

Solids Flowmeters

Continuous In-Line Weighing



 **MILLTRONICS**
Mass Dynamics Division



Accurate Continuous In-Line Weighing Of Dry Bulk Materials

Competitive industries worldwide find they improve the quality of end product, increase operating efficiency and make significant cost savings with Milltronics' solids flowmeters in their process.

Continuous in-line weighing of dry bulk solids requires accurate, repeatable measurement. Milltronics' flowmeters consistently meet these requirements. Operating in conjunction with the appropriate integrator, they provide an economical display of flow rate, totalized flow and alarms.

Low Maintenance

Low maintenance is standard with all models. The rugged construction is designed to require nothing more than occasional visual inspection for operation in demanding industrial environments. For extremely abrasive applications, optional wearliners are available for both the stainless steel plate and the flowguide.



Customer Service

You can depend on Milltronics for quality performance. Anticipating and meeting industry needs is the basis of our success. In developing advanced and effective process measurement equipment, Milltronics' engineers and sales and service personnel work closely with industrial customers worldwide. To ensure your satisfaction, all Milltronics systems include extended guarantees.

Applications

Milltronics solids flowmeters monitor dry bulk materials in sizes from powders to granules more than 25mm (1 in.) in diameter. Handling flow rates from 200 kg/h to 2000 t/h (440 lb./hr to 2200 STPH). Material density runs from puffed wheat to iron ore while fluidity covers the spectrum from fluidized powder such as flyash to sluggish flowing material such as lathe turnings. Typical materials monitored include: cement, sand, coke, coal, lime, wheat, rice, flour, sugar, feed meal, woodchips and plastic pellets.



Solids Flowmeter Benefits

- No Zero Drift eliminates frequent re-calibration
- Compact sizes for areas with limited room
- Enclosed designs ensure dust-tight installations, essential when transporting substances hazardous to health, and in applications requiring housekeeping.
- Using material samples, these flowmeters can be calibrated to $\pm 1.0\%$ accuracy and provide $\pm 0.2\%$ repeatability.
- Millflo series operate in temperature ranges to 65°C (150°F). Standard E-Series flowmeters tolerate product temperatures to 232°C (450°F).
- With customized models, temperatures may range to 400°C (750°F).



Millflo

- Low Cost
- Maximized Reliability
- Simple Installation
- Mechanical Overload Stops

Continuous in-line weighing is simplified with Milltronics unique, field proven Millflo solids flowmeters. Low cost, maximized reliability and simplified installation are reasons to select this technology when the specifications meet your needs.

The design of the Millflo is based upon a single point parallelogram suspension featuring a patented sensing mechanism which maximizes performance. Using a state of the art proprietary loadcell, Millflo provides superior repeatability and the greatest accuracy available in flowmeter technology.

The compact design makes Millflo ideal for installation where headroom is limited or where space is otherwise restricted. It is the most easily installed solids flowmeter available.

The Millflo is versatile in application. It is available with five inlet sizes for full-scale flow rates from 1 to 230 t/h (1 to 250 STPH), dependent on the material bulk density.

The rugged housing is constructed of painted steel with a stainless steel sensing plate. Options include a stainless steel unit and sensing plate coatings for abrasive or sticky materials.

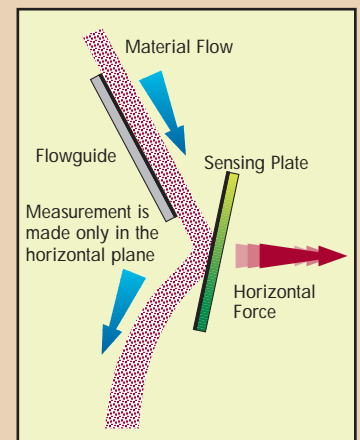
For truly reliable information at an affordable price, Millflo has proven to be an effective choice worldwide.

How It Works

The principle of operation is simple - dry bulk material enters the flow guide producing a mechanical deflection as it strikes the flowmeter's sensing plate; it then continues on through the process unhindered, ensuring no disruption in the process or production.

The horizontal force of this deflection is converted into an electrical signal, monitored and processed by the associated electronic integrator, which instantaneously displays the flow rate and integrated total weight.

Since only the horizontal force is measured, vertical force due to material build-up in the non-impinging area, has no effect. There is no zero drift and the need for frequent recalibration is eliminated.



E-Series

The totally enclosed E-Series flowmeters locate the weighing mechanics externally where they are unaffected by corrosive, abrasive or hot materials.

With only the rugged sensing plate in the process, product temperatures can range up to 232°C (450°F).

The basis of E-Series design is the linear voltage differential transformer (LVDT). These units use a range spring to provide opposing force to the flow of material, and a viscous fluid damper to smooth the movement of the sensing plate. This feature reduces the effects of pulsating flow or surge so that smooth flow indication and easy process control are assured. The weighing mechanics have built-in overload protection.

The flowguide and the flowmeter enclosure, with a full opening access door, are of painted mild steel. Stainless steel is optional.

The E-Series also includes models to meet specific requirements for applications with air slides and vertical flow guides.



M-Series

Special control of measurement for high rate applications is assured with the M-Series unique weighing suspension. It is made up of two load cells and two stainless steel cables. With this design, materials can be guided to any point on the sensing plate while maintaining constant moments of force.

In the event of side to side variations of flow, and changes in depth, accuracy and repeatability remain constant.

Integrator Options To Suit Your Needs

Milltronics' flowmeters operate in conjunction with one of a series of micro-processor based integrators which provide information in the format you require. These integrators indicate flow rate and totalized weight of bulk solids material on easy-to-read displays.

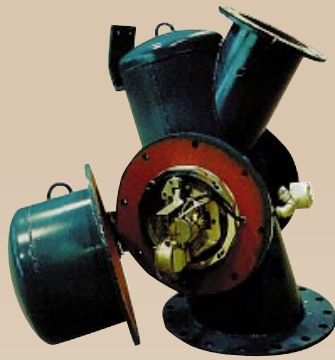
Milltronics' integrators feature push button calibration and operation, with automatic calibration through keypad data entry. Access protection to safeguard calibration is standard on all integrators, with memory protection giving extra data security.

Data is displayed in standard engineering units.



Specialized Applications

Milltronics has pre-engineered enclosures and flowguides for various specialized prefeed applications.



C40 Coal Scale

The C40 is designed to NFPA Code 8503 specifications for metering of pulverized coal.



MA-500/900

The MA is designed for high flow rate, aerated gravity conveyor applications.



A-Series

Designed for use with aerated gravity conveyors.



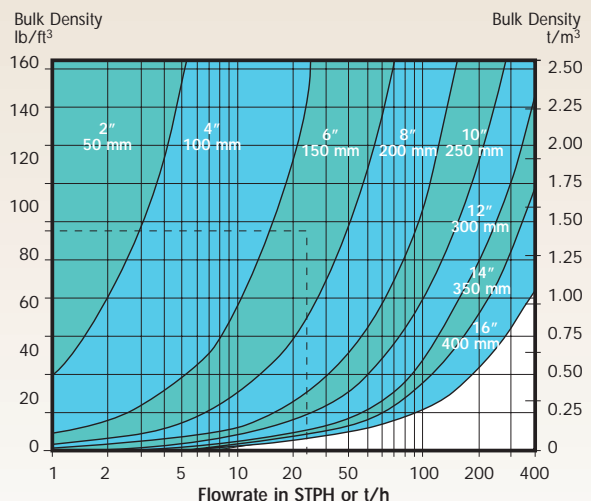
Stainless Steel E-Series

The stainless steel E-Series is designed for sanitary or food applications.



V-Series

The V-Series is designed specifically for use where available headroom is minimal.



Example: 25 STPH of material at 90 lb/ft³, the selection is a 6 in. size flowguide.

Circular Flowguide Selection Chart

Specification

MILLFLO

Maximum

Inlet Size	Capacity/Range t/h STPH	Particle Size mm (In.)
100 mm/4 in	1-14 1-15	6 (1/4)
150 mm/6 in	4-35 5-40	10 (3/8)
200 mm/8 in	18-80 20-90	10 (3/8)
250 mm/10 in	45-135 50-150	13 (1/2)
300 mm/12 in	90-230 100-250	13 (1/2)

Note: Flow ranges are calculated at 1.6 t/m³ (100 PCF)

Construction: Painted steel with stainless steel sensing plate (optional stainless steel housing).

Max. Material Temp: 65°C (150°F).

Types of monitored material: powder or granular to 13 mm (1/2 in.)

Accuracy: ±1.0% over 0.3 to 1.0 of design capacity.

Repeatability: 0.2%

Electronic Options: Milltronics Integrators

For applications in hazardous areas, intrinsically safe barrier strip packages are also available.

E-SERIES

Maximum Capacity Range*	E-40 0.2-40 t/h (0.2-44 STPH)
Maximum Particle Size	13 mm (0.5 in.)
Maximum Product Temperature	232°C (450°F)

Volumetric Capacity 37 m³/h (130 CFH)
Accuracy: ±1.0% over 0.3 to 1.0 of design capacity.
Repeatability: ± 0.2 % of rate

E-300

Maximum Capacity Range*	E-300 20-300 t/h (22-330 STPH)
Maximum Particle Size	25 mm (1 in.)
Maximum Product Temperature	232°C (450°F)

Volumetric Capacity 283 m³/h (10,000 CFH)

Construction: Painted mild steel enclosure, cast aluminium sensing head, fibreglass instrument cover and stainless steel sensing plate.

Optional certification for class I, Groups C & D; Class II, Groups E, F and G applications.

* Based on a material density of 1.6 t/m³ (100 PCF)

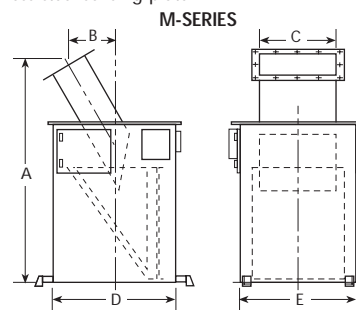
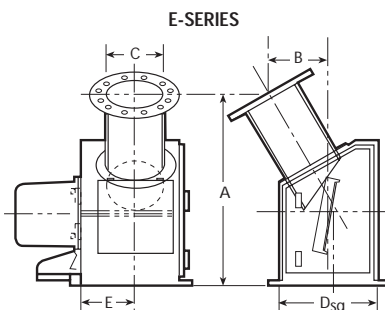
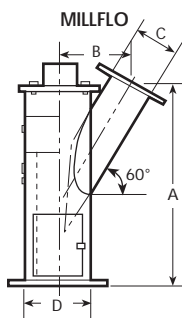
M-SERIES

Maximum Capacity Range	M-500 200-500 t/h (220-550 STPH)	M-900 400-900 t/h (440-990 STPH)
Maximum Particle Size	25 mm (1 in.)	25 mm (1 in.)
Maximum Product Temperature	150°C (300°F)	150°C (300°F)
Volumetric Capacity	450 m ³ /h (16,000 CFH)	820 m ³ /h (29,000 CFH)

Accuracy: ±1.0% over 0.3 to 1.0 of design capacity.

Repeatability: ± 0.2% of rate

Construction: Enclosure-painted mild steel, removable cover; sensing by precision strain gauge load cells supporting a stainless steel sensing plate.



SIZE	A	B	C	D
100 (4)	597 (23.5)	203 (8)	108 (4.26)	162 (6.36)
150 (6)	838 (33)	254 (10)	162 (6.36)	212 (8.33)
200 (8)	1168 (46)	356 (14)	212 (8.33)	315 (12.39)
250 (10)	1321 (52)	406 (16)	265 (10.42)	343 (13.5)
300 (12)	1575 (62)	483 (19)	315 (12.39)	394 (15.5)

Nominal Dimensions in mm (inches)

Type	A	B	C	D	E
E-40	914 (36)	279 (11)	51 (2)	457 (18)	254 (10)
			102 (4)		
			152 (6)		
			203 (8)		
E-300	1270 (50)	330 (13)	254 (10)	610 (24)	305 (12)
			305 (12)		
			356 (14)		
			406 (16)		
			152 (6)		

Dimensions in mm (inches)

DIM MODEL	A	B	C	D	E
	M-500	1498 (59")	305 (12")	533 (21")	850 (33.5")
M-900	1625 (64")	381 (15")	660 (26")	850 (33.5")	950 (37.5")

Dimensions in mm (inches)

Our continuous program to improve our products may result in changes to design and specifications without notice.

Y2K Compliant · Year 2000 Compliant

Mass Dynamics is dedicated to the sales and development of continuous weighing, feeding and motion sensing instrumentation. Launched in 1997 as a new business division of Milltronics Ltd., Mass Dynamics offers a range of belt scales, solids flowmeters, weigh feeders, acoustic sensors and motion sensing equipment. Designed to withstand the sustained rigours of heavy primary industries, these products have proven their reliability in a wide range of harsh applications including the mining, mineral processing and cement industries. They are also used extensively in wet and dry food processing and petrochemicals.



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