TM400-F-P	997.60	TM400-D-P	997.60

*When ordering computer assembly only, specify turbine housing size; ISO 7 designation is RC

GPI FLOMEC® OM Series Oval Gear Flowmeters



Features

- High accuracy and repeatability, direct volumetric reading
- No requirement for flow conditioning (straight pipe runs)
- Measures high and low viscosity liquids
- Only two moving parts
- Optional Exd I/IIB approval (ATEX, IECEx)

Florec's OM series oval gear meters are designed for low flow and high accuracy applications. They work great for viscous fluids and are available with pulse output from either a reed switch or hall effect sensor. OM series meters work best with clean fluids that are free of debris.

Specifications

Sizes: 1/8" to 4" standard; Intermediate and high pressure models: 1/8" to 2";
Models with analog display: 1/2" to 2"

Repeatability: Typically $\pm 0.03\%$ of reading

Temperature Range: -4° to 250°F; Mechanical: 176°F Max.; Call Lesman for lower temperature

Outputs: Reed Switch: 30 VDC x 200 mA max; Hall Effect (NPN): 3-Wire Open Collector, 5-24 VDC max; Output Options: 4-20mA, scaled pulse, quadrature pulse, flow alarms or two stage batch control

Protection Class: NEMA 4X/IP66/67, optional Exd I / IIB T4/T6, integral ancillaries can be supplied intrinsically safe

Size	Flow Range		Filtration	Accuracy* @3 cp	Max. Pressure PSI		Output Pulse Resolution Pulses/Gallon		
					Aluminum	316 SS	Reed Switch	Hall Effect	QP Hall Effect
1/8"	0.13 – 9.5 GPH	0.5 – 36 LPH	200 mesh	$\pm 1\%$	220	495	10600	10600	10600
1/4"	0.5 – 27 GPH	2 – 100 LPH	200 mesh	$\pm 1\%$	220	495	3975	3975	3975
3/8"	4 – 145 GPH	15 – 550 LPH	200 mesh	$\pm 1\%$	220	495	1345	2690	2690
1/2"	0.26 – 10.6 GPM	1 – 40 LPM	100 mesh	$\pm 0.5\%$	990 (580)	990	318	363	636
1"	2.6 – 40 GPM	10 – 150 LPM	100 mesh	$\pm 0.5\%$	990 (580)	990	102	405	204
1-1/2"	4.0 – 66 GPM	15 – 250 LPM	100 mesh	$\pm 0.5\%$	435 (435)	435	53	212	106
2"	8 – 120 GPM	30 – 450 LPM	100 mesh	$\pm 0.5\%$	285 (285)	550	25	99	49
3"	10 – 200 GPM	35 – 750 LPM	40 mesh	$\pm 0.5\%$	175 (12)	175	10.0	40.5	20.0
4"	20 – 400 GPM	75 – 1500 LPM	40 mesh	$\pm 0.5\%$	145	—	4.15	8.30	8.30

*Accuracy is $\pm 0.2\%$ of reading with optional RT14 with non-linearity corrections

() denotes mechanical register max. pressure PSI



Model Selection Guide for Oval Gear Flowmeters With Mechanical Register

Description		Catalog Number	Availability/Price					
OM Series Mechanical Register Oval Gear Flowmeter								
Pipe Size	1/2"	OM015-	↓					
	1"	OM025-		↓				
	1-1/2"	OM040-			↓			
	2"	OM050-				↓		
	3"	OM080-					↓	
	4"	OM100-						↓
Body Material	Aluminum	A ___ -	\$689.60	\$749.60	\$1512.00	\$1650.40	\$3093.60	\$4536.00
	316L Stainless Steel	S ___ -	1575.20	1839.20	2700.00	3212.80	5550.40	—
Rotor Material	Stainless Steel	_ 51 _ -	135.20	164.00	598.40	598.40	1764.00	—
	PTFE-Filled Polyphenylene Sulfide	_ 00 _ -	0.00	0.00	0.00	0.00	0.00	0.00
O-Ring Material	FKM (Viton) [Std for Aluminum]	___ 1 -	0.00	0.00	0.00	0.00	0.00	0.00
	PTFE Encapsulated FKM	___ 3 -	94.40	173.60	188.80	188.80	337.60	479.20
	Buna-N Nitrile (-40°F Minimum)	___ 4 -	0.00	0.00	0.00	0.00	0.00	0.00
Process Fitting	No Fitting	800	0.00	0.00	0.00	0.00	0.00	0.00
	NPTF Threaded	820	0.00	0.00	0.00	0.00	0.00	0.00
	150# ANSI RF Flanged	840	409.60	346.40	406.40	564.00	564.00	564.00
	300# ANSI RF Flanged	850	673.60	976.80	1048.80	1124.80	—	#VALUE!
Integral Options	4-Digit Mechanical Totalizer, Liters	- M3	0.00	0.00	0.00	0.00	0.00	0.00
	4-Digit Mechanical Totalizer, Gallons	- M4	0.00	0.00	0.00	0.00	0.00	0.00
	5-Digit Mechanical Totalizer, Liters	- V1	—	—	—	1874.40	1874.40	1874.40

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**OVAL GEAR
FLOWMETERS**

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Model Selection Guide for Oval Gear Flowmeters With Digital Interface

Description			Catalog Number	Availability/Price							
OM Series Oval Gear Flowmeter											
Pipe Size	1/8"	OM004- OM006- OM008- OM015- OM025- OM040- OM050- OM080- OM100-	↓								
	1/4"			↓							
	3/8"				↓						
	1/2"					↓					
	1"						↓				
	1-1/2"							↓			
	2"								↓		
	3"									↓	
	4"										↓
Body	Aluminum 316L Stainless Steel	A _ _ _ - S _ _ _ -	\$516.80 689.60	\$539.20 720.80	\$440.80 636.80	\$614.40 1174.40	\$684.00 1411.20	\$1342.40 2296.00	\$1492.80 2970.40	\$2954.40 5153.60	\$4536.00 —
Rotor	Stainless Steel PTFE-Filled Polyphenylene Sulfide	_ 51 _ - _ 00 _ -	0.00 —	0.00 —	132.80 0.00	135.20 0.00	164.00 0.00	598.40 0.00	598.40 0.00	— 0.00	— 0.00
O-Ring	FKM (Viton) [Std for Aluminum bodies]	_ _ _ 1 -	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PTFE Encapsulated FKM	_ _ _ 3 -	31.20	35.20	38.40	44.00	116.80	126.40	126.40	337.60	406.40
	Buna-N Nitrile (-40°F Minimum)	_ _ _ 4 -	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max. Temp	176°F	8 _ _	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	250°F	2 _ _	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Process Connection	NPTF Threaded	_ 2 _	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	150# ANSI RF Flanged	_ 4 _	—	—	—	409.60	346.40	406.40	564.00	1313.60	564.00
	300# ANSI RF Flanged	_ 5 _	—	—	—	673.60	976.80	1048.80	1124.80	—	—
	Sanitary Fittings	_ 3 _	—	—	—	260.80	456.80	564.00	749.60	—	—
	No Fitting	_ 0 _	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Cable Entries	3-6mm Cable Gland or No Cable Entry	_ _ 0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	—	—
	M20 x 1.5MM	_ _ 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1/2" NPT*	_ _ 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* 1/2" NPT Adapter on >OM008 and OM015N

Integral Options (Add Suffix)	Suffix	Price
Combination Reed Switch/Hall Effect Sensor	-	\$ 0.00
Reed Switch Only (for IS installations)	-RS	0.00
High Resolution Hall Effect Output (for 1/8" and 1/4" meters only)	-HR	24.80
ATEX, IECEx EF with High Res Hall Effect Output (for 1/8" and 1/4" meters only)	-H1	176.80
Quadrature Pulse: 2 NPN Phased Outputs	-QP	0.00
ATEX, IECEx EF with 2 NPN Phased Outputs	-Q1	151.20
Stainless Steel Terminal Cover	-SS	100.80
ATEX, IECEx Explosion-Proof Housing	-E1	151.20
ATEX, IECEx Mine Explosion-Proof Housing (SS meters only)	-E2	151.20
RT14 Intrinsically Safe Rate/Totalizer Display with All Outputs	-R5	617.60
RT40 Backlit Rate Totalizer	-R4	450.40
E018 Aluminum Backlit Rate/Totalizer, Pulse, 4-20 mA, Lin, HART (Not for 1/2" meters)	-E18	2907.20
E018 SS Backlit Rate/Totalizer, Pulse, 4-20 mA, Lin, HART (Not for 1/2" meters)	-E19	3688.80

Also available with Keishi-cut rotors for high viscosity liquids, stainless steel bodies for intermediate and high pressures, and temperatures over 250°F.

Don't see the configuration you need? Give us a call!



GPI FLOMEC® DP Series Insertion Impeller Flowmeters



Features

- NEMA 6/IP68 submersible 316 stainless steel construction
- Integral or remote pre-amplifiers and flow instruments
- DP525 suitable for hot tap installation
- Quadrature pulse output option and bi-directional flow measurement
- Available with intrinsic safety approval for use in hazardous environments

Flomec's DP490 and DP525 measure flow in water, fuel, and other low viscosity liquids. DP series meters are installed with the metering head one-eighth into the pipe, resulting in minimal pressure drop. They work in pipe sizes 1.5" to 100" and do not require external power when used with a Flomec rate totalizer. Typical applications include HVAC, hot and chilled water, fire systems, water distribution, boiler and chiller feed water, and industrial chemicals.

Specifications

Pipe Sizes: DP490: 1.5" to 36"; DP525: 2" to 100"

Flow Rate: DP490: 4–99,600 USGM; DP525: 6–780,000 USGM

Flow Velocity: 1 to 33 feet/sec

Accuracy: ±1.5% of reading

Linearity: Typically ± 1.5% with well established flow profile

Temperature Range: -40° to 300°F

Pressure: 1160 PSIG max.

Materials: 316 SS body, tungsten carbide rotor shaft, PVDF rotor (PEEK optional)

Pipe Connection: DP490: 1.5" or 2" NPTM; DP525: 2" NPTM

Pulse Output: For PVDF 212°F

Reed Switch: 30 VDC x 200mA max., 0–240 Hz nominal; resolution is 1/3 that of NPN Hall effect or voltage pulse outputs

Voltage Pulse: Self generated voltage; 0 to 240 Hz nominal

Non-Magnetic Sensor: Three-wire NPN, 5-24 VDC max.; 20mA max.; 0-24 Hz nominal

Optional Outputs: 4-20mA, scaled pulse, quadrature pulse, flow alarms or two stage batch control

Model Selection Guide

Description		Catalog Number	Price	
Pipe Size	1.5" to 36"	DP490 -	\$516.80	-
	2 to 100"	DP525 -	-	\$595.20
Rotor/Bearing Materials	PEEK high temperature rotor (300°F) with tungsten carbide rotor shaft	S3 _ -	16.00	16.00!
	PVDF rotor with 316 SS rotor shaft (standard)	S2 _ -	0.00	0.00
O-Ring Materials	FKM (Viton) standards, 5° to 400°F	_ _ 1 -	0.00	0.00
	Buna-N (Nitrile), -40° to 250°F	_ _ 4 -	0.00	0.00
Temperature Limits	260°F available with electrical connections 5, 6 & PEEK rotor only	2 _ _ -	53.60	53.60
	300°F NPN output only (available with Electrical Connection 5 and PEEK rotor only)	3 _ _ -	53.60	53.60
	212°F standard, (185°F maximum for non magnetic output type 4)	5 _ _ -	0.00	0.00
Process Connection	1-1/2" (DP490) or 2" (DP525) NPTM thread	_ 2 _ -	0.00	0.00
	2" NPTM thread (DP490)	_ 4 _ -	24.80	-
Pick-Up Type	NPN open collector and voltage pulse (standard)	_ _ 1 _	0.00	0.00
	NPN open collector(s) only (for temp code 3 or QP option)	_ _ 2 _	0.00	0.00
	Reed switch only (may be used with an I.S. barrier or instrument in hazardous areas)	_ _ 3 _	0.00	0.00
	Quadrature pulse output (requires F15 option for bi-directional flow capability)	_ _ 9 _	31.20	31.20
Electronic Connections	Flying cable (5 ft. on DP490, 3 ft. on DP525)	_ _ _ C	0.00	0.00
	Terminal box on stem kit (add this for integral output option FI, 4-20mA output)	_ _ _ 5	182.40	245.60
	3/8" NPT stem kit (price included with integral options B2, B3, R3, R4)	_ _ _ 6	47.20	66.40
Integral Options	Intrinsically Safe RT14 with all outputs (IECEX and ATEX)	-R5	617.60	617.60
	RT40 large LCD flow rate totalizer (scaled pulse and backlighting)	-R4	450.40	450.40
	F115 backlit bidirectional flow, rate/totalizer, pulse out, 4-20mA	-F15	1528.00	1528.00
	F018 backlit rate/tot, pulse out, 4-20mA, 10-point linear, HART	-F18	1811.20	1811.20
	F018 intrinsically safe backlit rate/tot, pulse, 4-20mA, 10 point linearization, HART	-F19	1928.00	1928.00

GPI FLOMEC Transmitters, Displays and Outputs

RT14 Digital Flow Rate Totalizer

Features

- Computes flow rates and totals from Flomec meters with pulse, sine wave or frequency outputs
- High/low flow alarms
- Low frequency cutoff
- Displays resettable (batch) total, cumulative total, and instantaneous flow rate
- Choice of battery or 8-24 VDC power
- Simple flow chart touch key programming
- IP66/67 NEMA 4X universal mount
- Reverse polarity protection



Specifications

Signal Input: Pulse/frequency Input with reed switch Hall Effect, Voltage, Current and Coil, dual inputs (A+B, A-B, A/B)

Linearization: 10-point correction

Pulse Output: NPN transistor, Scalable (20hz, 100mA max.)

Rate Outputs: 4-20mA into 750Ω @24VDC, NPN/PNP solid state relay options

K-factor Range: Scale factor i.g. pulses/liter, gallon. programmable range 0.001 to 999,999.999

Display: Backlit display, 8-digit reset cumulative totalizer, 5-digit rate Units: Selectable Ltr, gal, m3, kgs, lbs (total)/sec, /min./hr or day (rate)

Temperature Range: -4° to 176°F

Power: Battery: 5-year life expectancy; External: Regulated 8-24VDC

Configuring: PIN protected data entry

Protection: IP66/67 (NEMA 4X) 3 x M16 x 1.5 female conduit entries

Approval: IECEx/ATEX Intrinsic Safety: Exia IIB T4, FM (integral version only)

GG500 and GX500 Flow Rate Totalizer/Transmitters



GG500/510



GX500/510

Output	Open collector (NPN)	0/4-20mA
Power Supply	9V Battery or External	2-Wire, Loop Power
Voltage Supply	7-30 VDC	8.5-35 VDC
Operating Temp.	32° to 140°F	14° to 140°F
Frequency Input:		
Low Level Coil	0-1000 Hz	0.25-1000 Hz
High Level, Low Freq.	0-150 Hz	0.25-150 Hz
High Level, High Freq.	0-1000 Hz	0.25-1000 Hz
Optically Isolated	-	2500V Isolation

Features

- Compatible with Flomec G and G2 turbine flowmeters, OM oval gear and DP insertion impeller meters
- Displays batch and cumulative totals and rate of flow
- Factory calibrated in gallons and liters; field calibratable

Specifications

Input Options: Hall effect, reed switch, open collector, low level sine wave

Accuracy: ± 0.1% of reading

Auxiliary Outputs (GX): Single ended; 0.1 to 4.9V

Pulse Output (GX): OFF Voltage: 60V max.; ON Voltage Drop: < 0.5 V max. @200 mA; ON Current: 200 mA max.

Enclosure Rating: NEMA 4X/IP55

Cable: Remote: 20 ft. Belden 936; Local: No cable provided

Calibratable: K-factor Entry

See individual flowmeter model selection guides for compatibility and pricing.

E112 Explosion Proof Totalizer and Flow Rate Indicator

Features

- Selectable on-screen engineering units; volumetric or mass
- 16 point linearization of the flow curve- with interpolation
- Loop-powered, battery, or 8-30VDC power options
- Isolated, loop-powered 4-20mA output according to linearized flow rate
- Scaled pulse output according to linearized accumulated total
- Can process all types of volumetric or mass flow meter signals: reed-switch, NAMUR, NPN/ PNP pulse, sine wave (coil), active pulse signals

Flomec's E112 is built to withstand harsh environments. The indicator's long life makes it a safe and reliable choice for even the toughest conditions. Save time with its easy-to-operate through glass keypad and view key information at a glance.

The display shows flow rate, total, measuring units, and a flow rate indicating speedometer. The E112 is easy to install, with a spacious chamber, plug and play connectors, and 1" NPT thread for mounting.

Prices start at \$885



Specifications

Power Supply: 9-27 VDC; Long life Lithium battery (approx. 2 years)

Operating Temperature: -40° to 158°F (-40° to 70°C)

Output: Digital: Pulse output, transmitting accumulated total; Analog: Transmitting linearized flow rate

Display: LCD; 7 digit flow rate / total, 11 digit accumulated total

Enclosure Approvals: ATEX, IECEx, FM/CSA, CE

Thermal Dispersion Mass Flowmeters



Model 600-9 Inline Flowmeters

The Model 600-9 thermal mass flowmeter provides reliable, accurate flow measurement with no obstructions to the actual flow path. It handles liquids, slurries, gases, and homogeneous solids through a wide range of flow rate, temperature, pressure, viscosity, abrasiveness, or chemical compositions.

The 600-9's sensor is built into the meter's outer surface and is completely protected from adverse process conditions. The spool matches the actual flow pipe in dimensions and construction material, and is impervious to fluid, as is the rest of the line.

System electronics include the flow analyzer, temperature compensator, and signal conditioner to provide a linear output directly proportional to mass flow. An optional output provides continuous temperature measurement.

Specifications

Accuracy: Better of $\pm 1\%$ full scale or 4% reading; **Repeatability:** Better than 0.2% reading; **Linearity:** 0.5%

Temperature Limits: -20° to 350°F ; **Calibrated Temperature Range:** $\pm 50^{\circ}\text{F}$

Pressure Limits: 0 to 1200 PSI (Max. pressure ratings depend on pipe size.)

Pressure Range: *Liquids:* Unlimited; *Gases:* 20 atmospheres

Response Time: *Liquids:* Less than 1/2 second; *Gases:* 1 to 2 seconds typical, 4 to 8 seconds worst case

Pressure Drop: Negligible, completely unobstructed flow path

Viscosity: Up to 5000 cps

Flow Rate: (Volumetric flow units for gases should be expressed in std or normal units) *Liquids:* 0.003 grams/minute minimum full scale; *Gases:* 2 SLPM minimum full scale. Maximum determined by pipe capacity.

Flow Range: 10:1 (100:1, 1000:1, multiple ranges available)

Flow Element: Meets NEMA 4, 7, and 9 explosion-proof requirements. *Electrical connection:* 1/2"; *Construction:* 316 SS standard (304 SS Hastelloy®, Monel, Inconel®, tantalum, titanium, gold, platinum, nickel, Carpenter 20®, glass); *Connections:* Flanged, Swagelok®, NPT, VCR, VCO, Tri-Clamp, concentric reducer, flared, sanitary, high pressure fittings, wafer, barbed, welded, others; *Coatings:* Teflon®, tungsten, carbide, HMF®

Remote Flow Transmitter: Model 9200: Panel or wall mount; Model 926A: NEMA 4 JIC type; Model 926B: NEMA 4, 7, and 9 explosion-proof. Others available upon request

Outputs: Standard 4-20 mA DC isolated/1000 Ω max. load (0-10VDC, 0-5VDC, 10-50 mA DC, pulse output)

Options: Digital flow indication, 8-digit LED totalizer, batch counter, hi/lo alarm setpoints, bidirectional flow, temperature output, multiple ranges



Model 62-9 Insertion Thermal Flow Probes

Thermal Instruments' Model 62-9 flow probe is designed to measure the flow rates of gases, liquids, or slurries in stacks, irregularly shaped lines, and process ducts.

Unlike other probe flowmeters, the 62-9 has no apertures that can become clogged with particles or distorted by heat. The sensing element is located on the probe's inside leading edge and has no contact with the flow stream.

The 62-9 can be made of pipe or tubing using any metal compatible with the flow stream of a given application. It can also be built with extra length, so it can be inserted through a gate valve and packing gland. This will allow easy insertion and removal while the pipe is in use.

The thermal probe's electrical connections can be made either in a gasketed-type conduit or an explosion-proof conduit.

For applications with temperatures above 350°F , the sensors are made of platinum embedded in a ceramic matrix, securely bonded to the pipe's inside diameter. An additional temperature sensor can also be installed, as well as independent circuitry to provide fluid temperature readout signals.

Specifications

Flow Range: 10:1 (100:1, 1000:1, multiple ranges available)

Flow Limits: (Volumetric flow units for gases should be expressed in standard or normal units.) *Liquids:* 0.02 FPS to 20 FPS FS; *Gases:* 40 SFPM to 15000 SFPM FS. Maximum determined by pipe capacity.

Pipe Size: 1" minimum

Accuracy: $\pm 0.5\%$ full scale or 2% reading. Calibrated by weight or volume (0.5% FS). **Repeatability:** Better than 0.2% reading; **Linearity:** 0.5%

Temperature Limits: -20° to 1100°F ; **Calibrated Range:** $\pm 50^{\circ}\text{F}$

Pressure Limits: 0 to 60000 PSI, depending on size

Response Time: *Liquids:* <0.5 sec; *Gases:* 1-2 sec typical, 4-8 sec worst case

Viscosity: Up to 5000 cps

Flow Element: Meets NEMA 4, 7, and 9 explosion-proof standards. *Construction:* 316 SS standard; *Connections:* Flanged, Swagelok®, NPT sanitary Tri-Clamp, hot tapping, retractable, saddle mount; *Coatings:* Teflon®, HMF®, Nedox®

Remote Flow Transmitter: Model 9200: Panel mount or NEMA 4 box; Model 926A: NEMA 4 JIC; Model 926B: NEMA 4, 7, and 9 explosion-proof

Outputs: Standard 4-20 mA DC isolated/1000 Ω max. load (0-10 or 0-5 VDC, 10-50 mA DC, pulse output)

Options: Digital flow indication, 8-digit LED totalizer, batch counter, hi/lo alarm setpoints, bidirectional flow, temperature output, multiple ranges, flow profile, multipoint, averaging

Need help with thermal mass flowmeters? Fill out the application datasheet from www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

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**MECHANICAL
SWITCHES**

15 L



Mechanical Flow Switches



V4 Flotect Vane-Operated Flow Switch

Features

- For fluids, gases, and flowing solids
- Pipe sizes 1-1/2" and larger
- Magnetically actuated switching design
- Leak proof body machined from bar stock
- Installs directly into pipeline with thredolet, tee, or flange; field adjustable

Specifications

Switch Type: SPDT snap switch standard, DPDT optional

Mounting Orientation: Within 5° of vertical for proper operation; Units for horizontal installation (for pipe with upward flow) available

Wetted Materials: Vane: 316 SS; Body: Brass or 316 SS; Magnet keeper: 430 SS; Other materials available

Pressure Limit: Brass body: 1000 PSI; 316 SS body: 2000 PSI; 5000 PSI optional

Temperature Limit: -4° to 163°F

Setpoint Adjustment: Five vane combinations

Electrical Rating (@125/250 VAC): UL, FM, ATEX, IECEx: 10A; CSA: 5A; 5A resistive, 3A inductive @ 30 VDC

Connections: Conduit: 3/4" NPTF; Process: 1-1/2" NPTM; Electrical: UL/CSA: 16 AWG, 6" long; ATEX/IECEx: Terminal block

Approvals: FM, UL, CSA, CE, ATEX, IECEx

Model Selection Guide

Switch Type	Brass Body		Stainless Body	
	Catalog Number	Price	Catalog Number	Price
SPDT	V4-2-U	\$ 321.75	V4-SS-2-U	\$ 462.75
DPDT	V4-2-D-U	355.50	V4-SS-2-D-U	496.50
ATEX Approved Construction			-AT	72.50

See page 16 for plastic paddles.



V6 Flotect® Mini Vane-Operated Flow Switches

Features

- For gases or liquids
- Pipe sizes 1/2" to 2"
- Protects pumps, motors, or other equipment against low or no flow
- NEMA 4, weatherproof explosion-proof enclosure
- Pipe insert with tee and switch connections

Model Selection Guide

Tee Connect. (NPT)	All Brass		Brass Body/Iron Tee		All Stainless Steel	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
V6 Flotect Explosion-Proof Mini Flow Switch, SPDT						
1/2"	V6EPB-B-S-1-B	\$ 155.00	V6EPB-B-S-1-MI	\$ 155.00	V6EPS-S-S-1-S	\$ 220.50
3/4"	V6EPB-B-S-2-B	161.70	V6EPB-B-S-2-MI	161.70	V6EPS-S-S-2-S	266.00
1"	V6EPB-B-S-3-B	187.00	V6EPB-B-S-3-MI	187.00	V6EPS-S-S-3-S	301.50
1-1/4"	V6EPB-B-S-4-B	211.50	V6EPB-B-S-4-MI	211.50	V6EPS-S-S-4-S	400.50
1-1/2"	V6EPB-B-S-5-B	248.50	V6EPB-B-S-5-MI	248.50	V6EPS-S-S-5-S	454.50
2"	V6EPB-B-S-6-B	315.00	V6EPB-B-S-6-MI	315.00	V6EPS-S-S-6-S	508.50
V6 Flotect Mini Flow Switch, Low Flow. Field-Adjustable Setpoint, No Tee. SPDT						
1/2"	V6EPB-B-S-LF	211.50			V6EPS-S-S-LF	266.00
V6 Flotect Explosion-Proof Mini Flow Switch, DPDT						
1/2"	V6EPB-B-D-1-B	191.50	V6EPB-B-D-1-MI	191.50	V6EPS-S-D-1-S	257.00
3/4"	V6EPB-B-D-2-B	198.20	V6EPB-B-D-2-MI	198.20	V6EPS-S-D-2-S	302.50
1"	V6EPB-B-D-3-B	223.50	V6EPB-B-D-3-MI	223.50	V6EPS-S-D-3-S	338.00
1-1/4"	V6EPB-B-D-4-B	248.00	V6EPB-B-D-4-MI	248.00	V6EPS-S-D-4-S	437.00
1-1/2"	V6EPB-B-D-5-B	285.00	V6EPB-B-D-5-MI	285.00	V6EPS-S-D-5-S	491.00
2"	V6EPB-B-D-6-B	351.50	V6EPB-B-D-6-MI	351.50	V6EPS-S-D-6-S	545.00
V6 Flotect Mini Flow Switch, Low Flow. Field-Adjustable Setpoint, No Tee. DPDT						
1/2"	V6EPB-B-D-LF	248.00			V6EPS-S-D-LF	302.50
V6 Flotect Mini Flow Switch, Full Field Trimmable Vane. No Tee. All Stainless.						
2"	SPDT				V6EPS-S-S-6-0	200.10
2"	DPDT				V6EPS-S-D-6-0	236.60
Approval Options	CSA Approved with Junction Box				-CSA	58.75
	ATEX Approved with Junction Box				-AT	86.50
	IECEx Approved with Junction Box				-IEC	86.50

Specifications

Temperature Limits: 4° to 220°F

Pressure Limit: Brass body, iron or no tee: 1000 PSI; SS body, SS or no tee: 2000 PSI; Brass tee: 250 PSI; Low flow: 1450 PSI

Mounting Orientation: Can be installed in any position

Setpoint Adjustment: Standard: None; Without tee: Vane trimmable; Low flow: Field adjustable within range

Electrical Rating (@125/250 VAC): UL: 5A; CSA/ATEX/IECEx: 5A; 5A restrictive, 3A inductive @ 30 VDC

Electrical Connections: UL: 18 AWG, 18" long; ATEX/CSA / IECEx: Terminal block

Connections: 3/4" NPTM conduit standard; 3/4" NPTF on junction boxes; Process: 1/2" NPTM on models with no tee

Materials: Vane: 301 SS, Body: Brass or SS, Magnet: Ceramic, Tee: Brass, iron, forged steel, or SS; Low flow: Tee: Brass or SS, O-ring: Buna-N; Fluoroelastomer optional

Approvals: UL, CSA, CE, ATEX, IECEx, KTL

Flow Switches



PPS Polysulfone Paddle Flow Switch

Specifications

Switch: Hermetically sealed, magnetically actuated contact;
 15VA max., 0.5A max., 250V max. capacity
Pressure: 145 PSI max.; 1.45 PSI max. drop
Adjustment Accuracy: ±20%

Switch Repeatability: ±3%
Maximum Temperature: 225°F
Material: NEMA 4 Polysulfone, SS, ceramic magnet
Connections: Thread: 1" NPT; Electric: DIN 43650 plug

Pipe Bore	Cutoff Mark "L" Approx.	Switch Point (GPM Water)	
		Turn-On	Turn-Off
1"	0.9"	9.5	5.0
1-1/4"	1.1"	9.5	5.0
1-1/2"	1.4"	14.5	9.5
2"	2.0"	19.0	9.5
2-1/2"	2.4"	24.0	14.5
3"	2.9"	28.5	19.0

Model Selection Guide

Avg. Delivery: 3-4 Weeks.

Switch Type	Catalog Number	Price
Normally Open, SPST, 15VA Max.	PPS-3106	\$124.00
Normally Closed, SPST, 15VA Max.	PPS-3105	124.00

**Need a stainless steel paddle?
See page 15.**

Insertion Paddle/Bellows Flow Switch for Liquids



Features

- Position-independent installation
- 160 PSI/450 PSI max. pressure
- Media temperatures to 250°F

Kobold FPS paddle bellows flow switches are used wherever reliable control for minimum or maximum liquid flow is required.

The flowing medium exerts a force on the paddle to actuate a microswitch. Instrument internals are separated from the process by the bellows, making the FPS an excellent choice for dirty media.

Model Selection Guide

Avg. Delivery: 3-4 Weeks.

Description			Brass		Stainless Steel	
De-Actuating GPM H2O	Actuating GPM H2O	Pipe Size	Catalog Number	Price	Catalog Number	Price
2.6 – 8.8	4.4 – 9.3	1"	FPS-5100P	\$277.00	FPS-5200P	\$368.00
3.5 – 12.3	5.7 – 13.2	1.25"				
4.8 – 16.3	7.5 – 17.6	1.5"				
9.7 – 25.1	13.7 – 26.9	2"				
11.9 – 28.6	17.6 – 30.2	2.5"				
18.9 – 47.1	27.3 – 50.2	3"				
50.2 – 122.0	64.7 – 127.7	4"				
100.8 – 234.7	125.1 – 244.8	5"				
158.1 – 360.0	189.8 – 385.0	6"	FPS-5100P	\$277.00	FPS-5200P	\$368.00
319.7 – 729.6	374.7 – 759.5	8"				



All Metal Paddle Flow Switch

Specifications

Flow Speed: 12 ft/sec max., adjustable flow ranges
Contact: Reed switch SPST, N/O or N/C; 50VA, 50 watt, 250V, 1.5A max ratings
Pressure: 1450 PSI max.
Temperature: 230°F max.
Materials: Housing: NEMA 4, Glass-reinforced Polyamid; Paddle, Leaf Spring, Beam: SS; Locking Plate, Screws: Brass; O-Ring: Buna-N

Call for price and availability of stainless steel bodies or larger pipe sizes.

Model Selection Guide

Avg. Delivery: 3-4 Weeks.

Switch ON GPM H2O	Switch OFF GPM H2O	NPT Connection	Catalog Number	Price
PSR Series Brass Paddle Flow Switch with 5' PVC Cable				
0.9 – 1.3	0.6 – 1.2	1/4"	PSR-5105	\$87.00
1.3 – 2.1	1.0 – 2.0	1/2"	PSR-5115	87.00
3.0 – 4.0	2.2 – 3.0	3/4"	PSR-5120	87.00
3.2 – 5.0	2.4 – 4.5	1"	PSR-5125	99.00
4.9 – 8.5	3.8 – 7.8	1-1/4"	PSR-5132	118.00
9.2 – 5.0	7.9 – 14.3	1-1/2"	PSR-5140	118.00

Flowmeters and Switches

BVO Series Flowmeter/Switch for Water-Like Liquids



Specifications

Accuracy: $\pm 12\%$ full scale; **Repeatability:** $\pm 2\%$

Temperature: -10° to 212°F

Pressure: 145 PSIG max.

Flow Direction: Vertical, up

Switch Characteristics: *N/O switch:* 240VAC/200 VDC max., 1.5 Amp AC/1.0 Amp DC max., 50VA, 50W max. power, 4-8 mm float travel hysteresis. *SPDT switch:* 240VAC max, 0.8 Amp AC max, 30 VA max. power, 4-8 mm float travel hysteresis

Model Selection Guide

Body	Water Range	Fitting (NPT)	Pressure Loss @ Max. Flow	Catalog Number	Price
Brass	0.1 – 1.0 GPM	1/4"	0.9 PSIG	BVO-6102	283.00
Brass	1.0 – 5.0 GPM	1/2"	1.1 PSIG	BVO-6116	283.00
304 SS	0.1 – 1.0 GPM	1/4"	0.9 PSIG	BVO-6202	541.00
304 SS	1.0 – 5.0 GPM	1/2"	1.1 PSIG	BVO-6216	541.00
Optional SPDT Contact				Suffix -U	0.00

KAL-K Flow Switch/Trend Indicator for Liquids and Oils

Features

- No movable parts
- Minimal pressure loss
- Simple media adjustment
- Temperature compensation and switch point stability
- Unaffected by viscosity changes — even for the smallest flow velocities!
- IP65 enclosure — insensitive to dirt
- Designed for minimal pipe intrusion



Specifications

Measuring Range: *Water:* 0.05 to 2 m/sec.; *Oils:* 0.1 to 4 m/sec. approx.

Operating Conditions: *Pressure:* 1450 PSIG max; *Temperature:* -10° to 185°F

Switching: *Adjustment:* By potentiometer; *Selectable output:* NPN or PNP, open collector; *Current:* 400 mA max.; *Voltage:* 24VDC max.; *Status indicator:* Bicolored LED

Power: *Supply voltage:* 24 VDC $\pm 10\%$; *Current draw:* 300 mA max.

Materials: *Wetted parts:* 304 or 316-Ti stainless steel; *Housing:* NEMA 4 Nylon standard, NEMA 7 Al optional

Fittings: 1/2" or 3/4" NPT or 1-1/2" Tri-Clamp®

Flow Trend Indicator: Eight red LEDs

Approximate Switch Point (GPM) per Pipe Diameter

Nominal ID	Water Range	Nominal ID	Water Range	Nominal ID	Water Range
1/2"	0.3 – 5.0	2"	3.1 – 55	8"	50 – 900
3/4"	0.5 – 8.9	2-1/2"	4.4 – 80	10"	78 – 1400
1"	0.8 – 14	3"	7.9 – 140	12"	110 – 2000
1-1/4"	1.1 – 20	4"	12 – 220	16"	200 – 3600
1-1/2"	2.0 – 35	6"	28 – 500	20"	310 – 5600

Model Selection Guide

Description	Catalog Number	Price
KAL-K Flow Switch for Liquids, 24 VDC Power		
304 SS Wetted Parts, 1/2" NPT	KAL-4215	\$366.00
316-Ti SS Wetted Parts, 1/2" NPT	KAL-4315	414.00
316-Ti SS Wetted Parts, 3/4" NPT	KAL-4320	424.00
316-Ti SS Wetted Parts, 3A Sanitary	KAL-4340-S	508.00
KAL-K Flow Switch, 110 VAC Power, SPST Dry Contact Output for Liquids		
304 SS Wetted Parts, 1/2" NPT	KAL-4215-P03R	543.00
316-Ti SS Wetted Parts, 1/2" NPT	KAL-4315-P03R	591.00
316-Ti SS Wetted Parts, 3/4" NPT	KAL-4320-P03R	601.00
Options	Fast Response (2.8-6 Sec.)	-F 0.00
	Quick Disconnect Plug (24 VDC)	-M12 93.00



Looking for a compact thermal flow switch for non-viscous liquids?

Kobold's KAL-D is a compact all-stainless calorimetric thermal flow switch for use in small spaces and 1/4" NPT fittings. It has a switching range from 0.15 to 6.6 feet per second, works in pressures to 580 PSIG, and temperatures to 176°F . KAL-D can even be used in Clean-in-Place applications with short-term temperature limits of 250°F .

KAL-D prices start at \$357.00

Searching for other Kobold flow indicators and switches? Call Lesman for pricing and availability.



Flow Switches and Indicators



RotorFlow® Indicators

RFI is Gems' RotorFlow at its most basic form — a bright orange rotor turning with fluid flow. Either port can be used for incoming flow.

Body: Polypropylene, brass, or 316 SS

Other wetted materials: Orange molded Nylon rotor, ceramic rotor pin, polysulfone lens, glass-reinforced polypropylene low flow adapter

Model Selection Guide

Port Size	Flow Ranges (GPM)		Pressure Max.	Catalog Number	Price
	Low*	High			
RotorFlow RFI Flow Indicator, Polypropylene Body, 180°F Max. Temp					
0.25"	0.1 – 1.0	0.5 – 5.0	100 PSI	155420	\$55.00
0.50"	1.5 – 12.0	4.0 – 20.0	100 PSI	155480	55.00
RotorFlow RFI Flow Indicator, Brass Body, 212°F Max. Temp					
0.25"	0.1 – 1.0	0.5 – 5.0	200 PSI	142541	145.00
0.50"	1.5 – 12.0	4.0 – 20.0	200 PSI	142542	145.00
0.75"	-	5.0 – 30.0	200 PSI	180392	145.00
RotorFlow RFI Flow Indicator, 316 SS Body, 212°F Max. Temp					
9/16"	0.1 – 1.0	0.5 – 5.0	200 PSI	174596	185.00
0.50"	1.5 – 12.0	4.0 – 20.0	200 PSI	173138	185.00
0.75"	-	5.0 – 30.0	200 PSI	181682	215.00

Low Cost Switches for Threaded Plastic Piping

Gems FS-500 offers low cost flow monitoring with a variety of actuation points and low pressure drop, ideal for a wide range of chemical and temperature requirements. They're also NSF or FDA approved for potable water treatment applications including chlorinators, purifiers and heaters.



Accuracy: ±20%

Operating Temp.: 0° to 212°F max.

Switch: SPST, N.O. Pilot Duty 20 VA, 120-240 VAC or VDC

Inlet/Outlet Ports: 3/4" NPTF

Wetted Materials: Housing, Bonnet, Shuttle & Cap: Polypropylene; O-Ring: Viton® or Buna N; Spring: 316 Stainless Steel; Retaining Clip: PH 15-7 Mo SS

Model Selection Guide

Setpoint	Catalog Number	Price
0.25	170231	\$71.00
0.5	170232	71.00
1	170233	71.00
2	175117	71.00
2.5	170234	71.00
5	170235	71.00

General Purpose Switch for Plastic Piping

Gems FS-400P switches have a clear, non-corrosive housing for broad chemical compatibility, and are ideal for flow/no-flow detection.

Materials: PVC, Epoxy, and Buna-N

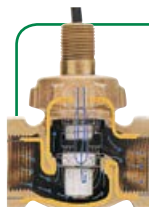
Switch: SPST, 20 VA, N.O. at no-flow



Model Selection Guide

Connect Size	Actuation on Increasing Flow	Pressure Max.	Operating Temp	Catalog Number	Price
1/2" NPT*	0.5 GPM ±20%	120 PSIG	120°F	135805	\$81.00

*3/4" IPS model with 1/2 NPT port installed



Gems Shuttle Switches Rise to the Occasion!

Fluid displaces a spring-loaded, calibrated shuttle, which is metered relative to a fixed orifice. When flow rate reaches the calibrated setpoint, the shuttle moves up to the stem, actuating the hermetically sealed reed switch. Flow switches respond only to flow — not pressure!

Occasional Cleanout is a Snap!

Remove the bonnet easily without disturbing the inline body.



Rugged Flow Switches Deliver Accurate, Reliable Service

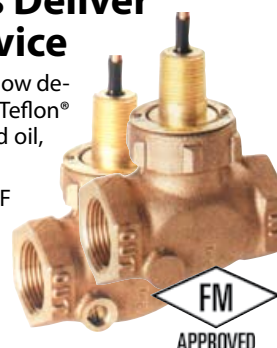
FS-200 flow switches provide accurate flow detection with 1% repeatability. Bronze and Teflon® construction delivers long life in water and oil, and fluid temperatures to 300°F.

Setpoints are calibrated using water at 70°F on increasing flow with unit in a horizontal position (lead wires up).

Operating Pressure: 400 PSIG @ 100°F

Operating Temperature: -20° to 200°F

Switch: SPDT, 20 vA



Model Selection Guide

Port Size	Flow Setting (GPM)	Bronze Body		Stainless Steel Body	
		Catalog Number	Price	Catalog Number	Price
1" NPT	0.5	27051	\$191.00	27059	\$569.00
	1	27052	191.00	27060	569.00
	2	27053	191.00	27061	569.00
	3	27054	191.00	27062	569.00
	4	27055	191.00	27063	569.00
	5	27056	191.00	27064	569.00
	6	27057	191.00	27065	569.00
	8	27058	191.00	27066	569.00
1-1/4" NPT	1	27067	365.00	27076	838.00
	2	27068	365.00	27077	838.00
	4	27069	365.00	27078	838.00
	6	27070	365.00	27079	838.00
	8	27071	365.00	27080	838.00
	10	27072	365.00	27081	447.00
	12	27073	365.00	27082	838.00
	16	27074	365.00	27083	838.00
	20	27075	365.00	27084	838.00
	1.5	27085	447.00	27093	881.00
1-1/2" NPT	3	27086	447.00	27094	881.00
	5	27087	447.00	27095	881.00
	7.5	27088	447.00	27096	881.00
	10	27089	447.00	27097	881.00
	15	27090	447.00	27098	881.00
	20	27081	447.00	27099	881.00
	30	27092	447.00	27100	881.00

Looking for other Gems flow switches or indicators? Need a different material or port size? Call Lesman!

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman
Instruments • Valves • Controls
www.lesman.com • sales@lesman.com

Wisconsin and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

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**MECHANICAL
FLOWMETERS**

19 **L**

RCM
Industries, Inc.

Direct Reading Flowmeters



Specifications

Accuracy: ±3% full scale

Range: Flow rates to 500 GPM or 4000 SCFM;
Rangeability: 6:1

Mount: Horizontal (standard), flow to the right

Temperature: 212°F max., 350°F max. optional

Pressure: 180 PSIG max., 400 PSIG max. optional

Construction: Die cast aluminum housing, glass or polycarbonate crystal, bronze body and gear movement, Buna-N seals

Options: High/Low alarm relays, 4-20 mA, 0-1000 Hz output, digital display for flow rate/totalization

Shown with optional 4-20 mA loop-powered two-wire indicator. Displays 4-1/2 digits for flow rate, 8 digits for totalization. Includes scaled, open collector output for remote totalizer, and square root extraction for use with W3 solid-state strain gauge. Call for pricing.



RCM Series 8000 Flo-Gage® is designed for larger pipe sizes and mounts between adjoining flanges (ANSI 150#, 300#, DIN PN10, PN16, JIS, AS). Install the Flo-Gage just as you would install an orifice plate, with flat gaskets and bolts (order separately).

Specifications

Accuracy: ±3% full scale; **Repeatability:** 1% full scale

Range: Flow rates to 3000 GPM liquid or 20000 SCFM gas; **Rangeability:** 6:1

Mount: Horizontal (standard), flow to the right

Operating Conditions: **Temperature:** 212°F max., 350°F opt.; **Pressure:** 180 PSIG max., 400 PSIG opt.

Construction: Bronze body, movement, ABS housing and crystal, Buna-N seal; Call for other materials

Options: **Relay:** High/Low alarms; **Output:** 4-20 mA, 0-1000 Hz frequency; Optional Digital Display

Model Selection Guide

Standard mounting is horizontal, (R) designates flow going to the right. For other configurations, call Lesman. When ordering, please specify media, pressure, and temperature.

Media Type	Flow Rate	NPT Connection	Catalog Number	Price
Liquid	0.5 – 6 GPH	1/2"	1/2-71-R-06-ES	\$610.00
	3.0 – 20 GPH	1/2"	1/2-71-R-20-ES	610.00
	5.0 – 60 GPH	1/2"	1/2-71-R-60-ES	610.00
	15 – 100 GPH	1/2"	1/2-71-R-100-ES	610.00
	0.5 – 4 GPM	1/4"	1/4-71-R-04	495.00
	0.5 – 4 GPM	1/2"	1/2-71-R-04	495.00
	0.5 – 6 GPM	1/2"	1/2-71-R-06	495.00
	1.5 – 10 GPM	1/2"	1/2-71-R-10	495.00
	0.5 – 6 GPM	3/4"	3/4-71-R-06	555.00
	1.5 – 10 GPM	3/4"	3/4-71-R-10	555.00
	3.0 – 20 GPM	3/4"	3/4-71-R-20	555.00
	3.0 – 20 GPM	1"	1-71-R-20	585.00
	5.0 – 40 GPM	1"	1-71-R-40	585.00
	5.0 – 40 GPM	1-1/2"	1.5-71-R-40	660.00
	15 – 100 GPM	1-1/2"	1.5-71-R-100	660.00
	15 – 100 GPM	2"	2-71-R-100	765.00
	5.0 – 40 SCFH	1/2"	1/2-71-R-40-IES	700.00
	15 – 100 SCFH	1/2"	1/2-71-R-100-IES	700.00
Air or Gas	30 – 200 SCFH	1/2"	1/2-71-R-200-IES	700.00
	50 – 400 SCFH	1/2"	1/2-71-R-400-IES	700.00
	1.5 – 10 SCFM	1/4"	1/4-71-R-10-I	585.00
	4 – 30 SCFM	1/4"	1/4-71-R-30-I	585.00
	1.5 – 10 SCFM	1/2"	1/2-71-R-10-I	585.00
	4 – 30 SCFM	1/2"	1/2-71-R-30-I	585.00
	5 – 60 SCFM	1/2"	1/2-71-R-60-I	585.00
	5 – 60 SCFM	3/4"	3/4-71-R-60-I	645.00
	15 – 100 SCFM	3/4"	3/4-71-R-100-I	645.00
	30 – 200 SCFM	3/4"	3/4-71-R-200-I	645.00
	30 – 200 SCFM	1"	1-71-R-200-I	675.00
	50 – 600 SCFM	1-1/2"	1.5-71-R-600-I	750.00
	50 – 600 SCFM	2"	2-71-R-600-I	855.00
	150 – 1000 SCFM	2"	2-71-R-1000-I	855.00
	400 – 3000 SCFM	3"	3-71-R-3000-I	1050.00

Model Selection Guide

Media Type	Flow Rate (GPM)	NPT Connection	Catalog Number	Price
Liquid	0.3 – 2	1/2"	1/2-81-R-02	\$ 495.00
	0.4 – 3	1/2"	1/2-81-R-03	495.00
	0.5 – 4	1/2"	1/2-81-R-04	495.00
	0.5 – 6	1/2"	1/2-81-R-06	495.00
	1.5 – 10	1/2"	1/2-81-R-10	495.00
	0.5 – 6	3/4"	3/4-81-R-06	555.00
	1.5 – 10	3/4"	3/4-81-R-10	555.00
	2 – 15	3/4"	3/4-81-R-15	555.00
	3 – 20	3/4"	3/4-81-R-20	555.00
	2 – 15	1"	1-81-R-15	585.00
	3 – 20	1"	1-81-R-20	585.00
	5 – 40	1"	1-81-R-40	585.00
	4 – 30	1-1/2"	1.5-81-R-30	660.00
	5 – 40	1-1/2"	1.5-81-R-40	660.00
	5 – 60	1-1/2"	1.5-81-R-60	660.00
	15 – 100	1-1/2"	1.5-81-R-100	660.00
	5 – 40	2"	2-81-R-40	765.00
	5 – 60	2"	2-81-R-60	765.00
	15 – 100	2"	2-81-R-100	765.00
	20 – 150	2"	2-81-R-150	765.00
	30 – 200	2"	2-81-R-200	765.00
	30 – 200	3"	3-81-R-200	960.00
	40 – 300	3"	3-81-R-300	960.00
	50 – 400	3"	3-81-R-400	960.00
	60 – 500	3"	3-81-R-500	960.00
	40 – 300	4"	4-81-R-300	1045.00
	50 – 400	4"	4-81-R-400	1045.00
	50 – 600	4"	4-81-R-600	1045.00
	100 – 800	4"	4-81-R-800	1045.00
	50 – 600	6"	6-81-R-600	1260.00
	100 – 800	6"	6-81-R-800	1260.00
	150 – 1000	6"	6-81-R-1000	1260.00
	300 – 2000	6"	6-81-R-2000	1260.00
	50 – 60	8"	8-81-R-600	1735.00
	150 – 1000	8"	8-81-R-1000	1735.00
	300 – 2000	8"	8-81-R-2000	1735.00
	400 – 3000	8"	8-81-R-3000	1735.00

Options: Add as suffix to catalog number

Hi/Low alarm setpoint relays (Req. 24 VDC power)	-X	\$ 370.00
4-20 mA loop-powered output	-W	630.00
0-100 Hz output	-Y	630.00
For gas applications	-I	90.00

Options: Add a suffix to catalog number

Calibrate for specific gravity other than water	-C	\$90.00
Hi/Lo alarm setpoint relays (Req. 24 VDC power)	-X	370.00
NEMA 4X Gasketed Meter Case	-D	55.00

New! WIKA Fluidic Techniques Primary Flow Elements

Key
▲ Recommended
◆ Depends on application
▼ Do not use

It can be difficult to evaluate the variables affecting the velocity profile for all flow meters and for all pipe conditions. The Reynolds number combines medium properties (density and viscosity), flow rate, and geometric aspects.

The table shows the smallest possible Reynolds number that can be used with each flow element type.

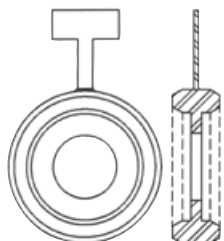
Picking the Right Flow Element for Your Process Media

	Orifice Plates, Meter Runs, and Annular Chambers					Flow Nozzle	Venturi Tube	Pitot Tube
	Square Edge	Quarter Circle	Conical Entrance	Eccentric	Segmental			
Clean Gas	▲	▼	▼	◆	◆	▲	▲	▲
Dirty Gas	▼	▼	▼	▲	▲	◆	◆	▼
Clean Liquid	▲	▲	▲	◆	◆	▲	▲	▲
Viscous Liquid	▼	▲	▲	▼	▼	◆	◆	◆
Dirty Liquid	◆	◆	◆	▲	▲	◆	◆	▼
Corrosive Liquid	◆	◆	◆	◆	◆	◆	◆	◆
Steam	◆	◆	◆	◆	◆	▲	◆	▼
Min. Reynolds Number	>2000	>200	>200	>10000	>1000	>75000	>12500	No Limit
Minimum Nominal Diameter	>1.5" DIN 40	>1.5" DIN 40	>1.5" DIN 40	>4" DIN 100	>4" DIN 100	>2" DIN 50	>2" DIN 50	>4" DIN100

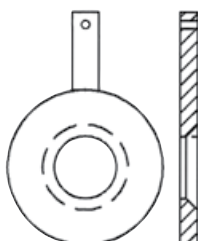
Orifice Plates and Flange Unions



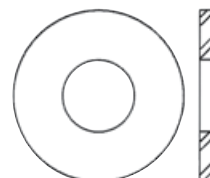
Series 200 RTJ Holder with Integral Orifice Plate
Available in sizes 1/2" to 3"



Series 120 Paddle Type
Available in sizes 1/2" to 60"



Series 100 Universal Type
Available in sizes 2" to 30"



Series 290 RTJ Holder with Removable Orifice Plate
Available in sizes 4" to 24"

Orifice plates and flanges are one of the most widely used means of flow measurement in clean liquids, gases, and low viscosity steam.

Fluidic Techniques orifice plates are designed according to industry and plant specifications. They are available in 1/8" thickness and greater, all ANSI ratings, and a variety of materials (304 SS, 316 SS, Monel, Hastelloy, Titanium, and others). Orifice plates are available in concentric, eccentric, ASME quadrant edge, and segmental bore.

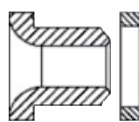
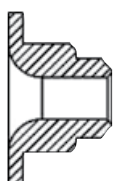
Orifice flange unions meet ASME B16.36 standards and are available in pipe sizes 1/2" through 24". All pipe schedules are ANSI class 300# through 2500# in raised face and ring type joint with weld neck, slip-on, or socket-weld connection. Wika orifice flange unions come with all necessary hardware, gaskets, jackscrews and plugs. They are available in carbon steel, 204SS, 316 SS, and other materials upon request.

Fluidic Techniques stocks orifice flange unions in 2" to 12" sizes, RFWN, schedule STD and XS, ASTM A105 CS with 1/2" NPT connections, hardware, jackscrews, gaskets and plugs. Call Lesman for flange unions larger than 24".

Flow Nozzles and Meter Runs



Model FT
Held in place between pipe flanges welded to pipe sections.



Model HR
Held in place by a holding ring and pins welded in a pipe section that is bored and honed to receive the nozzle.



Model WI
Welded in place between two pipe sections.

Fluidic Techniques flow nozzles are most commonly used to measure steam and water flow. Flow nozzle meter runs are designed with $\pm 2\%$ of accuracy, and can be increased to $\pm 1\%$ when flow nozzle sections are precision bored the required distance upstream and downstream of the nozzle. Flow calibration can increase accuracy to ± 0.25 as needed.

Pressure measurement taps are located upstream and downstream of the nozzle. Wika flow nozzles are available in 304 SS, 316 SS, Chrome-moly, Inconel, and other materials on request.

Upstream and downstream pipe sections and flanges meet ASME specifications and are matched to the plant's piping.

Flange Unions, Pitot Tubes, and Bluff Body Flowmeters

Raised Face Weld Neck Orifice Flange Unions

Use an orifice flange instead of a standard pipe flange when you need to install an orifice plate or flow nozzle. Pairs of pressure tapings are machined into the orifice flanges, removing the need for separate orifice carriers or tapings in the pipe wall.

All raised face flange unions are made of A105 carbon steel and include nuts, bolts, and 1/16" gasket.



Please allow 10 days for delivery.

If you need your order faster, just let us know. In most cases, we can arrange for overnight or second-day shipping. Or, we'll work with you to arrange delivery by local messenger service. Same-day shipping is available for a small premium.

Build a Raised Face Weld Neck Orifice Flange Part Number

Pipe Size	Flange Rating	Material Grade	Face Style	Flange Style	Pipe Schedule	Hardware
----	--	CS	R	WN	40	C
See Chart Below	300#-03 600#-06 (no 150#)	A105 Carbon Steel	Raised	Weld Neck	Schedule 40	Complete w/ Nuts, Bolts, & Gaskets

Pipe Size and Flange Rating Options

(1) Select Your Pipe Size

Pipe Size	Code	Pipe Size	Code	Pipe Size	Code
0.5"	0050	3"	0300	14"	1400
0.75"	0750	4"	0400	16"	1600
1"	0100	5"	0500	18"	1800
1.25"	0125	6"	0600	20"	2000
1.5"	0150	8"	0800	24"	2400
2"	0200	10"	1000	30"	3000
2.5"	0250	12"	1200	36"	3600

(2) Specify Flange Rating

Flange	Code	Flange	Code	Flange	Code
150#	01	300#	03	600#	06

Call, fax, or e-mail your completed part number to Lesman for a quote on price and delivery. Prices are valid for two weeks from the quote date.

Need help picking your flow element?
Fill out a primary flow element datasheet at Lesman.com/datasheets/ and send it to Lesman for engineering review, pricing, and expected delivery.

Other Flow Elements Available from Lesman

Pitot Tubes

- Available in tube insert, threaded, and flanged models
- Suitable for up to 2500# ANSI Class, 6000 PSI and 1000° F
- For gases, liquids, and steam
- Solid one-piece construction

The unique shape of this averaging pitot flow sensor reduces drag and flow-induced vibration. Moving the low pressure ports to the sides of the sensor eliminates the potential for clogging and improves signal stability.

The rough surface and grooves on the flow sensor's front surface relieves the drag and partial vacuum at the rear of the sensor, reducing pressure drag, and extending the accuracy and rangeability to very low velocities

Built-in valves in the head of the instrument simplify installation and maintenance, and lower the connecting hardware cost by reducing the number of fittings.

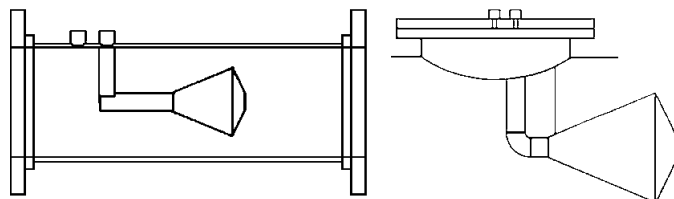
Available in partial insert versions for use in high velocity cooling water applications, large diameter pipes, large vertical stacks, and buried water lines. Partial insert hot-tap sensors can be inserted with no reduction in flow rate.



Bluff Body Differential Pressure Flowmeters

The bluff body flowmeter is the only differential pressure flowmeter that fully conditions the flow prior to measurement. It's ideal for lines with limited straight piping. This flowmeter provides repeatable accuracy up to $\pm 0.5\%$ flow rate, even under the most difficult flow conditions, and over a wide range of Reynolds numbers.

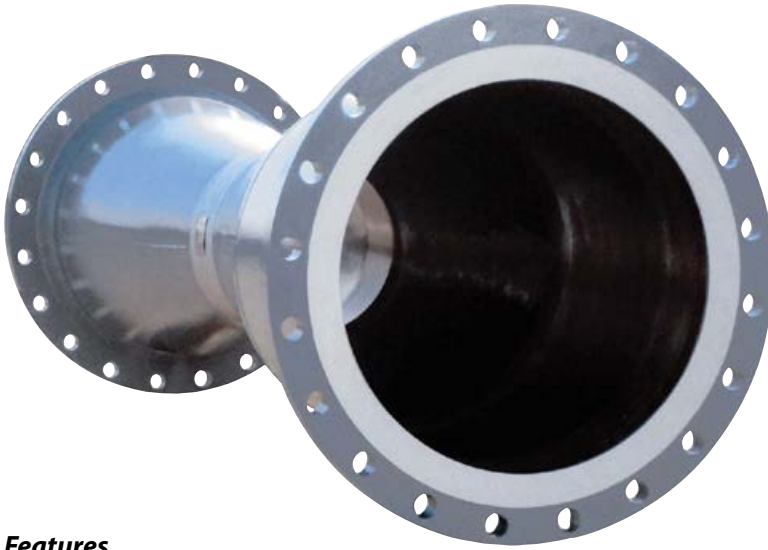
Because this meter can accurately measure disturbed flow, it doesn't require the upstream or downstream straight pipe runs of many other flowmeters; so, it can fit where other flowmeters can't because of limited space or weight requirements.



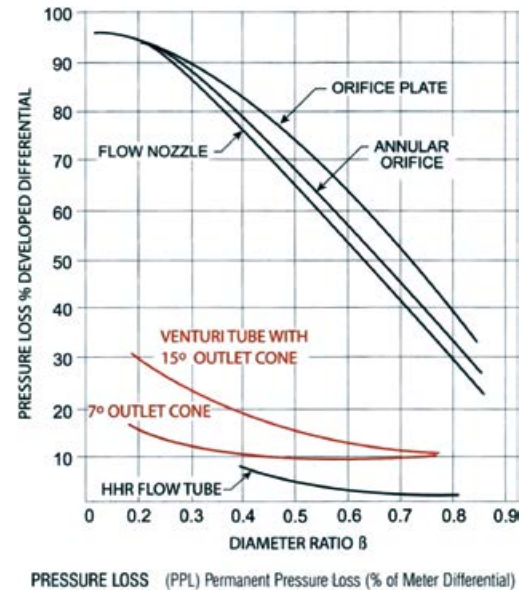
Left: Precision flow tube, **Right:** Insertion weld-on saddle.



Fluidic Techniques Venturi Flow Tubes



Permanent Pressure Loss of Primary Flow Elements



Features

- Available in line sizes from 1/2" to 96"
- Carbon steel with stainless steel throats standards; all-stainless and other materials available on request
- Uncalibrated accuracy $\pm 1.5\%$; NIST certified accuracy $\pm 0.25\%$
- Short upstream piping requirement
- Flanged, weld-in, and insert types

WIKA Fluidic Technique's venturi measures liquids, gases, or steam flow. Since there are no protruding edges that interfere with the flowing stream, it is particularly accurate for flow measurement of fluids with suspended solids.

Wide range, high pressure recovery, repeatability, and sustained accuracy make it a great choice for flow metering applications. Plus, it is a viable alternative for flow nozzles, since it requires shorter upstream piping requirements.

Each venturi tube is customized to meet your application's specific flow measurement requirements for differential pressure, permanent pressure loss, piping requirements, and accuracy.

The classic (Herschel) short form venturi tube is known for its accurate performance — as documented by ASME and ISO industry standards — providing an uncalibrated accuracy of $\pm 1.5\%$. When you need higher accuracy, your venturi tube can be calibrated with NIST certification to an increased accuracy of $\pm 0.25\%$.

Venturi tubes generally consist of an inlet section, convergent section, throat section, divergent section, and outlet section. Fluidic Techniques manufactures two styles of venturi tubes: machined inlet and fabricated.

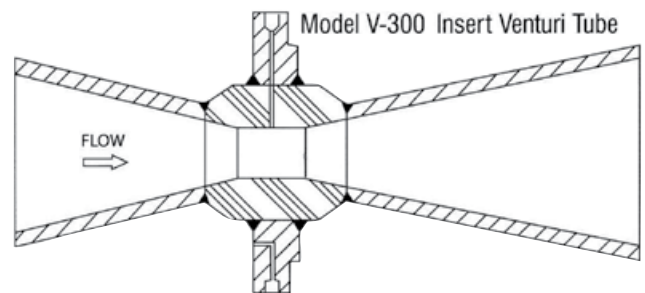
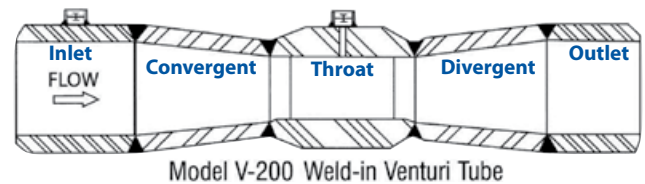
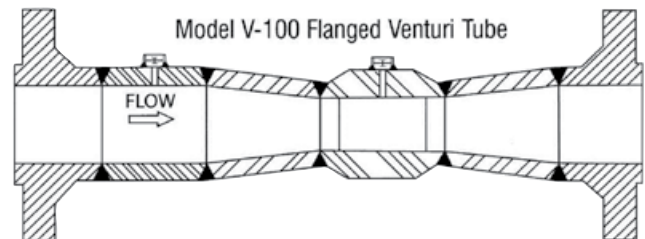
A machined inlet venturi tube has a machined entrance, convergent and throat sections made from a single piece of material. A fabricated venturi tube has pipe or rolled cylinders and formed cones or machined sections, joined together by welds.

All venturi tubes come with a set of differential pressure taps. The upstream tap can be found in the inlet section and the downstream tap in the throat. DP taps can be welded on the outside diameter or machined into the body depending on the venturi style.

Flanged venturi tubes, like the model V-100, come standard with raised face weld neck flanges. Weld-in venturi tubes, like model V-200, are beveled in accordance with ASME standard B16.25.

Low Permanent Pressure Loss for Energy Efficiency

The short form venturi is one of the most efficient differential pressure producing flow measurement devices on the market, with a lower PPL than orifice plates, annular orifices, and flow nozzles. Low permanent pressure loss leads to a reduced operating cost and a pressure recovery cone adds enhanced pressure recovery.



Fill out a primary flow element datasheet at www.Lesman.com/datasheets/ and send it to Lesman.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman
Instruments • Valves • Controls
www.lesman.com • sales@lesman.com

Wisconsin and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V 01.2019

**PRIMARY FLOW
ELEMENTS**

23



**50MC2 Series
(Hose)**



**50MR2 Series
(Flanged)**

Features

- 2" to 8" line sizes; compatible with most gases
- Measures low gas flow rates from 0.2 SCCM up to 2250 SCFM
- ± 0.72 to 0.86% accuracy, 0.1% repeatability
- 20:1 turndown or better
- 16 mS response time
- 1/4" hose barb differential pressure connections
- Aluminum housing for low pressure applications

Laminar flow elements (LFE) are most commonly used for gas flow measurement, but are also suited for leak detection and quantification, design and testing of discrete parts, automotive engine and emissions testing, and window and door leak testing. They can be used to calibrate turbine meters, variable area meters, flow regulators, mass flow meters, and thermal anemometers.

Meriam's 50MC2 series is designed for gas flow applications that require hose-type process connections, mated to rigid piping with lengths of flexible hose or rubber couplings. It is sealed into the piping system using conventional strap clamps. Pick the 50MR2 series in gas flow applications that require ANSI flanged process connections.

The LFE matrix is made from individual stainless steel tubes or windings of foil, long enough to cause laminar flow to occur in each tube for a near-linear relationship between differential pressure and flow rate. The DP generated across the matrix responds quickly to changes in flow. All DP is permanent pressure loss to the system, but LFEs are size-restricted to produce no greater than 8" water column at maximum flow conditions.

Because LFE tube diameters are small, flowing gases need to be clean and dry to preserve the calibration. Filtered inlet versions are available to help keep the LFE matrix clean and keep the calibration consistent, or to be used for intake measurement applications.

Flow element inlet filters

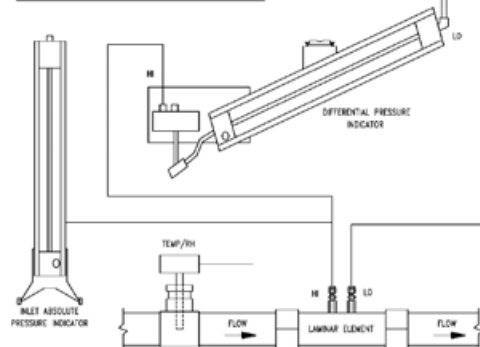
In applications where particulates in the air can affect measurement or clog the flow matrix, an inlet filter can be used to keep the matrix clean and calibration constant.

Filters are available for most laminar flow elements, and can be changed without affecting the calibration curve.

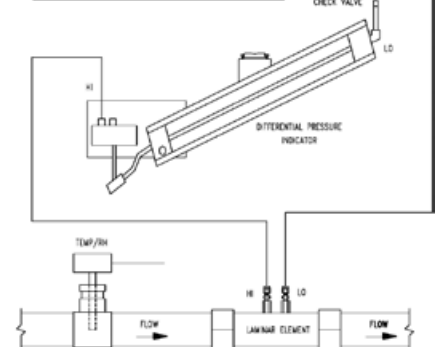
Call for pricing and availability.

Typical Laminar Flowmeter System Installations

Standard or Mass Flow Rate



Actual Volumetric Flow Rate



New! MDT500 Multivariable Digital Transmitter

Features

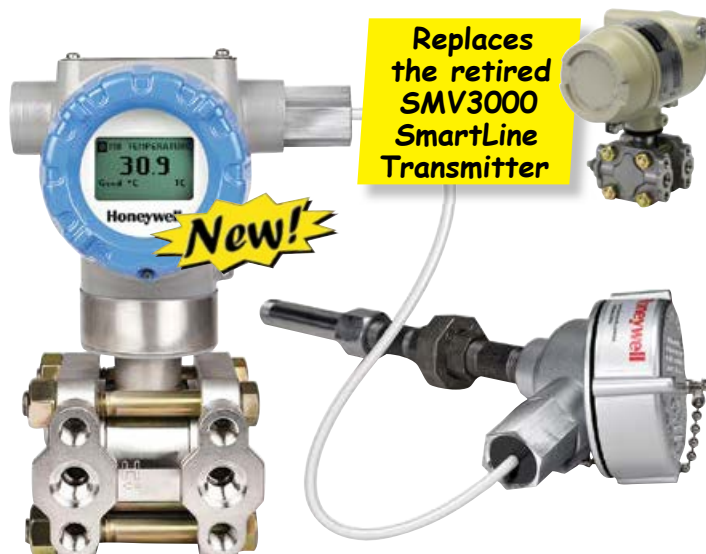
- Compatible with all Meriam laminar flow element models
- Measures differential pressure, compensates for static pressure and temperature changes
- Seven readings per second from both differential and absolute pressure sensors
- 14 temperature readings per second
- Low head loss model available
- LabVIEW® drivers and software kit included; ACFM, SCFM and mass flow displayed on your PC

The Meriam MDT500 is a flow measurement system designed to help you accurately measure air and gas flow rates. It provides a wide flow range, while maintaining accuracy with no drift over time and temperature.

The MDT500 transmitter can be directly mounted on any Meriam LFE model. It can deliver system accuracy of $\pm 0.8\%$ flow rate and a response time of less than 0.1 seconds. With long-term stability and no moving parts, the unit is ultimately maintenance-free.



Honeywell SMV800 SmartLine Multivariable Transmitter



Features

- Mass flow measurements for liquids, gases, and superheated and saturated steam.
- Accuracy: Up to 0.04% for differential pressure, up to 0.0375% for static pressure, up to 0.1°C temperature, with a reference accuracy up to 0.6% for mass flow
- Rangeability up to 400:1
- Universal temperature input option
- Automatic static pressure and temperature compensation
- Compensated flow response time up to two times per second
- External zero, span, and configuration capability
- Polarity insensitive electrical connections
- Comprehensive on-board diagnostic capabilities
- Integral dual seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- World class overpressure protection
- Modular design for easy component replacement in the field

Honeywell's SMV800 smart multivariable flow transmitter accurately measures differential pressure, static pressure, and temperature with the ability to calculate compensated mass or volume flow rate as a fourth process variable.

The SMV800 combines integrated sensor and microprocessor technologies with dynamic flow compensation to produce the most accurate and consistent flow measurement possible. The transmitter can measure differential pressure across a primary flow element (averaging pitot tube, venturi, flow nozzle, orifice plate, V-Cone®, wafer cone, or wedge); static process pressure from a single sensor; and process temperature from thermocouple or RTD inputs.

All SMV800 series transmitters are available with 4-20 mA analog output and HART v7.0, or Honeywell digitally enhanced (DE) output.

SmartLine transmitters all offer digitally accessible diagnostics that aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing lower overall operational costs.

Configuration Tools

SmartLine SMV800's transmitter and display can be easily configured using three buttons accessible on the transmitter head. You can also use these buttons to zero and span the transmitter, with or without the local display. The only parameters not accessible through the pushbuttons are for flow calculations.

All Honeywell SmartLine transmitters are designed and tested for compliance to HART® and DE communication protocols and will operate with any properly validated hand held configuration device.

SmartLine HART transmitters can be configured using Honeywell's MCT404 handheld configurator, for all parameters other than flow. You can also configure HART transmitters using device description-based asset management tools, or a PC-based device type manager (DTM).

DTMs provide enhanced features like measurement types, flow configuration, engineering unit choices, automatic calculation of viscosity and density, coefficients, auto-calculation of K-User and beta factor, and import/export configurations from an external file.

Honeywell's PC Based configuration Toolkit SCT3000 provides an easy way to configure the SMV800 DE devices.

Mass Flow Calculation

Standard mass flow compensation can be user-selected for gas, liquid and steam without limitation on primary elements. Dynamic mass flow compensation can be user-selected: ASME-MFC-3M, ISO5167, or Gost-8.586 for orifice plate, nozzle and venturi; AGA3 for orifice; Calculation support for averaging Pitot tube, V-cone, wafer cone, wedge, integral, and conditional orifice; and Fixed input parameters for customizing the calculations

Flow Density Compensation

With flow factors entered manually, the SMV800 is capable of basic flow density compensation.

Using configuration software, the SMV can be configured with the primary element type and the physical parameters of your measured fluid to dynamically compensate for fluid characteristics like discharge coefficients, gas expansion factors, density, and viscosity plus installation issues like upstream pipe size.

Advanced Graphics LCD Display Features

- 0°, 90°, 180°, and 270° mounting position adjustments
- Standard and custom measurement units available
- Up to eight display screens with three formats: Large PV with bargraph or PV with trend graph
- Configurable screen rotation timing (3 to 30 sec)
- Display Square Root capabilities may be set separately from the 4-20mA DC output signal

Modular Design

To help contain maintenance and inventory costs, all SMV800 transmitters are modular in design, so you can replace meter bodies, indicators or change electronic modules without affecting overall performance or approval body certifications, including:

- Meter body replacement
- Replaceable electronics/comm modules*
- Add or remove integral indicators*
- Add or remove lightning protection (terminal connection)*

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

Honeywell

Specifications

Pressure Inputs (PV1 and 2)

Model	Max Allowable Working Pressure	Process Variable 1 (DP)					Process Variable 2 (AP or GP)				
		Range Limits (InH2O)	Span (InH2O)	Turndown Ratio	Stability (URL/Yr)	Accuracy (% Span)	Range Limits	Span	Turndown Ratio	Stability (URL/Yr)	Accuracy (% Span)
SMA810	100 PSIA	-25" to 25"	1.0" to 25"	25:1 max.	1.0%	0.04%	0 to 100 PSIA	5 to 100 PSIA	20:1 max.	0.125%	0.0375%
SMA845	3000 PSIA	-400" to 400"	1.0" to 400"	400:1 max.	0.0625%	0.04%	0 to 1500 PSIA	30 to 1500 PSIA	50:1 max.	0.008%	0.0375%
SMG870	4500 PSIG	-400" to 400"	1.0" to 400"	400:1 max.	0.0625%	0.04%	-14.7 to 4500 PSIG	60 to 4500 PSIG	75:1 max.	0.025%	0.0375%

Zero and Span: May be set anywhere within the listed (URL/LRL) range limits

Typical Calibration Frequency: Honeywell recommends PV1/PV2 calibration verification every four years

Temperature Inputs (Digital PV3)

Input Type		Maximum Range Limits		Digital Accuracy
		°C	°F	°C
RTDs ⁴	Pt25	-200° to 850°	-328° to 1562°	±0.50°C
	Pt100	-200° to 850°	-328° to 1562°	±0.10°C
	Pt200	-200° to 850°	-328° to 1562°	±0.20°C
	Pt500	-200° to 850°	-328° to 1562°	±0.12°C
	Pt1000	-200° to 500°	-328° to 932°	±0.10°C
Thermocouples ³	T	-250 to 400	-418° to 752°	±0.20°C
	E	-200° to 1000°	-328° to 1832°	±0.20°C
	J	-200° to 1200°	-328° to 2192°	±0.25°C
	N	-200° to 1300°	-328° to 2372°	±0.40°C
	K	-200° to 1370°	-328° to 2498°	±0.25°C
	R, S	-50° to 1760°	-58° to 3200°	±0.50°C
	B	200° to 1820°	392° to 3308°	±0.60°C

Ambient Temperature Effect Digital Accuracy: RTD Inputs: 0.0015°C/°C; T/C Inputs: 0.005°C/°C; Analog Output: 0.0005% span/°C

Maximum Lead Wire Resistance: Thermocouples: 50Ω/leg; Pt100, Pt200, Pt500 and Pt1000 RTDs: 50Ω/leg; Pt25 RTD: 10Ω per leg

Temperature Sensor Burnout: User-selectable burnout detection. Upscale or down scale with critical status message. For RTD type inputs; broken wire(s) will be indicated

Mass Flow (PV4) Reference Accuracy: 0.6% over 20:1 flow range, calculated every 500ms; (Flow performance specifications assumed dynamic compensation and is applicable for SMA845 and SMG870) Applicable standards and installations per ASME MFC 3M or ISO 5167-1 for uncalibrated orifice; >2.8" Pipe Diameter; (0.2 < beta < 0.6 Orifice). DP Turndown 16:1; Reference accuracy does not include RTD sensor accuracy.

Analog Output/Digital Communications: Two-wire, 4–20 mA (HART and DE Transmitters only); Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITC 6.0.1 compliant

Output Failure Modes: Honeywell Compliance: 3.8–20.8 mA normal limits, NAMURNE43: 3.8–20.5 mA normal limits; Failure Mode: ≤3.6 mA and ≥21.0 mA

Supply Voltage Effect: 0.005% span per volt

Response Time (DP): DE/HART Analog Output: 144ms (Delay + Time Constant)

Damping Time Constant (HART®): DP/SP: Adjustable from 0 to 32 seconds in 0.1 increments, 0.5 second default; Temperature: Damping limit is 0 to 102; Flow: Damping limit is 0 to 100

Damping Time Constant (DE): DP/SP: 0, 0.16, 0.32, 0.48, 1, 2, 4, 8, 16, 32 seconds, 0.48 second default; Temperature: 0, 0.3, 0.7, 1.5, 3.1, 6.3, 12.7, 25.5, 51.1, 102.3; Flow: 0, 0.50, 1, 2, 3, 4, 5, 10, 50, 100

Transmitter Turn-On Time: 5.0 sec

Vibration Effect: SMA845, SMG870: Less than ±0.1% URL without damping; Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)

Galvanic Isolation: 2000 VDC (1400 VRMS) between inputs and outputs

Lightning Protection Option: Leakage Current: 10µA max @ 42.4VDC 93C

Impulse Rating: 8/20uS, 5000A (>10 strikes), 10000A (1 strike min.); 10/1000uS, 200A (> 300 strikes)

Communications and Diagnostics: HART Protocol: HART 7; Power Supply: 10.8 to 42.4 VDC at terminals; 0–1440 Ω load; (Requires 250Ω min. load for handheld communications); Honeywell Digitally Enhanced (DE): Honeywell proprietary protocol that provides multivariable communications between Honeywell DE enabled field devices and hosts; Power Supply: 15 to 42.4 VDC at terminals, 900Ω max. load.

Standard Diagnostics: SMV800 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display.

Electronic Housing: Type 4X, IP66, IP67, polyester powder-coated low copper aluminum, all-stainless optional

Process Connections: 1/4" or 1/2" NPT with adapter (meets DIN requirements)

Mounting: Can be mounted in any position using standard mounting bracket, designed to mount on 2" vertical or horizontal pipe; Mounting Bracket: Zinc-plated carbon steel, 304 SS or 316 SS

Wiring: Accepts up to 16 AWG (1.5 mm) diameter

Operating Conditions

Temperature: Ambient: -40° to 185°F; Meter Body: -40° to 257°F

Humidity: 0 to 100% RH

Vacuum Region Pressure: 25 mmHg absolute, min. 13"H2O absolute, min.

Agency Approvals

FM: Explosion-Proof: Class I, Div 1, Groups A-D; Dust Ignition Proof: Class II, III, Div 1, Groups E-G; T4; Class I, Zone 1/2, AEx d IIC T4; Class II, Zone 21, AEx tb IIIC T 85°C IP 66; Intrinsically Safe: Class I, II, III, Div 1, Groups A-G; T4; Class 1, Zone 0, AEx ia IIC T4; Non-incendive: Class I, Div 2, Groups A-D; Class 1, Zone 2, AEx nA IIC T4; Enclosure: Type 4X/ IP66/ IP67

CSA: Explosion Proof: Class I, Div 1, Groups A-D; Dust Ignition Proof: Class II, III, Div 1, Groups E-G; T4; Ex d IIC T4; Ex td A21 T 95°C IP 66; Intrinsically Safe: Class I, II, III, Div 1, Groups A-G; T4; Ex nA IIC T4; Non-incendive: Class I, Div 2, Groups A-D; T4; Ex nA IIC T4; Enclosure: Type 4X/ IP66/ IP67

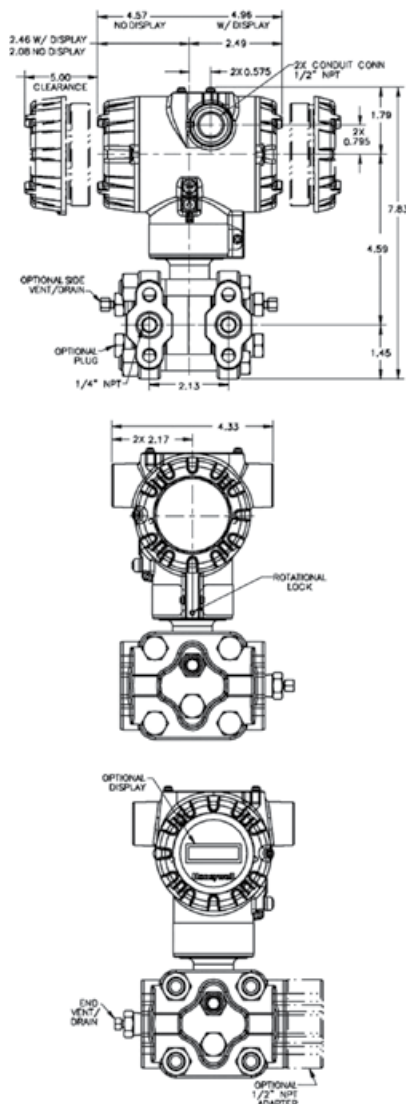
ATEX: Flameproof: II 1/2 G Ex d IIC T4; II 2 D Ex tb IIIC T 85°C IP 66; Intrinsically Safe: II 1 G Ex ia IIC T4; Non-incendive: II 3 G Ex nA IIC T4; Enclosure: IP66/ IP67

IECEx: Flameproof: Ga/Gb Ex d IIC T4; Ex tb IIIC T 85°C IP 66; Intrinsically Safe: Ex ia IIC T4; Non-incendive: Ex nA IIC T4; Enclosure: IP66/ IP67

Electromagnetic Compatibility: EN 61326-1

Honeywell SMV800 SmartLine Multivariable Transmitter

Dimensions



Ordering Instructions

Make one selection from each table. A finished catalog number looks like this:

SM _____ -0- _____ - _____ - _____ - _____ - _____ - _____ - _____ -0000

Model Selection Guide

Description			Catalog Number	Availability			Price
Measuring Range	Differential Pressure	Static Pressure					
	-25" to 25" H2O	0 to 100 PSIA	SMA810	↓			\$3514.00
	-400" to 400" H2O	0 to 1500 PSIA	SMA845		↓		3372.00
	-400" to 400" H2O	-14.7 to 4500 PSIG	SMG870			↓	3513.00
Temperature	RTD Input		S1-	•	•	•	623.00
	Universal Input (RTD & Thermocouple)		S2-	•	•	•	1216.00
Future	No Digital Output		0-	•	•	•	0.00
Wetted Materials	Plated Carbon Steel Process Head, 316L SS Diaphragm		A _____	•	•	•	0.00
	316L SS Process Head, 316L SS Diaphragm		E _____	•	•	•	88.00
	Hastelloy C-276 Process Head and Diaphragm		J _____	•	•	•	1045.00
	Monel 400 Process Head and Diaphragm		L _____	•	•		656.00
Fill Fluid	Silicone Oil 200		_ 1 _ _ _ _	•	•	•	0.00
	Fluorinated Oil CTFE		_ 2 _ _ _ _		•	•	64.00
Process Connection	1/4" NPTF Thread (Standard)		_ _ A _ _ _	•	•	•	0.00
	1/2" NPTF (for Carbon Steel/Stainless Steel Heads)		_ _ H _ _ _	•	•	•	54.00
	1/2" NPTF (for Hastelloy C-276 or Monel Heads)		_ _ H _ _ _		•	•	188.00
Vent/Drain	Single-Ended Head, No Vent/Drain		_ _ _ _ 1 _	•	•	•	0.00
	Dual-Ended Head, Side Vent, End Plug		_ _ _ _ 6 _		•	•	45.00
Gasket	Teflon or PTFE (Glass-Filled)		_ _ _ _ _ A-	•	•	•	0.00
	Viton or Fluorocarbon Elastomer		_ _ _ _ _ B-	•	•	•	26.00
Head Connection	High Side Left, Low Side Right, Standard Orientation		1-	•	•	•	0.00
	Low Side Left, High Side Right, Standard Orientation		2-	•	•	•	28.00
Approvals	None		0	•	•	•	0.00
	FM Approved		A	•	•	•	39.00
	CSA Approved		B	•	•	•	28.00
Housing	Aluminum Housing, 1/2" NPT Connection		A _ _	•	•	•	0.00
	Aluminum Housing, 1/2" NPT Conn, Lightning Protection		C _ _	•	•	•	80.00
	316 SS Housing, 1/2" NPT Connection		E _ _	•	•	•	650.00
	316 SS Housing, 1/2" NPT Conn, Lightning Protection		G _ _	•	•	•	730.00
Output	4-20 mA DC Analog Output, HART® v7		_ H _	•	•	•	76.00
	4-20 mA DC Analog Output, Honeywell DE Protocol		_ D _	•	•	•	344.00
Interface	No Indicator, No External Zero/Span		_ _ 0-	•	•	•	0.00
	No Indicator, External Zero/Span		_ _ A -	•	•	•	63.00
	Indicator, External Zero/Span, English/Euro Languages		_ _ E -	•	•	•	374.00
	Indicator, External Zero/Span, English/Asian Languages		_ _ J -	•	•	•	374.00
Software	Standard Diagnostics		1 _ _	•	•	•	0.00
Failsafe/ Write Protection	Fail High (>21.0 mA DC), Write Protect Disabled		_ 1 _	•	•	•	0.00
	Fail Low (<3.6 mA DC), Write Protect Disabled		_ 2 _	•	•	•	26.00
	Fail High (>21.0 mA DC) Write Protect Enabled		_ 3 _	•	•	•	26.00
	Fail Low (<3.6 mA DC), Write Protect Enabled		_ 4 _	•	•	•	26.00
Configuration	Factory Standard		_ _ S-	•	•	•	0.00
Calibration	Standard Accuracy, Factory Std Single Calibration Range		A-	•	•	•	0.00
Mounting Bracket	Carbon Steel Angle Bracket		1 _ _ _	•	•	•	39.00
	Stainless Steel Angle Bracket		3 _ _ _	•	•	•	Call
Tagging	None		_ 0 _ _	•	•	•	0.00
	One Wired SS Tag (Up to 4 Lines, 26 Char/Line)		_ 1 _ _	•	•	•	28.00
Adapters	No Conduit Plugs or Adapters Required		_ _ A0-	•	•	•	0.00
Options (Separate Option Choices with a Comma)							
Certifications	None		00	•	•	•	0.00
	F3391 Certificate of Conformance		F3	•	•	•	28.00
	F3392 Overpressure Leak Test Certificate (1.5X MAWP)		TP	•	•	•	39.00
Extended Warranty	Additional 1 Year		01	•	•	•	25.00
	Additional 2 Years		02	•	•	•	41.00
	Additional 3 Years		03	•	•	•	61.00
	Additional 4 Years		04	•	•	•	86.00
Factory	Factory Identification		0000	•	•	•	0.00

STD730 SmartLine Differential Pressure Transmitter

Features

- Accuracies to 0.05% of span
- Stability up to 0.02% URL per year for 5 years
- Automatic static pressure & temperature compensation
- Maximum turndown ratio to 100:1
- Response times as fast as 100ms
- Alphanumeric display can be added or removed in the field
- External zero, span, and configuration capability
- On-board diagnostic capabilities
- World class overpressure protection
- Polarity-insensitive electrical connections
- Integral dual seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- Compliant to SIL 2/3 requirements
- HART v7.0 or Honeywell DE communications



Replaces ST3000 model STD924

Honeywell's new SmartLine® STD700 differential pressure transmitters feature piezoresistive sensor technology combining pressure sensing with on-chip temperature compensation, for high accuracy, stability and performance over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS automation and control software platform, providing the highest level of compatibility assurance and integration capabilities.

The ST700 modular features a basic alphanumeric LCD display that can be added or removed in the field. For easier access and visibility, the display can be mounted and adjusted to 0°, 90°, 180°, and 270° positions. The two-line, 16-character LCD can display any one of 16 standard engineering units plus square root output indication.

Suitable for all electrical and environmental requirements, SmartLine offers the ability to zero and span the transmitter from three externally accessible buttons. With the display option, these buttons also let you configure the transmitter and display.

Using a handheld Honeywell MCT202 configurator and Smartline transmitter two-way communications, you can field configure DE and HART devices. Field Device Manager (FDM) software and FDM Express are available for managing HART device configurations. ST700 transmitters integrate with Honeywell's Experion PKS control software platform for tamper-reporting, FDM plant area views, and health summaries.

To help control maintenance and inventory costs, Honeywell ST700 transmitters are modular, giving you the ability to replace meter bodies, add indicators, or change electronics modules without affecting overall performance or approval certification. Each meter body is uniquely characterized to provide in-tolerance performance over a range of varying temperatures and pressures.

Due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics.



Displays provide PV, bargraphs, trend lines, and text messages for diagnostics and maintenance.

How does the STD700 stack up?

Model	SmartLine ST700	ST3000 Series 900
Accuracy	±0.05%	±0.0625 digital mode ±0.075% analog
Speed of response	100 ms	330 ms
Stability	±0.02% URL/year for 5 yrs	±0.01% URL per year

Specifications

Reference Accuracy: 0.05% span

Stability (%URL/year for five years): 0.020%

Temperature: Ambient: -40° to 185° F; Meter Body: -40° to 257° F; LCD: -4° to 158° F

Humidity: 0 to 100% RH

Vacuum Region Pressure: 1"WC min. absolute @ 2 hours at 158° F

Maximum Allowable Working Pressure (MAWP): 4500 PSI for temperatures -40° to 257° F. Static Pressure Limit derated to 3000 PSI below -40° F

Analog Output: Two-wire, 4 to 20 mA (HART & DE Transmitters only)

Output Failure: Normal Limits: 3.8 to 20.8 mA Honeywell standard, or 3.8 to 20.5 mA NAMUR NE 43 Compliant; Failure Mode: ≤3.6 mA and ≥21.0 mA

Supply Voltage: 10.8 to 42.4 VDC at terminals (IS version limited to 30 VDC); Voltage Effect: 0.005% span per volt

Transmitter Turn-On Time: 2.5 seconds

Response Time (Delay + Time Constant): 100 mS

Damping Time Constant: HART: Adjustable from 0 to 32 seconds in 0.1 increments. Default: 0.50 seconds; DE: Discrete values 0, 0.16, 0.32, 0.48, 1, 2, 4, 8, 16, 32 seconds. Default: 0.48 seconds

Vibration Effect: Less than ±0.1% URL without damping

Electromagnetic Compatibility: IEC 61326-3-1

Lightning Protection (Option): Leakage Current: 10uA max @ 42.4 VDC 93C

Materials: Process Head, Vent/Drain Valves and Plugs: 316 SS; Barrier Diaphragms: 316L SS; Head Gaskets: Glass-filled PTFE; Meter Body Bolting and Mounting Bracket: Zinc-Plated Carbon Steel; Fill Fluid: Silicone DC® 200 oil; Electronic Housing: Pure polyester powder-coated low copper aluminum

Mounting: Can be mounted in virtually any position using a standard mounting bracket. Bracket is designed to mount on 2" vertical or horizontal pipe.

Digital Communications/Diagnostics: Honeywell DE, HART 7 protocol

Process Connections: 1/2" NPT

Enclosure: Type 4X, IP66, IP67

FM Approvals: Explosion-Proof: Class I, Div 1, Groups A-D; Dust-Ignition Proof: Class II, III, Div 1, Groups E-G T4; Intrinsically Safe: Class I, II, III, Div 1, Groups A-G T4; Non-Incendive: Class I, Div 2, Groups A-D

SIL 2/3 Certification: IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys

Honeywell STD720 dP transmitters available from Lesman stock — ready to ship same day!

Model Selection Guide

Both transmitters below feature 4" to 400" WC range, 0.05% span accuracy, FM explosion-proof approved enclosure for Class I, Div 1 environments.

Description and Catalog Number	Price
Transmitter with 4-20 mA with HART® output, digital display with external zero/span/configuration buttons	
STD720-E1HC6AS-1-A-AHC-11S-A-10A0-00-0000	\$2284.00
Transmitter with 4-20 mA and Honeywell DE output, no local display or zero/span/configuration buttons	
STD720-E1HC6AS-1-A-CD0-11S-A-10A0-00-000	2268.00

SITRANS FM MAGFLO Electromagnetic Flowmeters



MAGFLO flowmeters make it easier for you to manage flow. Whether it's installation, managing operations, or verifying continuous accuracy, our customers rely on Siemens MAGFLO to improve their processes.

Greater Flexibility and Expandability

- One transmitter/converter electronics box fits all sensor tubes
- Choice of integral mount, remote pipe or wall mount, explosion-proof, or 19" rack mount electronics styles available
- Ready for your plant data network! Universal communications slot on each converter
- Communication modules for HART®, Modbus RTU, Profibus PA/DP. Add-on modules allow upgrades without buying a new flowmeter

Easier to Operate

- Mag 5100W doesn't require grounding rings
- Robust construction and materials: PTFE, PFA, Ceramic, and NOVALAK liners; AISI 316 Ti stainless steel, Hastelloy C, Titanium, Tantalum, and Platinum electrodes
- Only Siemens offers NOVALAK, a revolutionary liner material with a smooth, hard, non-porous finish that provides the highest level of protection against corrosion, abrasion, high pressure and temperature, and vacuum conditions. It has the chemical resistance you expect from PTFE with the mechanical strength and stability of steel.
- Uniform user interface for all MAGFLO products

Easier to Commission

- Pushbuttons on transmitter electronics make setup easy for technicians and contractors
- SensorPROM holds identity of each flowmeter: Calibration data, magnetic properties, user setup, and programming.
- SensorPROM module enables instant measurement at power-up

Easier to Service

- Transmitter replacement requires no programming
- SensorPROM automatically updates all settings after initialization
- Advanced Diagnostics of Application and Metering
- Identification in clear text and error log
- Error categories: Function, warning, permanent, and fatal
- Transmitter self-check including outputs and accuracy
- Sensor check function
- Overflow
- Empty pipe, partial filling, low conductivity, electrode fouling
- System verification with MAGFLO Vericator

Need FM Class I, Div 1 meters? MAGFLO models are available for harsh environments. Call Lesman for help.

Flexible Transmitter Electronics

Choose between Mag 5000 ($\pm 0.5\%$ accuracy) and Mag 6000 ($\pm 0.25\%$ accuracy) for high performance, easy operation, and reduced maintenance. Mag 5000 is a robust solution for all-around applications. Mag 6000 is for the more demanding applications where higher accuracy and greater functionality are required.

The Mag 6000i (Industry) transmitter is designed for special demands in the process industry. The robust, full-metal housing provides superb protection, even in the harshest industrial environments. Full input and output functionality is provided, even in the ATEX EEx d version.



Individual calibration and fingerprint (magnetic property) data are pre-programmed at the factory and stored in the MAGFLO's SensorPROM module. Setup data is added during configuration. This unique combination ensures a cost-effective, easy, and error-free installation.

Plug and play communication modules make your MAGFLO compatible with your plant network protocol. Changing communications standards or moving the MAGFLO to a different network? Just swap out the communications module. No need to buy a new magmeter.

Sensor Tube Designs for Every Industry

Mag 5100W: A sensor for all water and wastewater applications. With its coned design, increased low-flow accuracy is achieved, making it especially useful for leak detection. It can be made suitable for direct burial and constant flooding. Mag 5100W complies with drinking water and custody transfer approvals.



Mag 1100: The flangeless wafer design that meets all flange standards. The Mag 1100 is used in all industries where the corrosion-resistant stainless steel housing and highly resistant liner and electrodes fit even the most extreme process media. Mag 1100s are available with FM and ATEX approvals for installations in hazardous areas.

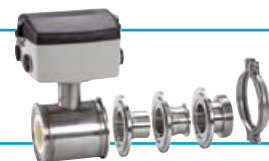
Its obstruction-free performance minimizes the risk of deposits. And, it's unaffected by the suspended solids, viscosity, and temperatures typically found in pharmaceutical processes. The Mag 1100 is suitable for CIP and SIP cleaning, and withstands the high pressures of hose-down.

Mag 1100 Food: Specially designed for the food and beverage industry, Mag 1100F offers unique and flexible process connections. Mag 1100F was the first to pass EHEDG hygienic test and meets all sanitary standards. Its performance is unaffected by suspended solids, viscosity, and temperature changes.



The Mag 1100F features an AISI 316SS enclosure with an IP67/NEMA 4X rating that is upgradeable to IP68/NEMA 6P. It's delivered with your choice of flange adapter, with metal-to-metal design, and no grounding connection required.

Tri-Clover and Tri-Clamp adapters in stock, ready for quick assembly and shipment!



Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

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Instruments • Valves • Controls
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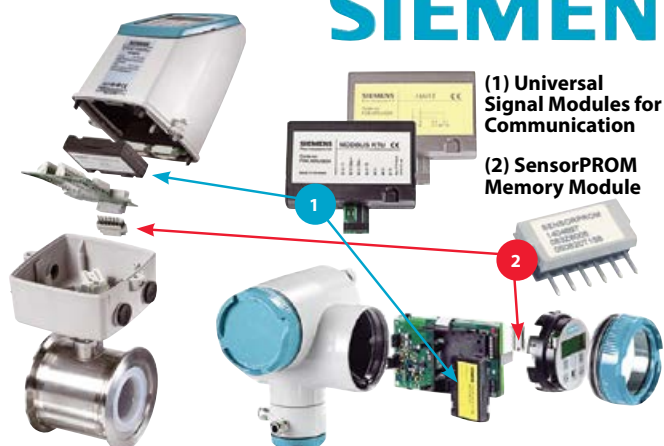
Wisconsin and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

**MAGNETIC
FLOWMETERS**

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SIEMENS



Plug and Play communication modules and swappable SensorPROM memory module make replacing electronics quick and painless!



Mag 3100: This flexible and comprehensive sensor program offers a wide range of sizes, to fit a wide variety of general industry applications. Liners and measuring electrodes capable of withstanding the most extreme processes are available. All welded construction provides a ruggedness that suits the toughest environments.

Mag 3100P: Designed to meet the most common specifications in the chemical and process industries. It features fully welded construction for ruggedness, and PTFE or PFA liners and Hastelloy electrodes for flexibility.

Mag 8000W: These battery-powered units give you the flexibility to install a reliable water meter almost anywhere, without sacrificing accuracy or performance. It's optimized for leakage detection and accurate billing.

The Mag 8000W features a datalogger with selectable log interval up to 26 months, an infrared (IrDA) port for on-site downloads, power management with selectable battery alarm levels, a self-check feature with automated data backup, and three totalizers, one with user reset.



Transmag 2: For Heavy-Duty Applications



Thanks to its pulsed AC system, the Transmag 2 is capable of measuring where conventional DC field technology fails, including applications with high concentrations of pulp stock, heavy slurries, or slurries with magnetic particles.

Magnetic particles in the media boost the magnetic field in the flowmeter and cause bad readings. Transmag 2 overcomes this issue with a second compensating coil circuit. The alternating field technology generates a much stronger magnetic field within the sensor, to measure more reliability and with greater precision — even when the media has a high concentration of solids.



There's a solution to every abrasive media application, and the choice of construction material is crucial to protect the flowmeter. Besides inlet protection rings, Siemens offers a broad range of liner and electrode materials — like the soft LINATEX rubber and NOVALAK liner, which have proven themselves in these harsh environments.

Why Do So Many Engineers Choose MAGFLO?

- Mag 5100W doesn't need grounding rings.
- Reducing spares! One transmitter fits all sensor tubes.
- Easy transmitter configuration with the keypad — contractors and technicians love them!
- Owners can schedule on-site verification service from Siemens, or do their own verification with a MAGFLO Verificator unit.
- SensorPROM makes replacement server a quick swap-out.
- With the universal communication modules, it's easy to get data onto the plant network.
- They can produce a traceable record of reliability, with calibration data and verification test results.

In-Situ Verification

Using the MAGFLO Verificator, Siemens offers in-situ verification for documenting continuous accuracy for critical process applications — especially crucial when your application is required to meet ISO 9001, ISO 4001 or other quality management programs.

Through in-depth analysis, Siemens has identified the parameters that influence the accuracy of a flowmeter operating in the real world. These parameters are checked using a patented verification technique for MAGFLO meters.

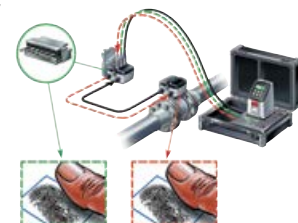
In-situ verification requires no interruption of flow, no opening of pipes, and no disconnection of cabling. The Verificator can run a full installation test of the transmitter, sensor, and cabling — all in less than 15 minutes!

Transmitter Test: The transmitter test is a flow simulation test that checks the whole electronic system from signal input to output. Using the magnetic field energy, the Verificator simulates a flow signal to the transmitter input. By measuring transmitter output, the Verificator calculates its accuracy against factory-defined values.

Flowmeter Insulation Test: This "cross-talk" test of the entire flowmeter ensures that the sensor flow signal is unaffected by external influences. In this test, the Verificator generates a high voltage disturbance within the coil circuit, and then looks for any cross-talk induced in the flow signal circuit. By generating dynamic disturbances close to the flow signal, the flowmeter is tested for noise immunity to a maximum level.

Sensor Magnetism Test: This "boost" test of the magnetic field coil ensures that the electromagnetic signal meets the original settings. In the boost test, the Verificator changes the magnetic field pattern and uses high voltage to get quick stable magnetic conditions. Then, it compares the current sensor magnetism to the factory "fingerprint" determined during initial calibration, and stored in SensorPROM.

An authorized, signed certificate documents the verification, and includes test results with pass/fail approval, installation specifications, flowmeter specification and configuration, and Verificator specification with calibration date (to ensure traceability to national and international standards.)



Need help finding the right magmeter?

Fill out the application datasheet at
www.Lesman.com/datasheets/ and send it to
Lesman for engineering review.

SITRANS FM MAGFLO Electromagnetic Flowmeter



MAGFLO Transmitter Electronics	MAGFLO Mag 5000	MAGFLO Mag 6000
<ul style="list-style-type: none"> ULC Approved FM Class 1, Div 2 Rated NEMA 4X and NEMA 6 115–230 VAC or 12–24 VAC/VDC Power 3-Line, 20-Character Backlit Display Can be Ordered Blind (No Local Display) 	<ul style="list-style-type: none"> ±0.5% Accuracy with All Sensors Comes Standard with 1 Current, 1 Digital, and 1 Relay Output Available with HART® Communication Only Available for Sensors 1/2" to 48" 	<ul style="list-style-type: none"> ±0.25% Accuracy with Selected Sensors Advanced Batch Control Functions Add-On Plug-In Communication Modules Required for Use with Sensors >56" Mag 6000i IP67/NEMA Enclosure Optional

Step 1: Choose your electronics by accuracy, power, and mounting style. Add connecting cables and accessories you need.

Step 2: Choose your flow sensor by size and linear material. Issue your order to Siemens Industry Inc., c/o Lesman Instrument Company.

Model Selection Guide

Description	Catalog Number	Price
Mag 5000 Transmitters; Max. Measuring Error: 0.5% Flow Rate		
Integral Mount, 115-230 VAC	7ME6910-1AA10-1AA0	\$1473.00
Integral Mount, 11-30 VDC 11-24 VAC	7ME6910-1AA30-1AA0	1473.00
Integral Mount, No Display, 115-230 VAC	7ME6910-1AA10-0AA0	1222.00
Integral Mount, HART®, 115-230 VAC	7ME6910-1AA10-1BA0	1525.00
Rack Mount, 115-230 VAC	7ME6910-2CA10-1AA0	1703.00
Mag 6000 Transmitters; Max. Measuring Error: 0.25% Flow Rate		
Integral Mount, 115-230 VAC	7ME6920-1AA10-1AA0	1735.00
Integral Mount, 11-30 VDC 11-24 VAC	7ME6920-1AA30-1AA0	1735.00
Rack Mount, IP20/NEMA 2, 115-230 VAC	7ME6920-2CA10-1AA0	1984.00
IP66/NEMA 4 ABS Plastic, 115-230 VAC	7ME6920-2EA10-1AA0	2008.00
Mag 6000i Transmitter; Max. Measuring Error: 0.25% Flow Rate		
Remote Mount IP67/NEMA 4X, HART Aluminum Enclosure 10-220 VDC/AC	7ME6930-2BA20-1BA2	2228.00
Mounting Kits and Hardware		
Wall Mount Junction Box IP67/NEMA 4X/6	FDK:085U1053	259.00
Submersible Kit for Terminal Box, for IP68, 10m w.g. Rating	FDK:085U0220	157.00
21TE Panel Mount Kit for 19" Insert IP65/ NEMA4 Enclosure in ABS Plastic	FDK:083F5030	437.00
21TE Back Panel Mount Kit for 19" Insert IP20/NEMA 2 Enclosure in Aluminum	FDK:083F5032	199.00

Q Look for the Q for popular models available to ship within two weeks!

Issue all orders to: Siemens Industry Inc, c/o Lesman Instrument Company

Description	Catalog Number	Price
Interconnect Cables (Price/foot, two lengths required per installation)		
Standard Interconnect Cable	FDK:001STCAB **	\$6.00
Interconnect Cable for Empty Pipe	FDK:001SPCAB **	7.00
Plug-In Communications Modules for Mag 6000 Electronics		
Mag6000 HART Module	FDK:085U0226	243.00
Mag 6000 Modbus RTU/RS485 Module	FDK:085U0234	243.00
Spare Parts and Accessories		
Mag 5000/Mag 6000 Sensorprom 2KB	FDK:085U1005	42.00
Mag 5000/Mag 6000 Display Unit	FDK:085U1039	156.00
Sun Shield for Remote-Mt Polyamide Covers	A5E01209496	243.00
Sun Shield for Integral Polyamide Covers	A5E01209500	391.00
MAGFLO Verificator		
Verificator Kit (With Software and Adapters)	FDK:083F5061	20325.00

** Choose two standard cables or one standard and one empty pipe cable. Both are PVC jacket, three-conductor plus overall braided shield.

Need help finding the right magmeter? Fill out the Siemens magnetic flowmeter application datasheet at www.Lesman.com/datasheets/ and send it to Lesman for engineering review.

Visit www.Lesman.com for more information on Siemens' line of SITRANS FM MagFlo magnetic flowmeters. Get specs, manuals, and quick start guides.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

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Instruments • Valves • Controls
www.lesman.com • sales@lesman.com

Wisconsin and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

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**MAGNETIC
FLOWMETERS**

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SIEMENS

For Water and Wastewater Applications

Flow Sensor Body Mag 5100W: Nitrile Rubber Liner, Hastelloy C Electrodes, ANSI Class 150 Carbon Steel Flanges



Size	Catalog Number	Price
1"	7ME6580-2DJ14-2AA2	\$1171.00
1.5"	7ME6580-2RJ14-2AA2	1185.00
2"	7ME6580-2YJ14-2AA2	1224.00
2.5"	7ME6580-3FJ14-2AA2	1239.00
3"	7ME6580-3MJ14-2AA2	1251.00
4"	7ME6580-3TJ14-2AA2	1304.00
5"	7ME6580-4BJ14-2AA2	1533.00
6"	7ME6580-4HJ14-2AA2	1740.00
8"	7ME6580-4PJ14-2AA2	2094.00
10"	7ME6580-4VJ14-2AA2	2624.00
12"	7ME6580-5DJ14-2AA2	3908.00
14"	7ME6580-5KJ14-2AA2	5416.00
16"	7ME6580-5RJ14-2AA2	6062.00
18"	7ME6580-5YJ14-2AA2	6738.00
20"	7ME6580-6FJ14-2AA2	7480.00
24"	7ME6580-6PJ14-2AA2	8316.00

Great for Drinking Water Applications

Flow Sensor Body Mag 8000W: 0.5% Accuracy, Magmeter with Standard Mag 5100W Sensor, Integral Transmitter, and Integral Battery Pack (2 D-Cells). Qmax=Volume Unit



Size	GPM	Catalog Number	Price
2"	277	7ME6810-2YJ31-2AA1	\$3303.00
2.5"	440	7ME6810-3FJ31-2AA1	3316.00
3"	704	7ME6810-3MJ31-2AA1	3329.00
4"	1100	7ME6810-3TJ31-2AA1	3386.00
5"	1761	7ME6810-4BJ31-2AA1	3618.00
6"	2769	7ME6810-4HJ31-2AA1	3831.00
8"	4389	7ME6810-4PJ31-2AA1	4191.00
10"	7044	7ME6810-4VJ31-2AA1	4733.00
12"	11007	7ME6810-5DJ31-2AA1	6045.00

For General Industrial Applications

Flow Sensor Body Mag 3100: Neoprene Liner, 316 SS Electrodes, ANSI Class 150 Carbon Steel Flanges, Carbon Steel Housing



Size	Catalog Number	Price
1"	7ME6310-2DJ11-1AA2	\$1593.00
1.5"	7ME6310-2RJ11-1AA2	1612.00
2"	7ME6310-2YJ11-1AA2	1664.00
2.5"	7ME6310-3FJ11-1AA2	1689.00
3"	7ME6310-3MJ11-1AA2	1713.00
4"	7ME6310-3TJ11-1AA2	1788.00
6"	7ME6310-4HJ11-1AA2	2431.00
8"	7ME6310-4PJ11-1AA2	3031.00
10"	7ME6310-4VJ11-1AA2	3747.00
12"	7ME6310-5DJ11-1AA2	5284.00

Flow Sensor Body Mag 3100P: PTFE Liner, Hastelloy C-276 Electrodes, ANSI Class 150 Carbon Steel Flanges, Carbon Steel Housing



0.5"	7ME6340-1VJ13-2AA2	\$2049.00
1"	7ME6340-2DJ13-2AA2	1865.00
1.5"	7ME6340-2RJ13-2AA2	1900.00
2"	7ME6340-2YJ13-2AA2	1924.00
2.5"	7ME6340-3FJ13-2AA2	1951.00
3"	7ME6340-3MJ13-2AA2	1983.00
4"	7ME6340-3TJ13-2AA2	2081.00
6"	7ME6340-4HJ13-2AA2	2845.00
8"	7ME6340-4PJ13-2AA2	4190.00
10"	7ME6340-4VJ13-2AA2	5705.00
12"	7ME6340-5DJ13-2AA2	8052.00



Look for the Q for popular models available to ship within two weeks!

For Food, Beverage, and Pharmaceutical Use

Flow Sensor Body Mag 1100: Ceramic Liner, Platinum Electrodes, EPDM Gaskets, SS Studs and Nuts



Size	Catalog Number	Price
0.078" DN2	7ME6110-1DA20-2AA2	\$1727.00
1/8" DN3	7ME6110-1HA20-2AA2	1727.00
1/4" DN6	7ME6110-1MA20-2AA2	1510.00
3/8" DN10	7ME6110-1RA20-2AA2	1510.00
1/2" DN15	7ME6110-1VA20-2AA2	1510.00
1" DN25	7ME6110-2DA20-2AA2	1510.00
1.5" DN40	7ME6110-2RA20-2AA2	1809.00
2" DN50	7ME6110-2YA20-2AA2	2112.00
2.5" DN65	7ME6110-3FA20-2AA2	2260.00
3" DN80	7ME6110-3MA20-2AA2	2412.00
4" DN100	7ME6110-3TA20-2AA2	3053.00

Flow Sensor Body Mag 1100: PFA Liner, Hastelloy-C Electrodes, EPDM Gaskets, SS Studs and Nuts

3/8" DN10	7ME6110-1RA10-1AA2	\$1658.00
1/2" DN15	7ME6110-1VA10-1AA2	1658.00
1" DN25	7ME6110-2DA10-1AA2	1658.00
1.5" DN40	7ME6110-2RA10-1AA2	1964.00
2" DN50	7ME6110-2YA10-1AA2	2270.00
2.5" DN65	7ME6110-3FA10-1AA2	2409.00
3" DN80	7ME6110-3MA10-1AA2	2556.00
4" DN100	7ME6110-3TA10-1AA2	3140.00

Flow Sensor Body Mag 1100 Food: PFA Liner, Hastelloy-C Electrodes. Select Tri-Clover® or Tri-Clamp® Sanitary Adapter Below



Size	Catalog Number	1727.00
3/8" DN10	7ME6140-1RA10-1AA2	\$1658.00
1/2" DN15	7ME6140-1VA10-1AA2	1658.00
1" DN25	7ME6140-2DA10-1AA2	1658.00
1.5" DN40	7ME6140-2RA10-1AA2	1964.00
2" DN50	7ME6140-2YA10-1AA2	2270.00
2.5" DN65	7ME6140-3FA10-1AA2	2409.00
3" DN80	7ME6140-3MA10-1AA2	2551.00
4" DN100	7ME6140-3TA10-1AA2	3021.00

**Tri-Clover
Sanitary Weld-In
Adapters:**

**2 Clamp Fittings,
2 Clamps, and 2
EPDM Gaskets**

3/8" (1/2" Tri-Clover)	FDK:083G2276	\$268.00
1/2" (3/4" Tri-Clover)	FDK:083G2277	268.00
1"	FDK:083G2279	322.00
1.5"	FDK:083G2281	374.00
2"	FDK:083G2282	403.00
2.5"	FDK:083G2283	450.00
3"	FDK:083G2284	545.00
4"	FDK:083G2285	636.00

Siemens TransMag 2 for Applications with High Suspended Solids (Pulp and Paper, Cement, Mining)

- Patented pulsed AC-powered magnetic flowmeter
- IP67/NEMA 4X enclosure
- Max measuring error: 0.5% rate
- 1 current, 1 digital, 1 relay output (or 1 DI)
- Compatible with 911/E flow sensor bodies in sizes from 1" to 16"

Call for pricing and availability



SITRANS FC Coriolis Mass Flowmeters

SIEMENS

SITRANS FC430 Coriolis Mass Flowmeter

- Sizes available from 1/2" to 3"
- One FC coriolis mass flowmeter can measure mass flow rate, temperature, total volume, total mass, Brix, fraction flow, density, volumetric flow rate, and percent or total fraction
- Superior resistance against external vibrations for 0.1% accuracy, 0.05% repeatability, and no twisting
- HemiShape manifold for low pressure loss; Avoids cavitation and separation of fragile fluids
- 4-20 mA analog output with HART® 7.2 standard. Other I/O can be configured for analog, pulse, frequency, relay, or status
- Full graphical display, straight-forward commissioning, simple navigation, customized views, programming wizards provide guidance for inexperienced users
- Fully rotatable (0-180°) pedestal makes access possible from all sides, includes simple one-bolt release clamp
- MicroSD card stores user and factory settings and calibration data for quick transfer of information between transmitters
- Transmitter available in remote and compact versions, mountable on all FCS400 sensors



- Flange, thread, hygienic thread or hygienic clamp connections
- Can be validated and configured for SIL2 or SIL3 operation
- Meets all IEC Ex, ATEX, and FM hazardous area requirements
- EHEDG/3A approved for hygienic use; NTEP approved for custody transfer
- Remote FCS400 model's digital sensor link guarantees high-speed data transfer, even up to 200 meters between sensor and transmitter

Streamlined, compact SITRANS FCS400 sensor

The SITRANS FCS400 coriolis mass flow sensor was designed for superior performance and reliability: a very stable zero point, low pressure loss, and high immunity to process noise and plant vibrations. Its small size makes installation and replacement easy, and possible to fit multiple units into tight spaces.

The Siemens CompactCurve tube shape offers a 0.1% flow rate accuracy and high sensitivity for optimal measurement, even with very low flows. The unit is self-draining and highly resistant to pressure burst. The ultra-short tube provides better than 1 kg/m³ density accuracy.

HemiShape flow manifold design ensures balanced flow between tubes and makes the FC430 great for use in fragile liquids. It includes purge connectors for monitoring, safety relief valves, and rupture discs. The unique design secures low pressure loss and avoids cavitation at the separation of fragile liquids — ideal in hygienic applications. Its smooth surface allows for easy cleaning with minimal flow abstraction.

Models can be ordered for standard, hygienic, or NAMUR service, and can be validated and configured for SIL2 or SIL3 operation standard. (SIL3 requires two flowmeters in series, monitored by a SIL-rated control system).

SITRANS FCS400 Sensor Specifications

Sizes:	DN15 (1/2")	DN25 (1")	DN50 (2")	DN80 (3")
Flow Range (lb/h):	8,157	25,353	114,640	300,000

Accuracy: ±0.10%; **Repeatability:** ±0.05%

Pressure rating: Measuring tube: 1450 PSI; Sensor enclosure: 20 bar for 1/2" and 1" models, 17 bar for 2" and 3" models

Temperature: Process: -58° to 392°F; Ambient: -40° to 140°F

Material: Wetted parts: 316L SS; Enclosure: IP67-rated 304 SS

Process connections: Flanges: EN1092-1 B1 and D, ANSI/ASME B16.5, JIS; Pipe threads: ASME (NPT), BSPP, VCO Quick-Connect; Hygienic threads: DIN11851, DIN11864-1, ISO2853, SMS1145; Hygienic clamps: DIN11864-2, DIN32676, ISO2853, SMS1145

Approvals: Hazardous area: ATEX, IECEx, FM, NEPSI, CSA, TISS, GOST; Pressure equipment: PED, CRN; Hygienic: 3A, EHEDG; Custody transfer: SITRANS FC430 OIML R 117, NTEP; Operational safety: SIL2

Innovative and user-friendly SITRANS FCT030 transmitter

Based on patented digital signal processing technology, the SITRANS FCT030 transmitter delivers true multi-parameter measurements with enhanced efficiency, security and simplicity. Fully modular for installation and replacement; can be remote or compact mounted with all SITRANS FCS400 sensor sizes.

Fully graphical interface display can be customized to show you different information during measurement and diagnostics. Measurement views include numeric display, bar graphs, and trend curves. On-screen diagnostics include timestamp and NAMUR results. The SensorFlash MicroSD card serves as a removable database and provides direct access to all relevant certificates and audit trails.

Four navigational buttons, help text, and wizards for processes make servicing the transmitter easy. The common Siemens menu structure, display layout, and input methods reduce the need for user training.

SITRANS FCT030 Transmitter Specifications

Input/Output Channels: Up to 4 channels combining analog, relay or digital outputs and binary input

Signal Processing: 100 Hz

Communication: HART 7.2

Power supply: 24-90 VDC, 100-240 VAC

EMC performance: EN 61326-3-2

Local User Interface (LUI): Full graphical display, 240 x 160 pixels

Construction: IP67-rated aluminum with corrosion-resistant coating

Mechanical load: 18 to 1000 Hz random, 3.17 G rms, in all directions

Approvals: Hazardous areas: ATEX, IECEx, FM, NEPSI, CSA, TISS, GOST; Hygienic: 3A; NAMUR; Custody transfer: SITRANS FC430 OIML R 117; Operational safety: SIL3 (transmitter and redundant system)

Q Some FC430 and FC410 flowmeters are available by Quick Ship from Siemens. Call Lesman for details.

Need help choosing a coriolis mass flowmeter? Not sure coriolis is right for your application? Fill out the application datasheet from www.Lesman.com/datasheets and send it back to Lesman.

Mass 2100 Coriolis Mass Flow Sensor

- Accuracy >0.1% mass flow rate
- Dynamic turndown ratio >500:1, from 65 kg/h to a few g/h
- Densitometer performance available (Accuracy >0.001 g/cm³, repeatability >0.0002 g/cm³)
- Single continuous tube design, with no internal welds, reductions or flow splitters offers optimal hygiene, safety
- Market's biggest wall thickness ensures optimal corrosion resistance and high-pressure durability
- Intrinsically safe Ex ia standard



MASS 2100 Coriolis mass flow sensor is designed for low flow measurement in liquids and gases. One unit measures mass flow, volume flow, density, temperature and fraction. MASS 2100 can be connected to MASS 6000 transmitters for remote installation only.

Specifications

Pipe: Inside Diameter: 1.5 mm (0.06"); Wall Thickness: 0.25 mm (0.010")

Measuring Range: Mass Flow: 0–143 lb/h; Density: 0–0.10 lb/in³; Fraction: 0–100° Brix; Temperature: -58° to 257°F (Optional 356°F)

Liquid Pressure Measuring Pipe: Stainless steel: 3336 PSI at 68°F; Hastelloy C22/2.4602: 5294 PSI at 68°F

Construction: Measuring pipe/connection: 316L stainless steel; Hastelloy C22/2.4602; Enclosure: IP65 316L stainless steel

Connection: 1/4" NPTM ANSI/ASME B1.20.1

Approval: Ex ia IIC T3-T6, DEMKO 03 ATEX 135252X

Learn more about mass flowmeters at Lesman.com

Mass 6000 Mass Flow Transmitter

- For mass flow rate, volume flow rate, density, temperature, fraction flow (e.g., Brix)
- One current output, one frequency/pulse output, one relay output, one digital input; All outputs can be individually configured with mass, volume, or density
- Adjustable flow direction, with single and bidirectional flow measurement
- Limit switches with one or two limits, programmable for flow, density or temperature
- Full batch controller
- Two built-in totalizers count positive, negative or net
- Noise filter for performance in tough environments
- Auto zero adjustment with zero point evaluation feedback
- Full service menu for effective use and troubleshooting
- Compatible with MASS 2100, FC300 and other flow sensors



FC300 Coriolis Mass Flow Sensor

- Accuracy >0.1% mass flow rate
- Dynamic turndown ratio >500:1
- One tube with no internal welds, reductions, or flow splitters
- Balanced pipe design ensures optimal stability under harsh and unstable process conditions
- Four-wire Pt1000 temperature measurement for accurate mass flow, density and fractional flow
- Intrinsically safe Ex ia IIC standard



SITRANS FC300 sensor offers superior performance in flow and density accuracy, and turndown ratio. The compact enclosure fits in tight installation spaces for measuring liquids and gases. It can be installed in horizontal or vertical position. FC300 can be connected to MASS 6000 transmitters for remote installation only.

Specifications

Sensor Size: DN 4 (1/6")

Mass Flow: Range: 0–772 lb/h; Accuracy: 0.1 % of rate; Repeatability: 0.05 of rate; Max. Zero Point Error: 0.022 lb/h

Density: Range: 0–0.105 lb/in³; Density Error: 0.00025 lb/in³

Temperature: -40° to 239°F (Optional to 356°F); Temperature Error: 0.9°F

Brix: 0–100°; Error: 0.3° Brix

Pipe: Inside diameter: 0.14"; Wall thickness: 0.0098"; Liquid pressure measuring pipe: 1885 PSI at 68°F

Construction: 316L stainless steel; Measuring pipe/connection: Hastelloy C22/2.4602; Enclosure: IP67/NEMA4 316L stainless steel

Connection: 1/4" NPTM, ANSI/ASME B1.20.1

Approval: UL Class 1 Div. 1, Groups A–D, ATEX

Specifications

Current Output: 0/4–20 mA; Load: < 800 Ω; Time constant: 0–99.9s adjustable

Digital Output: Frequency: 0–10 kHz, 50 % duty cycle; Time constant: 0–99.9s adjustable; Active: 24 VDC, 30 mA; Passive: 3–30 VDC, max. 110 mA

Change-Over Relay: Load: 42 V/2 A peak; Functions: Error level, error number, limit, flow direction

Digital Input: 11–30 VDC; Start/hold/continue batch, zero point adjust, reset totalizer 1/2, force output, freeze output

Cut-Off: Low-flow 0–9.9% max flow; adjustable density or empty pipe cutoff

Limit Function: Mass flow, volume flow, fraction, density, sensor temperature

Totalizer: Two eight-digit counters for forward, net or reverse flow

Display: Backlit alphanumeric text, 3 x 20 characters for flow rate, totalized values, settings and faults. Reverse flow indicated by negative sign

Zero Point Adjustment: Via keypad or remote via digital input

Communication: Add-on modules: HART®, PROFIBUS PA and DP, MODBUS RTU RS-485, DeviceNet, FOUNDATION Fieldbus H1

Enclosure: Rating IP67/NEMA 6 Fiberglass reinforced polyamide;

Supply Voltage: 24 VDC/AC, 50–60 Hz

NAMUR: Within the value limits according to "General requirements" with error criteria A in accordance with NE 21

Cable Glands: Two 1/2" NPT or M20 polyamide cable glands

SITRANS F US Clamp-On Ultrasonic Flowmeters

Comparing SITRANS F US Clamp-on Flowmeter Configurations



Model	SITRANS FTS020 Basic	SITRANS FUS101 Standard	SITRANS FUP1010 Portable	FUE1010 Energy Industry Applications	FUH1010 Hydrocarbon Industry Applications	FUG1010 Gas Industry Applications
Replaces...	Controlotron 1020	Controlotron 1010N, 1010X, 1010WX	Controlotron 1010P, 1010WP	Controlotron 1010EN, 1010EP	Controlotron 1010DV, 1010V, 1010B	Controlotron 1010GC
Flow Range	±40 ft/sec (±12 m/s) bidirectional					
Flow Sensi- tivity	0.001 ft/sec (0.0003 m/sec) flow rate independent	0.001 ft/sec (0.0003 m/s) flow			0.001 ft/sec (0.003 m/sec) flow rate independent	
Pipe Sizes	0.25" to 360" (DN 6.4 to DN 9140)					1" to 60" (DN 25 to DN 152)
Optional Inputs	None	Two 4-20 mA DC,Two 0-10 VDC, Two 4-Wire 1kΩ RTD		Two 4-20 mA DC, Two 0-10 VDC, Two 4-Wire 1000Ω RTD, Totalizer commands (clear/hold)	Four 4-20 mA user selectable, Two 4-Wire 1000Ω RTD	Two 4-20 mA, Two 4-Wire 1000Ω RTD
Outputs	4-20 mA DC 1x for single channel 1x 0-5 kHz pulse rate, digi- tal isolated RS232	Two 4-20 mA DC (1kΩ @ 30 VDC), Two 0-10 VDC (5kΩ min.) Four SPDT relays for status alarms, Two 0-5 kHz frequency, RS232			Two 4-20 mA DC (1kΩ at 30 VDC), Two 0-10 VDC (5kΩ min.), Four 0-5 kHz pulse rate (None for NEMA 7/IP65 version), RS232	Two 4-20 mA DC pro- grammable standard, Two 0-10 VDC, Four 0-5 kHz, RS232
Accuracy	1-2% actual volume reading (higher accuracy is dependent on pipe condition)	±0.5-1.0% flow for velocities >1 ft/sec (0.3 m/sec) ±0.005-0.1 ft/sec (±0.0015-0.003m/ sec) for velocities <1 ft/sec (0.3 m/sec)	±0.5-2.0% flow for velocities >1 ft/sec (0.3 m/sec) ±0.005-0.1 ft/sec (±0.0015-0.003m/ sec) for velocities <1 ft/sec (0.3 m/sec)	±0.5-1.0% flow for velocities >1 ft/sec (0.3 m/sec) ±0.005-0.1 ft/sec (±0.0015-0.003m/sec) for velocities <1 ft/sec (0.3 m/sec)	0.5-1.0% flow, calibrat- able to 0.15-0.3% of flow, 0.05 of API number (interface detector)	Out of box 1-2%, calibratable to 0.5% ±0.005-0.01 ft/sec (±0.0015-0.003 m/sec) for velocities <1ft/sec (0.3 m/sec)
Batch Repeat- ability	±0.15-1.0% flow 0.05-0.1% actual; volume reading for 5-100 ft/sec (1.5-30 m/sec) velocities, pipe condition dependent	±0.15% flow for velocities >1ft/sec (0.3 m/sec) ±0.0015 ft/sec (0.0005 m/sec) for velocities <1 ft/sec (0.3 m/sec)			0.05% (depending on model) ±0.10-0.2% flow for velocities >1ft/sec (0.3m/sec)	±0.15% flow for veloc- ities >1 ft/sec ±0.0015 ft/sec (0.0005 m/sec) for velocities <1 ft/sec (0.3 m/sec)
Data Refresh	5 Hz				5 Hz (80 Hz output optional)	
Enclosure Ratings	NEMA 4/IP65	NEMA 4X/IP65, NEMA 7/IP65, NEMA 7/IP66	IP67	NEMA 4X/IP65, NEMA 1/IP40	NEMA 4X/IP65, NEMA 7/IP65, NEMA 7/IP66	
Liquid Tem- peratures	-40° to 250°F standard; -40° to 450°F optional					-40° to 140°F Call for higher temps.
Power Supply	90-240 VAC, 50/60 Hz 30 VA or 9-36 VDC, 12W		100-240 VAC, 50/60 Hz, 30 VA, 9-36 VDC, 12W	90-240 VAC, 50/60 Hz, 30 VA, 9-36 VDC, 12 W 100-240 VAC, 50/60 Hz, 9-36 VDC, 10W 4 hour NiCad battery	90-240 VAC, 50/60 Hz, 30 VA, 9-36 VDC, 12W 90-240 VAC, 50/60 Hz, 15 VA or 9-36 VDC, 10W	
Approvals	UL, ULc, CE	FM, CSA, ATEX, CCOE, INMETRO, GOST	UL, ULc, CE	FM, CSA, CE (fixed) UL, ULc, CE (portable)	FM, CSA, ATEX, INMETRO, GOST	
Prices Start at	\$3722.00	\$4224.00	CALL	CALL	\$8318.00	\$10012.00

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**ULTRASONIC
FLOWMETERS**

35



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**Don't guess how much money's
flowing through your pipe.
Clamp-on and know!**

**Flowmeter
configuration...
there's an App
for that!**

Available on the
App Store

- Measure practically any liquid and gas
- Performance unaffected by viscosity, flow rate, pipe size, solids and aeration content
- High accuracy and repeatability through automatic temperature compensation and zero drift correction
- Install on pipe sizes up to DN9140 (360")

With no moving parts to wear or foul, no need to cut the pipe for installation, and high accuracy WideBeam ultrasonic flow measurement technology, you have nothing to lose.

Siemens' clamp-on ultrasonic flow technology offers several advantages over other flow measurement methods. Transducers mount quickly and easily on the outside of the pipe, so they're ideal for retrofit applications or anywhere corrosive, toxic or high pressure liquids and gases rule out the option of cutting the pipe.

The Transducer is Key

Transducers for Siemens ultrasonic clamp-on flowmeters are available with Doppler and WideBeam transit time measurement technologies, so there's a solution to work in practically any installation.

Doppler operation is suggested for liquids with extensive suspended solids or aeration, and offers up to 2% flow accuracy. WideBeam transit time operation is the preferred mode for relatively homogeneous liquids. Accuracy is up to 0.5% of the flow.

The patented WideBeam technology increases measurement precision by reducing the sensitivity to any change in the medium type or physical properties. The signal-to-noise ratio is optimized by using the resonant frequency of the pipe wall to transmit the sound signal into the media, with the wall acting as a waveguide. This method produces a focused, coherent signal that makes the technology particularly valuable for hydrocarbon and gas applications.

For added flexibility, flowmeters are available that allow switching between Doppler and WideBeam to quickly adapt to varying conditions without changing meters.



Engineering specifications and more available online.

**Learn more about Siemens SITRANS F US
Clamp-On Ultrasonic Flowmeters by visiting
www.Lesman.com/get/SICF.php**

Since the accuracy of a clamp-on ultrasonic flowmeter depends on choosing the right transducer, this is a crucial step in the meter configuration. Siemens offers four types of transducers: universal, universal high temperature, high precision and Doppler. Before deciding on the most appropriate transducer, consider these factors: pipe thickness, diameter and material, liquid/gas type, and amount of aeration.

By evaluating all of these aspects before choosing your final configuration, you are sure that your meter will work exactly the way you want it, right from day one. With flexible configuration options combined with permanent and portable versions, finding exactly what you need has become a lot easier.

Customize your flowmeter by choosing necessary transducers, number of channels and enclosures, or select a complete pre-configured system available for HVAC, power, and hydrocarbon industries.

As a crucial accessory, the clamp-on program also includes an easy-to-use, stand-alone digital ultrasonic pipe wall thickness gauge. Since even the smallest pipe thickness miscalculations can have an impact on accuracy, this high precision gauge is an indispensable flow measurement tool.



SITRANS FUS1010: Versatility and Flexibility

Ultrasonic flowmeters can be used within a wide variety of applications and industries, so they're quickly becoming the metering technology of choice. The versatile SITRANS FUS1010 illustrates this perfectly.

It offers numerous advantages in application adaptability that cannot be matched by any other single flow measurement technology: zero pressure drop, insensitivity to outside noise, high turn-down ratio, interface software, and WideBeam and Doppler modes.

The SITRANS FUS1010 is available in single, dual channel/beam, and four channel configurations plus your choice of three enclosures: NEMA 4X/IP65 wall mount, NEMA 7/IP65 compact, and NEMA 7/IP66 wall mount.

To accommodate more basic applications, the low cost SITRANS FTS020 comes with WideBeam and as single and dual channel versions, allowing either one or two measurement points.



SITRANS FUP1010 Portable Flowmeter for Check Metering and Survey Applications

For applications that don't need constant flow monitoring or pipes where operators need to check the flow against a known or expected value, Siemens offers portable clamp-on ultrasonic flowmeters.

The SITRANS FUP1010 is available with a waterproof IP67 enclosure that makes it ideal for outdoor use. The rugged, impact resistant plastic case simply enables it to withstand rough treatment that would damage most other meters.

SITRANS FUP1010 operates on AC or DC power. It has an internal battery that provides 4 hours of operation and can be recharged in 1.5 hours.

SITRANS F US Clamp-On Ultrasonic Flowmeters



With the dual channel version, switching between WideBeam and Doppler operation for quick adaptation to varying conditions can take place without changing meters. This makes it suitable for any liquid; even those with high aeration or suspended solids. Using the meter's internal datalogger, process history can be recorded and stored or downloaded to a PC or laptop.

Check Metering Kits

If you need a portable meter that needs to be moved often as part of a flow survey or flow check measurement, pre-configured check metering kits are the ideal solution. They can be used for checking the performance and accuracy of any type and brand of flow or energy meter.



Kits come in rugged, weatherproof rolling cases with telescoping handles. The case holds all the equipment — cables, multiple transducers and the ultrasonic flow computer; no need to order extra parts.

Clamp-on ultrasonic check metering kits are available for water and wastewater, oil and gas, and energy industry applications.

Water and Wastewater Application Solutions

Ultrasonic WideBeam transit time and Doppler flowmeters are engineered to measure a wide range of flow applications found in the municipal water and wastewater industries.

They can be mounted on any pipe size and material, and range from simple single meter installations to full flow metering or leak detection systems in large distribution and collections systems plants.

Single, dual or four channel configurations facilitate the installation on a range of applications. Dual channel meters can be set up on two separate applications and provide math functions between the two channels. The same applies for the four channel meter, which can monitor four lines and also has math and multipath functions.

SITRANS FUH1010 for Hydrocarbon Industry Applications

Siemens SITRANS FUH1010 meters are specifically designed to address the needs of the hydrocarbon industry in applications where traditional meters cannot perform.

- Continuous operation with highly aerated liquids
- Flow measurement under a wide range of viscosities
- Easy and quick installation with zero process down time
- High performance under less than ideal flow profile conditions

SITRANS FUH1010 flowmeters are ideal for crude oil, refined petroleum or liquefied gas applications. They are available in single, dual, three or four beam versions and use WideBeam technology for maximum accuracy.

Clamp-on flowmeters for the hydrocarbon industry are available in three different versions. The temperature- and pressure-compensated SITRANS FUH1010 interface detector offers extremely precise interface, crude oil and multi-product identification. It is ideal for scraper "pig" and density indication. The system provides outputs for API number, density, and specific gravity at base temperature and pressure at both reference



and current operating conditions.

The SITRANS FUH1010 for accurate standard volume/mass flow measurement is required for high end application such as varying viscosity liquids and multi-product pipelines. It's also ideal for line balance applications that require normalized volume or mass output.

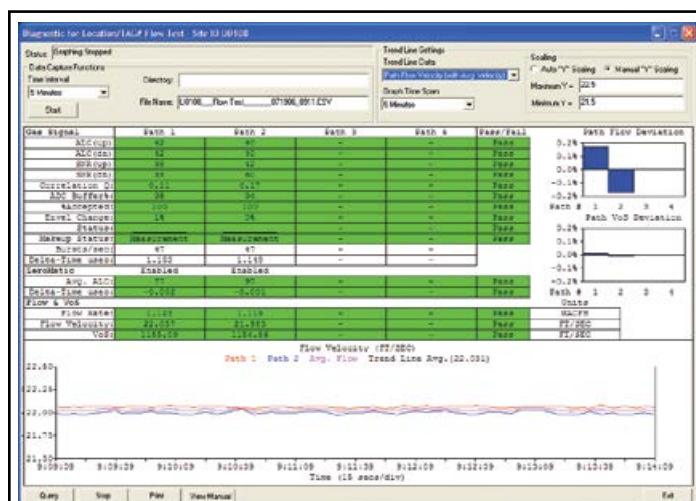
Outputs are available for density and API. For even more precise density compensation, analog inputs from densitometers, temperature sensors, viscometers and pressure transmitters can be used.

SITRANS FUE1010 for Energy and Power Applications

The rugged, high precision SITRANS FUE1010 flowmeter is ideally suited for thermal energy and power applications, and large pipe sizes.

Key applications include high precision revenue grade sub-metering of thermal energy production, chilled or hot water HVAC installations, measurement of ammonia and glycol mixtures, and energy efficiency monitoring of HVAC equipment and nuclear power plants.

As a stand-alone energy meter, the FUE1010 can be used as a remote communication module. Inputs from other data sources are transferred into the built-in data logger, making it easy to time-stamp all data and download it for billing, efficiency and operation analysis.



Flowmeter Software for Diagnostics and Data Analysis

Easy to use DataView software provides diagnostic capabilities, data logging and trending of meter performance. This diagnostic assures calibration and operational integrity. AGA-10 speed of sound calculation is incorporated in the software for speed of sound verification.

An internal AGA-8 table for fixed gas composition is available for standard volume computation. Single, dual, or optional four beam versions are available along with rugged, stainless steel transducer enclosures permit permanent and direct burial installations.

Illinois, Indiana, Missouri, and Iowa
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman
Instruments • Valves • Controls
www.lesman.com • sales@lesman.com

Wisconsin and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

V.01.2019

**ULTRASONIC
FLOWMETERS**

37



Quick Configurations for Popular Models



FUS1010 standard clamp-on flowmeter, NEMA 4/IP65 enclosure. Includes two 0-10 VDC, two 4-20 mA and two 0-5 kHz pulse outputs and four Form C relay outputs, 90-240 VAC power, RS232 Modbus RTU communications.



FST020 basic clamp-on flowmeter, NEMA 4/IP65. Includes one 4-20 mA output per channel and 1 pulse output (single channel model only.) Transducer includes pipe mounting kit. Unit is UL, cUL, and CE approved standard.

Model Selection Guide

Issue all orders to: Siemens Industry Inc,
c/o Lesman Instrument Company

Description		Catalog Number	Price
FUS1010 Standard Clamp-On Flowmeter		7ME3530-	\$4224.00
Channels/Beams	Single Channel	1AA00-	0.00
	Dual Channel/Dual Beam	2AA00-	1040.00
Channel Transducer	No Sensor		0.00
			1776.00
			1776.00
			2352.00
			2569.00
Channel Transducer			990.00
			0.00
			2352.00
Sensor Cable			990.00
			102.00
	1 x PVC-Jacket, 20'	,Z-K01	120.00
	1 x PVC-Jacket, 50'	,Z-K02	132.00
	1 x PVC-Jacket, 100'	,Z-K03	234.00
ID Tag			387.00
			438.00
	1 x PVC-Jacket, 200'	,Z-K05	438.00

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.

Please call Lesman for pricing and availability on portable clamp-on flowmeters.



FUP1010 portable clamp-on flowmeter, IP67 weatherproof, battery powered. Includes RTD mounting hardware and cable, pipe mounting kit and spacer bars for each transducer. Call for high temperature transducers.

Model Selection Guide

Issue all orders to: Siemens Industry Inc,
c/o Lesman Instrument Company

Description		Catalog Number	Price
FUP1010 Portable Clamp-On Flowmeter			\$CALL
Channels/Beams			0.00
			1064.00
Sensor Cable			0.00
			1144.00
			288.00
			190.00
			382.00
Battery Charger			0.00
			176.00
Channel 1 Transducer	No Transducer	0AA0	0.00
	A2 Universal, 3" Track Mount	0BA0	1635.00
	B3 Universal, 5" Track Mount	0CA0	1635.00
	C3 Universal, 13" Mounting Frame	0DA0	2027.00
ID Tag	Stainless Steel, Max 68 Characters	,Z-Y19	95.00

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.

Please call Lesman for pricing and availability on portable clamp-on flowmeters.

Siemens portable clamp-on ultrasonic flowmeters are available to rent for survey metering applications. Call for details.

Model Selection Guide

Issue all orders to: Siemens Industry Inc,
c/o Lesman Instrument Company

Description		Catalog Number	Price
FUS1020 Basic Clamp-On Flowmeter			\$3722.00
Channels			0.00
			0.00
Meter Power			0.00
			0.00
Channel 1 Transducer			0.00
			1651.00
			1799.00
			1799.00
			1858.00
Sensor Cables		__A0	0.00
	1 x PVC-Jacket, 20'	__B0	121.00
	1 x PVC-Jacket, 50'	__C0	133.00
ID Tag	Stainless Steel, Max 68 Characters	,Z-Y19	103.00

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.

Please call Lesman for pricing and availability on portable clamp-on flowmeters.

Program your flowmeter with an iPhone or iPad

SITRANS CONNECTION App for Apple iOS devices enables direct serial communication between an iPhone, iPad, or iPod touch and any SITRANS F US clamp-on ultrasonic flow meter to enhance all meter functions, like programming, operational review, and data logging and download.

SITRANS CONNECTION App makes connectivity possible without needing a laptop PC. It simplifies programming with a full alphanumeric keypad for easier navigation and parameter entry. Plus, it lets you share access to your terminal window with a qualified service technician (Wi-Fi or cellular service required).



How to Order

You can order the SITRANS CONNECTION IOS app through the Apple iTunes store or from Siemens. When you order the software from Siemens, you'll receive an iTunes redemption code. At that point, you can download the app from the iTunes store.

You will need to purchase a Siemens cable kit to connect your Apple device to the Siemens clamp-on ultrasonic flowmeter. Select the cable (or cables) you need based on your flowmeter model.

Flowmeter configuration... there's an App for that!



Model Selection Guide

Description		Catalog Number	Price
SITRANS CONNECTION App			\$0.00
Cable Kit			235.00
			235.00
			235.00
			235.00

Product Lifespan Announcement!
This model has been retired by Siemens and is no longer available for purchase.

Please call Lesman for pricing and availability on portable clamp-on flowmeters.

Compare SITRANS F US flowmeter models on Page 34.

SIEMENS SITRANS LUT440 Open Channel Flow Monitor



- Industry-leading accuracy to $\pm 0.04''$ (1 mm)
- Next generation Sonic Intelligence — improved performance in noisy environments
- Echo profile and trend view on the display for enhanced diagnostics
- Energy-saving algorithms and real time clock help you reduce pump operation cost by avoiding peak energy periods
- HART® communications with access via panel interface, SIMATIC PDM, Emerson handhelds, and web-browser
- Graphical Quick Start Wizards guide you through setup
- Front interface with four-button programming, menu-driven parameters, and Wizard support
- Datalogger records performance and alarm events
- Wall, pipe, and DIN rail mounting configurations
- Removable terminal strips for hassle-free wiring



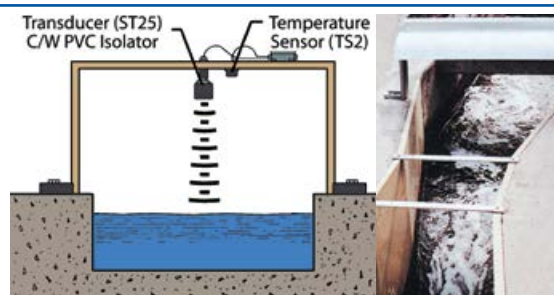
**Replaces
retired
Siemens
Multitronics
OCM-III**

Specifications

Range: 1 to 200 ft, transducer and material dependent
Accuracy: $\pm 0.04''$ (1 mm) plus 0.17% distance; *High accuracy:* $\pm 0.04''$ (1 mm), within 10 feet (3 m) range
Resolution: Greater of 0.1% measured range or 0.08"
Temperature: *Ambient:* -4° to 122°F (-20° to 50°C); *Application:* -40° to 302°F (-40° to 150°C)
Interface: Back-lit LCD; Removable display, operational up to 5 m (16 ft) from enclosure base
Communications: HART®, USB
Programming: Four local push buttons, SIMATIC PDM Emerson AMSTM, web browser (Internet Explorer), Field DeviceTool (DT), Emerson FC375/FC475
Output: *Three relays:* One Form C (SPDT) relay, two Form A (SPST) relays; One 4–20 mA output (active or passive)
Input: Two discrete inputs (0-50 VDC max switching level) with 24VDC bias for contact level device and/or pump interlock; One temperature sensor input for optional TS-3 temperature sensor
Enclosure: Wall/Pipe/DIN Rail mount; 1/2 DIN; Type 4X/NEMA 4X/IP 65, panel mount display IP 54 (Type 3/NEMA 3/IP 54); Polycarbonate. *Use of the knock-out on the blind lid for the panel mount version reduces the electronics enclosure rating to IP 20/NEMA 1.*
Power: AC version: 100 to 230 VAC $\pm 15\%$, 50/60 Hz, 36 VA 10 W; DC version: 10 to 32 VDC 10W
Approvals: *General purpose:* CE, CSAUS/C, FM, UL Listed, C-TICK; *Hazardous location:* CSA Class I, II, III, Div 2 (Groups A–G), CE, ATEX 3D, IECEx, C-TICK

An ultrasonic transducer above the primary device emits a pulse that strikes the liquid target and is reflected back as an echo.

The transmit and return times are converted to digital indications of head, flow rate, and totalized flow.



Ordering Instructions

Select one option from each table section below. A complete catalog number looks like this:
 7ML5050-OC ___ - ___ -Z

Model Selection Guide

*Issue all orders to: Siemens Industry Inc,
 c/o Lesman Instrument Company*

Description		Catalog Number	Price
SITRANS LUT440 Ultrasonic Open Channel Flow Monitor		7ML5050-OC__	\$2123.00
Enclosure Display Options	With Display	A__	149.00
	With remote panel mount display	B__	336.00
	No display (blank lid provided)	C__	0.00
Input Voltage	100 to 230 VAC $\pm 15\%$	_1_	0.00
	10 to 32 VDC	_2_	0.00
Cable Inlet	3 cable inlets, cable glands not supplied	__1-	0.00
Approval	General purpose CE, FM, CSA US/C, UL, C-TICK	1DA0	0.00
	CSA Class I, II, III, Div 2 Groups A-G	1DC0	73.00
Optional Addrs	Manufacturer's test certificate	-Z-C11	31.00
	Stainless steel tag: Max. 27 char plain text	-Z-Y15	48.00
	Preset Namur NE43 failsafe setting - <3.6mA	-Z-N07	47.00
Manuals	Printed English User Manual	A5E33329501	77.00
Accessories	Tag, stainless steel, 0.47 x 1.77", one text line	7ML1930-1AC	53.00
	Panel Mount Cable Extension 2.5 m (8.2 ft)	7ML1930-1GF	64.00
	Cable Glands and Retaining Nuts (3-Pack)	7ML1930-1GB	22.00
	HART Modem, USB	7MF4997-1DB	706.00
	LUT440 Sunshield, 304 Stainless Steel	7ML1930-1GE	263.00

A complete LUT440 system includes:

- 1 LUT440 Controller
- 2 Echomax transducer
- 3 Additional cable lengths, as necessary
- 4 Optional sensor mounting flanges and aiming kits



Call Lesman for available transducers.

Want to add a TS-3 temperature sensor? Call Lesman for pricing.

Honeywell VersaFlow Flowmeters for Any Application

Electromagnetic Flowmeter

- Conductivity down to 1 uS/cm
- Temperatures to 356°F (180°C)
- Available sizes 0.1" to 80"
- Stainless steel flow tube spool with carbon steel or stainless steel flanges
- Standard liner materials: PTFE, PFA, ETFE, hard rubber, and polyurethane
- Electrodes available in 316 stainless steel, Hastelloy C, platinum, titanium, tantalum, carbon, PTFE, and Cermet
- Signal converter offers local display, infrared interface, HART communications, four isolated outputs
- Diagnostics to standards better than requested by NAMUR 2650: 100% flow sensor and converter check, 100% process/application check, 100% linearity/calibration check
- Accuracy to $\pm 0.15\%$ measured value
- Measures flow in any media, from clean liquids to slurries and pastes with high solids content
- Abrasion-, chemical-, and vacuum-resistant



VersaFlow magnetic flowmeter is suitable for measuring applications, including rapidly changing media, pH jumps, large amounts of solids, or pulsating flow. It delivers significant cost savings during planning, procurement, installation, and training.

VersaFlow is wired exactly like a traditional magmeter, but no earth connection to the liquid is required. This reduces the high costs involved with purchasing exotic metal grounding rings or electrodes.

A new virtual reference grounding eliminates the need for grounding electrodes or rings, reducing installation costs and potential leak points. It provides complete isolation with opto-couplers of the flow converter's input amplifier and coil power circuits. The measurement circuit "floats" at liquid's potential, sensing only the induced voltage caused by the velocity of the conductive liquid flowing through the sensor.

A calibrated flow simulator is available for magmeters to troubleshoot converter and other system indicators and controls. It replaces the flow sensor in the system and simulates no-flow and up to five flow rates to troubleshoot flow output issues.

VersaFlow Coriolis Mass Flowmeter



- Flow and purity measurement, density, temperature, and concentration measurement
- Measures from 0.3 to 15,800 lb/minute
- For viscous or shear-sensitive media in applications to 266°F; low flow velocities, products with entrained solids or gas, or products in homogeneous mixtures
- Twin measuring tube sensors with optimized flow divider for minimal pressure loss
- Rapid signal processing, even with product and temperature changes or sudden changes in density
- Available with hygienic process connections and 3A approval

VersaFlow Coriolis measures mass flow, density, volume, temperature, mass, or volume concentration and solids content with a single device. It's the only Coriolis sensor for mass flow in its class with secondary pressure containment standard. It offers a high degree of accuracy, even for problematic applications.

Condensed Specifications

Flow Rate: 0–240 to 0–15800 lbs/min, depending on sensor model

Accuracy: *Liquid:* $\pm 0.15\%$ actual measured flow rate; *Gas:* $\pm 0.5\%$ actual measured flow rate

Density Measuring Range: 25–155 Lbs/Ft³ (400–2500 Kg/m³)

Temperature Measuring Range: -40° to 302°F; *Accuracy:* $\pm 1.8^\circ$ F

Materials: Sensors available in Stainless steel, Titanium, Hastelloy, or Tantalum, aluminum or stainless steel housings

Approvals: FM, CSA, ATEX, 3A (depending on model selected)

VersaFlow Vortex Flowmeter



- Works with conductive or non-conductive liquids, industrial compressed gases
- 0.5" to 12" flanges or 0.5" to 4" sandwich sizes
- Two-wire device with integrated pressure and temperature compensation, plus compensation for saturated steam
- Welded stainless steel construction with high corrosion, pressure, and temperature resistance
- Maintenance-free sensor design
- 4–20 mA, pulse output, HART communication

For measuring superheated and saturated steam, boiler monitoring, compressor output, consumption in compressed air systems, consumption of industrial gases, SIP and CIP processes in the food, beverage, and pharmaceutical industries.

VersaFlow vortex flowmeter provides reliable measurement of operating, standard volumetric, and mass flow of conductive and non-conductive liquids, gases, and vapors, even with fluctuating pressures and temperatures.

Condensed Specifications

Process Medium Viscosity: <10 cP

Accuracy: *Re* ≥ 20000 : $\pm 0.75\%$ for liquids, *Re* ≥ 20000 : $\pm 1\%$ for gases or vapors; *10000* < *Re* < *20000*: $\pm 2\%$ for liquids, gases, or vapors; *Repeatability:* $\pm 0.1\%$; *Stability:* $\pm 0.1\%$ over 1 year

Approvals: FM: Class 1, Div 1; ATEX: II 2G EEx d ia [ia] IIC T6

For help selecting a Honeywell VersaFlow system for your application, call Lesman at 800-953-7626.

Belt Scale Selection Guide

A typical belt scale system consists of the belt scale, an integrator, and a speed sensor, like the system shown here. Your application requirements will dictate the proper system combination.



Belt scales help maximize the use of raw materials, control inventories, and aid in the manufacturing of a consistent product. Siemens belt scale combine simple, drop-in installation, low maintenance (no moving parts), and repeatable accuracy for productive operation. They show minimal hysteresis, and superior linearity, and ignore side loading. All belt scales shown here feature overload protection for the load cells. When used with approved intrinsic safety barriers, MLC, MCS, MSI, and MMI belt scales can be used in hazardous locations.

For food, light duty, and medium duty industry

Model	Low Capacity (MLC)	Light Duty WD600	Compact (MCS)	Medium Duty (MUS)
Description	Low capacity scale for light belt loading	Light-to-medium duty slider belt scale	Compact, rugged, modular belt scale with stainless steel load cells	Modular, medium-to-heavy duty scale
Application	Product monitoring in fertilizer, tobacco, animal feed pellets and sugar	Process and load-out control for food, chemicals, and tobacco	Aggregate, mining, steel, mobile crushers, weighfeeder retrofits	Process indication in aggregates, agriculture, mining, steel, stackers
Capacity	Up to 50 t/h (55 STPH)	Up to 100 t/h (110 STPH)	Up to 1200 t/h (1320 STPH)	Up to 5000 t/h (5500 STPH)
Belt Width	18" to 48"	12" to 48"	Up to 42" CEMA	Standard duty ≤42", heavy duty ≥48"
Accuracy	±1.0% or better	±0.5 to 1% totalization over 25-100% range	±0.5 to 1.0%, ±2.0 on mobile applications	±0.5 to 1.0%
Approvals	CE, C-TICK, GOST	CE, C-TICK, GOST, Meets FDA/USDA requirements for food	CE, C-TICK, GOST, ATEX, CSA, FM, IECEx	CE, C-TICK, GOST

For heavy duty industry




Model	SITRANS WB300	SITRANS WB310	Single Idler (MSI)	Multiple Idler (MMI)
Description	Heavy-duty, full-frame four load cell belt scales	Heavy-duty, full-frame two load cell, pivoted pan based, belt scale	Heavy duty, high accuracy single idler scale	Heavy duty, high accuracy multiple idler scale
Application	For process and load-out control: Clinker in cement production, mining, iron, and steel	Recycling industries, tough applications from sorting to production monitoring	For process and load-out control in cement, chemicals, steel, aggregate, food, and mining	For critical process and load-out control in cement, chemicals, steel, aggregate, food, and mining
Capacity	Up to 5000 t/h (5500 STPH)			Up to 12000 t/h (13000 STPH)
Belt Width	24" to 72"	54" to 72"	18" to 96"	18" to 96"
Accuracy	±2.0% or better	±5.0% or better	±0.5% or better	±0.25% or better
Approvals	CE, RCM	CE, RCM	CE, C-TICK, GOST, SABs, Measurement Canada, OIML, MID, ATEX, IECEx, CSA, FM, CMC	

Learn more about Siemens bulk solids flow products at www.Lesman.com.

Bulk Solids System Components

Speed Sensors for Siemens Belt Scale Systems

Speed sensors operate in conjunction with a conveyor belt scale, providing a signal to an integrator for calculation of belt speed, flow rate, and totaled weight.

Model	 Milltronics RBSS	 SITRANS WS300	 Milltronics TASS
Description	High resolution, wheel-driven return belt speed sensor	Low- to high-resolution, shaft-driven speed sensor	Compact low-profile, wheel-driven return belt speed sensor, ideal for use on mobile crushers and in constricted spaces
Function	Provides a signal generated as the wheel on the sensor rotates on the return belt; Accurate belt speed detection	Converts shaft rotation into a pulse train of 32, 256, 1000, or 2000 pulses per revolution using high-precision rotary optical encoder; Suitable for low or varying shaft speeds	Operates with a conveyor belt scale, providing signals to an integrator to compute the rate of material being conveyed.
Construction	IP65 rated rugged design, CE approval	NEMA 4X/IP65; CE, CSA, FM, ATEX approvals	IP67; CE, RCM, GOST-R

See page 42 for full details on Siemens Milltronics integrators for belt scales, weighfeeders, and bulk solids flowmeters.

Milltronics MWL Weight Lifter for Siemens Belt Scales

- Can be used with new and existing applications
- Safe and easy application of belt scale reference weights, with the operator remaining outside the conveyor
- Easy-to-store drive handle that can be applied to left or right side of MWL
- Low profile fits easily into belt conveyor
- Security pin ensures safe weight storage

Milltronics MWL Weight Lifter is a mechanical calibration weight lifter for MSI, MMI, MBS, MCS, and MUS belt scales.

Milltronics MWL mechanically raises and lowers the static weights and then stores the weights securely above the belt scale calibration arms, and allows the operator to lower and apply them safely without having to lean into the conveyor.

The MWL is manually operated, and uses a high mechanical advantage to enable weights up to 750 lbs to be applied with limited effort. The crank handle uses twelve rotations for full range of motion, and can be removed and stored for safety with the locking ball-pin that secures the MWL when it is not in use.

Two lifting arms support a base-bar weight above the test-weight brackets of the belt scale: either flat bar or round bar style calibration weights are applicable. Locating notches in the base-bar weight engage the calibration weights securely on the lifting arms in the stored position, and the gear drive locks the lifting arms in place.

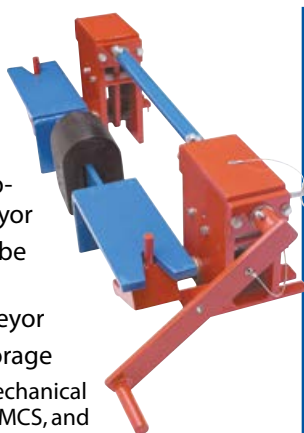
Specifications

Application: Span calibrations on belt conveyors

Components: Left-handed or right-handed crank body, each connected to a lifting pad with guide pin; Torque tube to connect left and right crankshafts; Crank handle that mounts to either the left or right input shaft; U-clamp to secure flat bar calibration weights; Optional base bar with integrated round bar weight or to support other types of calibration weights; Optional shaft extension adds 4" (102 mm) to handle shaft length

Crank Arm: Mechanical advantage 20:1, 12 revolutions required for raising or lowering

Approvals: Compliant with Directive 98/37/IEC, CE, C-TICK



WD600 Slider Bed Belt Scale

- Unique weighing mechanism design with low friction and long weigh area for increased retention time, resulting in higher accuracy and reliability
- Ultra-sensitive parallelogram style load cells (nickel-plated alloy or stainless steel) provide precision weighing accuracy
- Drop-in weighbridge for quick washdown and maintenance

Milltronics WD600 is a light- to medium-duty slider bed belt scale used for process and load-out control in manufacturing. Its corrosion resistant WD600 components are durable and virtually maintenance-free.

WD600 works with an existing flat belt conveyor and a Siemens integrator. As material is moving along the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended weighbridge to the load cells. WD600 reacts only to the vertical component of the applied force.

Specifications

Typical Applications: Monitor feed rates and blending in cereals, seeds, minerals, wet foods, or powder additives into a process

Measuring Principle: Heavy duty strain gauge load cells measuring load on a belt conveyor

Temperature: Material: 150° F (65° C) max.; Operating range: -40° to 150° F (-40° to 65° C); Compensated range: 15° to 105° F (-10° to 40° C)

Capacity: Up to 18 t/h; Nickel-plated load cells: 10, 15, 20, 30 kg; Stainless steel load cells: 6 kg, 25, 50 lbs; Overload: 150% of rated load cell capacity

Belt Width: 12", 18", 24", 30", 36" or 48" (300 to 1200 mm)

Accuracy: ±0.5% to 1% totalization over 4:1 operating range, application dependent

Construction: Stainless steel with UHMW slider pads, nickel-plated alloy steel or stainless steel load cells.

Output: Two mV/V or three mV/V, depending on load cell version; Non-repeatability: 0.01% of rated output; Non-linearity: 0.02% of rated output

Compatible with: Milltronics BW100 and BW500 integrators, or SIWAREX FTC weighing module (for integration directly into PLC system)




Weighfeeder Selection Guide

SIEMENS



Ultra-sensitive load cells provide precision weighing accuracy, improving blend consistencies, accountability, and record-keeping. Weighfeeders are indispensable when automated production processes require continuous in-line weighing and feeding. Depend on these weighfeeders to deliver fast, reliable, and uninterrupted service. The virtually maintenance-free construction promises unmatched performance.

Milltronics weighfeeders come standard with belt weigh bridge and speed sensor. Flanged belting is available on all models. Belt sizes and widths are made to measure for your specific application. Complete your weighfeeder system with a Milltronics integrator.

Model	 SITRANS WW100	 SITRANS WW200	 SITRANS WW500
Description	Light duty, high accuracy, low capacity for minor ingredient additives	Medium duty, low to medium capacity for minor ingredient additives	Heavy duty, high-capacity apron weighfeeder for applications in extremely harsh environments
Typical Applications	Control and monitor feed rates and blending in bulk chemicals, tobacco, food, and water treatment	Control and monitor feed rates and blending of minerals or powdered additives into a process	Industrial applications in steel, cement, or other heavy duty industries that convey clinker, granulated blast furnace clag or petroleum coke
Capacity	100 lbs/hr to 20 STPH 45 kg/hr to 18 t/hr	100 lbs/hr to 110 STPH 45 kg/hr to 100 t/hr	11 to 2200 STPH 10 to 2000 t/hr
Belt Width	9" to 12"	12" to 36"	Up to 98"
Motor Size	0.25 HP	0.33 HP or larger	0.75 HP
Belt Speed	1 to 40 FPM		2 to 50 FPM
Accuracy	±0.25% to 0.5%	±0.5% or better	±2% or better
Sensing Element	Platform weighbridge, single load cell	Platform weighbridge, dual load cell	Load cells
Construction	Mild steel or stainless steel		Mild steel
Features	Belts for specific applications, sanitary version available	Custom units for special application needs, belts for specific applications	Custom gate sizes available, limit switch, position sensor
Approvals	CE, Meets USDA and FDA requirements for food processing		—
Learn more	Fill out the application datasheet at www.Lesman.com/datasheets/ and send it to Lesman for an engineering review.		

Integrators for Belt Scales, Weighfeeders, and Solids Flowmeters

Electronic integrators process sensor signals into operating data for continuous in-line weighing and flow measurement. They can perform basic control functions, like PID and batch control, traditionally handled by higher level devices. Easy to install, commission, operate, and maintain, Milltronics integrators from Siemens incorporate patented electronic load cell balancing to perform basic and sophisticated level and flow control functions.

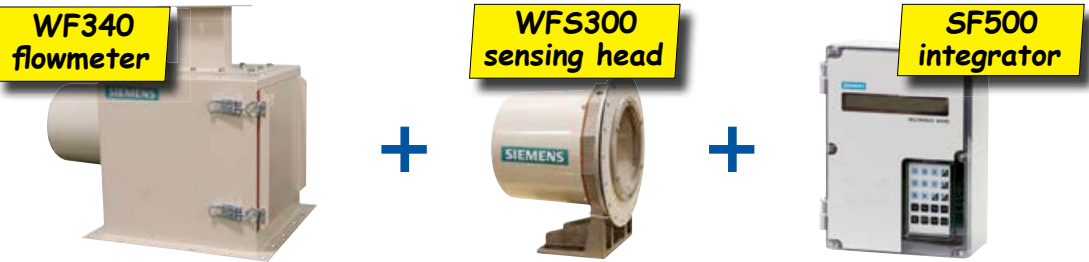
Siemens Dolphin Plus software can be used for quick and easy configuration. Optional modules for Allen-Bradley Remote I/O, Profibus DP, and DeviceNet can provide direct digital communications with your plant control system.









Model	Milltronics BW500/L	Milltronics BW500	Milltronics SF500
Description	Basic integrator for belt scale applications	Full feature integrator for use with both belt scales and weighfeeders	Full feature integrator for use with solids flowmeters
Compatible with	MLC, MUS, MCS, MSI, and WD600 belt scales	MLC, MUS, MCS, MSI, MMI, WD600 belt scales, WW100, WW200, and WW300 weighfeeders	SITRANS WF100, WF200, WF250, WFS300, and WFS320 solids flowmeters
Display Output	Rate, totalized weight, belt loading, and belt speed	Rate, totalized weight, belt loading, belt speed, PID, and batching	Rate, totalized weight, PID, batching
Alarm Relay	Two programmable SPST Form A contacts rated 5 amp @ 250 VAC	Five programmable SPST Form A contacts rated 5 amp @ 250 VAC	
Options	PROFIBUS DP, Allen-Bradley Remote I/O, DeviceNet, ProfiNet IO, Modbus TCP/IP, or Ethernet I/P industrial communications	Two additional analog inputs, two outputs programmable for PID control, Profibus DP, AB RIO, DeviceNet, ProfiNet IO Modbus TCP I/P, Ethernet I/P industrial communications	
Approvals	CSA, FM, CE, C-TICK, GOST	CSA, FM, CE, C-TICK GOST, NTEP, OIML, MID, Measurement Canada	CSA, FM, CE, C-TICK, GOST

Choosing the Right Solids Flowmeter

A typical solids flowmeter system consists of the flowmeter, sensing head, and an integrator, like the system shown here. Your application requirements will dictate the proper system combination.



Solids flowmeters enhance process control, contributing to improved quality of your end product and a positive bottom line. These heavy duty, low maintenance solids flowmeters provide continuous in-line weighing of dry bulk solids, free-flowing powders, or granular material. All models produce accurate, repeatable results, and can be used for critical functions like batch load-out and blending. All models are totally enclosed and dust-tight, and are constructed of painted mild steel. Stainless steel and hazardous area classification models are also available.

Strain Gauge Load Cell-Based Flowmeters			
	SITRANS WF100	SITRANS WF200	SITRANS WF250
	Description	Low to medium capacity flowmeter for various product sizes, densities, and fluidities in restricted spaces	Medium to high capacity flowmeters for various product sizes, densities, and fluidities
	Typical Applications	Monitoring food ingredients, pet food blending, plastic pellet production, silica sand in glass making	Grinding mill rejects in cement, load-out of grains and seeds
LVDT-Based Flowmeters			
	SITRANS WF330	SITRANS WF340	SITRANS WF350
	Description	Low to medium capacity flowmeter for various product sizes, densities, and fluidity, particularly fine powders	Compact, vertical flow, low to medium capacity flowmeter for various media sizes, densities, and fluidity, like fine powders
	Typical Applications	General purpose for most pre-feed applications: Fly ash, lime dosing, cement flow and control, flour stream monitoring	Designed for applications with tight space requirements: Fly ash load-out, lime dosing, and gypsum flow
Capacity		0.2 to 3000 t/h (0.2 to 330 STPH)	
Particle Size		0.25" to 0.5" max.	
Sensing Heads		Compatible with SITRANS WFS300 (0.5" particles, 0.2–40 t/h) or SITRANS WFS320 (1" particles, 20–300 t/h)	
Approvals		CE, C-TICK, GOST, CSA, FA, ATEX, IECEx, stainless steel options for meeting FDA and USDA requirements for food processing.	

Fill out the application datasheet at www.Lesman.com/datasheets/ and send it to Lesman for an engineering review.



Dispensing Valves for Bulk Solids

VIDOS Vibration Dosing Valve



- For dosing and discharging of solids materials in food and beverage, power, and pneumatic materials handling applications
- Resilient seated wafer-type butterfly valve for semi-corrosive media
- Linear vibration tip helps minimize product buildup on the disc
- 6" to 16" nominal diameters
- 145 PSI max operating pressure
- 14° to 392° F temperature range, depending on pressure, medium, and valve material
- One piece disk and shaft
- Stainless steel split body with stainless steel screws
- NBR or EPDM seals
- Triple shaft bearing
- Mirror polished disc sealing surface
- Seal materials can meet FDA or EC 1935/200 standards

INFLAS Inflatable Seat Valve



- For bulk goods, foods, pneumatic conveying systems, and weighing
- Extremely low wear of parts even in contact with abrasive media
- Reduced torques enable the use of lower-sized actuators
- Low grinding or clamping of sensitive media between the disc and liner
- Precision-machined bodies for perfect seating of the liner and precise shaft positioning
- Multiple bearings in the shaft provide optimal guidance, even after years of use
- No contact corrosion
- Mirror polished sealing surfaces guarantee low torque and tightness
- Continuous forming lobe fits perfectly in the groove of the body, stabilizing the liner
- Double-sided profiles ensure sleeve-body engagement in the outer body recess

FS-M Impeller Valve



- For shut-off and control of product streams in the bulk powder and solids industry, like blending plants, silos, granulates handling, and weighing technologies
- Can be installed in any position for the safe and consistent discharge of rapidly flowing product
- Noticeable reduction of demixing during discharge
- No compaction or levigation of products during charge or discharge
- Available in 6" to 16" sizes
- Maintenance-free operation
- Stainless steel body and impeller with ASME Class 150 flange
- Optional stop in zero (sealing) position, rotation speed control, hardened rotary valve, and right/left indication



Free Online Learning 24/7/365

Learn more about dispensing valves for bulk solids and powders by watching our free webinar recording at www.Lesman.com/train/.

Learn how to...

Solve caking issues in silo discharge

Achieve precise volume control in solids applications

Prevent air blockage in pneumatic conveying

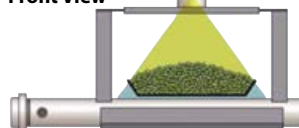
Handle abrasive or sensitive media

Radiometric Weighing System for Bulk Solids Mass Flow

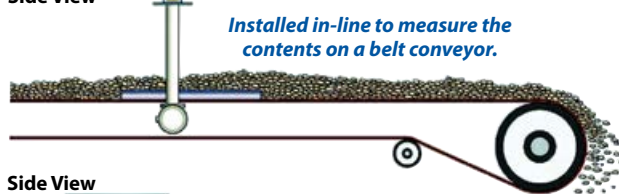


Typical Radiometric Weighing System Installations

Front View

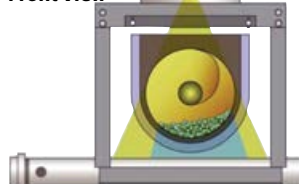


Side View

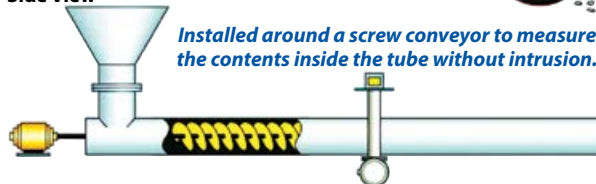


Installed in-line to measure the contents on a belt conveyor.

Front View



Side View



Installed around a screw conveyor to measure the contents inside the tube without intrusion.

Features

- Not affected by dust, moisture, high temperatures, variable or constant speed conveyors, build-up on belt or screw
- Automatically compensates for buildup on belt or screw
- Suitable for corrosive, abrasive, or toxic materials
- Single computer, compatible with all Ronan detectors, expandable to accurately measure the most complex processes
- Multiple user-configurable outputs
- Auto-zero on empty conveyor
- Proprietary filtering technology provides excellent measurement reliability
- No component wear, low maintenance

Ronan's X96S non-contact weighing system is an economical approach for solids weighing on belt and screw conveyors. It is designed to deliver outstanding performance in a wide range of difficult applications and process conditions, including dangerous materials like caustic, toxic, corrosive, explosive, and carcinogenics, regardless of their temperature. The modular design is ideal to upgrade older systems while keeping the existing sources.

Each system consists of a gamma source, frame, detector and measurement control computer. The gamma source, typically mounted on the top of the frame above the conveyor belt or screw, emits gamma energy through the material, collimated in a direction towards the detector mounted on the bottom of the conveyor. The mass of material on the conveyor attenuates the gamma energy. The amount of energy reaching the detector is inversely proportional to the mass on the conveyor. The detector measures the level of energy and sends a proportional signal to the X96S controller that linearizes, filters, and correlates this signal to a weight and rate measurement.

The entire system is mounted external to the conveyor and can be installed by simply bolting the frame around the conveyor, without the need to make any costly modifications to the conveyor itself. The lightweight, compact design enables it to be located in areas where space is a limitation and without the need for additional supports or foundations.

Source Holders

Ronan ultra-low level nuclear measurement sources improve safety and eliminate the requirement for surveys, wipe tests, inspections and much of the documentation. They are so safe, the NRC permits their removal and installation without a licensed person being present, translating into significant cost savings for the user.

The RLL-1 ultra-low radiation source utilizes very small quantities of radioactive materials. Because of these very low-levels of activity, and their simplicity of design, Ronan systems are the safest gamma gauges on the market.

RLL-1 Specifications

Temperature Limit: 455°F standard, 800°C for 20 minutes fire-resistant option

Collimation: Beam pattern up to 45°

Maximum Source Size: RLL-1: Multiple capsules; Up to 0.9 mCi CS-137; Up to 0.2 mCi Co-60; RLL-1A: Single capsule; Up to 0.09 mCi CS-137; Up to 0.01 mCi Co-60

SA-1 Specifications

Temperature Limit: 300°F

Collimation: Beam Pattern up to 37°

Maximum Source Size: 5 Ci CS-137, 18 mCi Co-60

Radiation Fields: Meets all international standards for surface radiation limits



X96S Process Measurement Controller

Ronan X96S controllers feature the fastest processors in the radiometric gauging industry. The modular design allows for low-cost expansion of outputs and measurement variables. Calibration and configuration is easy, and can be performed locally through push buttons on the front-face display, or remotely using HART®, Foundation Fieldbus or Profibus PA communications.

X96S Specifications

Accuracy: ±1% span

Inputs: Pressure: 0-10V or 4-20 mA; Temperature: Nickel or Platinum RTD; **Digital:** Up to 8 digital inputs that can be individually configured as dry or live contacts, quadrature, encoders, or pulse counters

Communications: HART 4-20mA, Foundation Fieldbus™, PROFIBUS PA

Outputs: Up to 4 Form C relays, Up to 4 isolated open collector outputs capable of switching 4.5-30V; RS-232/RS-485 optional

Diagnostics: On-board modular self-test watchdog timer and status LEDs

Power Supply: 24 VDC @ 0.035 A

Housing: NEMA 4 standard; Optional stainless steel or explosion-proof

Approvals: CSA Class 1, Div 1 Groups A-D; NEMA 4, NEMA 4X; Complies with Cenelec/ATEX

[Learn More at Lesman.com](http://Lesman.com)

WIKA Fluidic Techniques Differential Pressure Flowmeters



HHR FlowPak dP Flowmeter

- Accuracy to $\pm 0.5\%$
- No upstream or downstream piping requirements
- Suitable for liquids and gases, even in high temperatures and high pressures
- Low permanent pressure loss for energy efficiency and low operating costs

Designed from the innovative velocity profiling technology of a translineal flow plate and the field-proven performance of the WIKA FTI HHR Flow Tube, the HHR FlowPak differential pressure flowmeter consistently outperforms other flow measurement technologies in the most demanding flow environments.

There are no limitations to flow measuring applications for the HHR FlowPak. They can be used in natural gas, most chemicals, gasoline, oil, hydrogen, oxygen, and LNG. The HHR FlowPak meets the toughest flow measurement challenges — high temperature, high pressure main stream, and high pressure boiler feedwater, petrochemical, power plants and offshore platforms.

High Accuracy, Proven Performance

The HHR FlowPak delivers proven performance based on extensive laboratory and field testing. See here how it compares to a standard annular orifice flowmeter.

Feature Comparison	HHR FlowPak	Annular Orifice Flowmeter
Uncalibrated Accuracy	$\pm 0.5\%$	Typically Requires Calibration to Determine
Coefficient Discharge	0.985	0.75–0.85
Permanent Pressure Loss	15–20%	Varies with Beta and DP Typically 25–75%
Repeatability	$\pm 0.1\%$	$\pm 0.1\%$
Piping Requirements	0 Diameter Upstream and Downstream	0–3 Diameters Upstream 0–1 Diameters Downstream
Flow Ranges	Infinite*	10:1 and greater
Line Sizes	3" to 36"	1/2" to 120"
Number of Tap Sets	4+ Sets	1 Set
Standard Beta Ratios	0.4–0.75	0.45–0.85
Configurations	Flanged, Weld-In	Flanged, Weld-In, Wafer, Saddle

* Limited only by lower boundary of Reynolds Number

Line Size	Pipe ID (In.)	Beta Ratio	Overall Length
3	3.068	0.7	18
4	4.026	0.7	22
6	6.065	0.7	32
8	7.981	0.7	42
10	10.02	0.7	52
12	12	0.7	60
14	13.25	0.7	68
16	15.25	0.7	78
18	17.25	0.7	86
20	19.25	0.7	96
24	23.25	0.7	114

Empirical data from Alden Research Laboratory show the coefficient of discharge of the HHR FlowPak to be constant, independent of Reynolds Number, and within $\pm 0.5\%$ of the predicted value, even when installed directly after two elbows out of plane. This eliminates the need for calibration testing to characterize the coefficient and accuracy of each individual meter. When you need a higher degree of accuracy, the HHR FlowPak can be NIST certified.

The HHR FlowPak provides superior energy efficiency. Low permanent pressure loss (PPL) equates to energy efficiency and reduced operating cost. The HHR FlowPak has a lower permanent pressure loss than the orifice plate, annular orifice, flow nozzle or wedge meter. In an orifice plate the flow impacts with an abrupt surface, typically resulting in a PPL of 2 PSIG.

The HHR FlowPak has a smooth, contoured, obstruction-free entrance with a pressure recovery cone for enhanced pressure recovery. In many cases, the recurring operating cost savings offered by the HHR FlowPak in applications with high pressure, high temperature steam can actually pay for itself in a short period of time.

Installation Versatility

The unique design ensures that a flow velocity profile is well developed and properly defined prior to measurement.

Fluidic Techniques has conducted extensive performance testing on the HHR FlowPak at Alden Research Laboratory using two close coupled 90° elbows out of plane immediately before and after the meter. Test results show high accuracy and performance with **no additional upstream or downstream piping**, even in disturbed flow applications. This assures installation versatility in tight piping systems, whether new construction or retrofit. This can result in significant cost savings in larger, more expensive line sizes.

The HHR FlowPak adapts to the tightest piping systems without compromising performance. When governing codes increase upstream piping requirements, Fluidic Techniques designed the solution.

Learn more at www.Lesman.com

Other Products Available at Lesman

SIEMENS SITRANS LR250 Encapsulated Radar Level Transmitters



- Flanged encapsulated antenna (left) for corrosives and harsh media; Hygienic encapsulated antenna (right) for sanitary level applications
- 25 GHz high frequency
- Measuring range 2" from end of horn to 65 feet (50mm to 20m)
- Insensitive to mounting location and obstructions, and less sensitive to nozzle interference
- Advanced signal processing for reliable measurement and automatic false echo suppression of fixed obstructions; Graphical local interface displays echo profiles and diagnostics
- Standard with 4-20 mA and HART® 7.2 output
- FM/CSA approved, SIL-2 rated



Honeywell New SmartLine Improves Transmitter Performance!

- Fully modular! Alphanumeric display can be added or removed in the field, no need to remove the transmitter from service to swap modules or replace parts
- Stabilities to $\pm 0.01\%$ upper range limit per year for 5 or 10 years (series-dependent)
- Standard accuracies improved to $\pm 0.0375\%$
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- Automatic static pressure and temperature compensation
- External zero, span, and configuration capability
- Compliant to SIL 2/3 requirements
- Speed of response three times faster than retired ST3000 pressure transmitters — As fast as 80 mSec
- Display PV, bargraphs, trend lines, and text messages for diagnostics and maintenance
- Honeywell DE, HART v7.0 and Foundation Fieldbus communications

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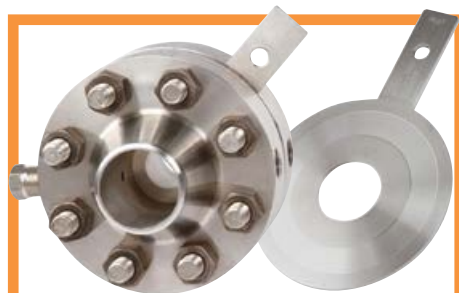
Due to contractual agreements with our manufacturers, some items in this catalog may not be available in all geographic areas or markets.



No Wait, No Downtime!

Differential pressure smart transmitters for flow applications in stock at Lesman, ready to ship same day!

See page 27.



Primary Flow Elements

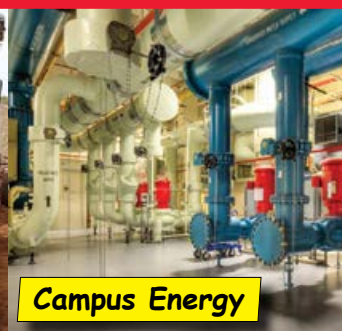
From venturi flow tubes, orifice plates and flange unions to flow nozzles and meter runs, Lesman has the best flow element to fit your application.

Learn more on page 20.

We Measure Flow Anywhere



Conveyors



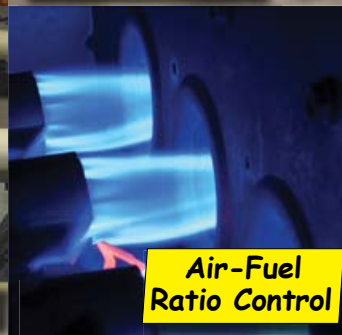
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