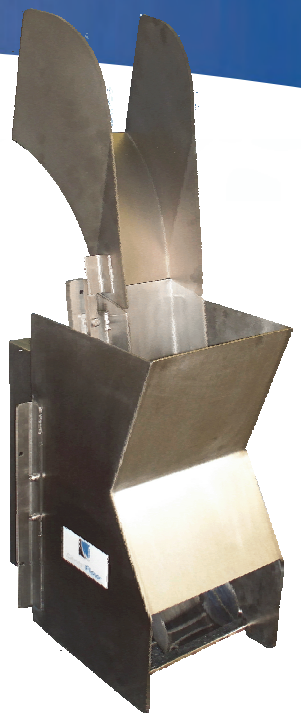
EASTERN INSTRUMENTS

CentriFlow® Low Flow Meter



The CentriFlow® CFL Low Flow Meter is a specially designed solid-particle mass flow meter that can accurately measure bulk solids from pellets and granular materials to powders at extremely low flow rates. Used for measuring the continuous flow of a variety of bulk solids, the CentriFlow® CFL Meter can measure flows down to 0.13 ft^3/min. and provides you with a 4-20 mA signal that is proportionate to mass flow. The CentriFlow® CFL Meter provides outputs of both flow rate and total that can be sent to a PLC or other controller.

Every meter comes standard with a digital electronics package that includes a large, color, touch screen HMI, a 2 Gigabyte Compact Flash Card, User-Friendly Push-Button calibration, Onscreen Plotting/Trending and more.

Specifications

Digital Electronics

- White Painted Carbon Steel or SS Enclosure (8.5” x 12” x 15.5”)
- Power
  - Input Power 20 Watts
  - Input Frequency 47-63 Hz
  - Input Voltage 115/230 VAC converted to 24 VDC via internal power supply
- Remote Reset Capabilities
- Flow Rate or Totalization Alarm/Preset Capabilities
- Large, convenient, color, touch screen HMI with Flow Rate and Totalization displayed simultaneously on main screen
- 2 Gigabyte, Compact, Flash Card for data storage
- Can store calibration data for multiple products
- Electronics can be installed within 10 ft of the feeder with standard interconnect cables (included). Longer lengths available.

CentriFlow® CFL

- Available in Aluminum or SS versions
- For both Horizontal and Vertical Feed Applications
- Accuracies to within ±0.25% of Full scale
- Small Profile /Small Footprint
- Removable access enclosure for easy cleanup
- Rugged construction for long life
- Accurate from 0.13—2.03 ft^3/min

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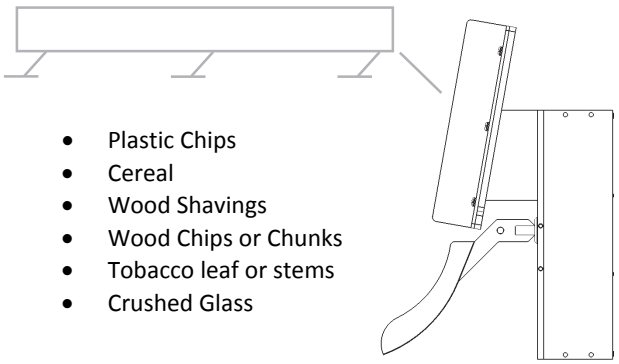
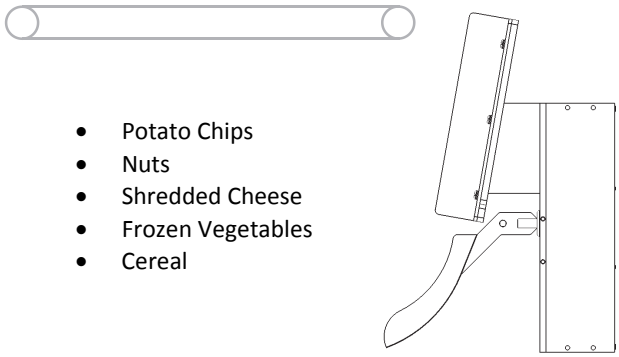
Type I Meter - Horizontal Flows

Type I - Horizontal Belt Feed



- Plastic Chips
- Cereal
- Wood Shavings
- Wood Chips or Chunks
- Tobacco leaf or stems
- Crushed Glass

Type I - Horizontal Vibratory Feed



- Potato Chips
- Nuts
- Shredded Cheese
- Frozen Vegetables
- Cereal

Flow Rate Capabilities of the CentriFow® CFL for a Given Density

Volumetric Capacity		
Meter Size	MIN ft^3/min	MAX ft^3/min
3L	0.13	0.75
6L	0.34	2.03

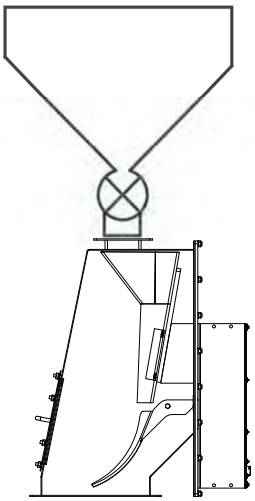
(45 lb/ft3 Density)				
Meter Size	Min Flowrate lb/min	Max Flowrate lb/min	Min Flowrate kg/min	Max Flowrate kg/min
3L	5.85	33.75	2.65	15.31
6L	15.30	91.35	6.94	41.44

(30 lb/ft3 Density)				
Meter Size	Min Flowrate lb/min	Max Flowrate lb/min	Min Flowrate kg/min	Max Flowrate kg/min
3L	3.90	22.50	1.77	10.21
6L	10.20	60.90	4.63	27.62

(60 lb/ft3 Density)				
Meter Size	Min Flowrate lb/min	Max Flowrate lb/min	Min Flowrate kg/min	Max Flowrate kg/min
3L	7.80	45.00	3.54	20.41
6L	20.40	121.80	9.25	55.25

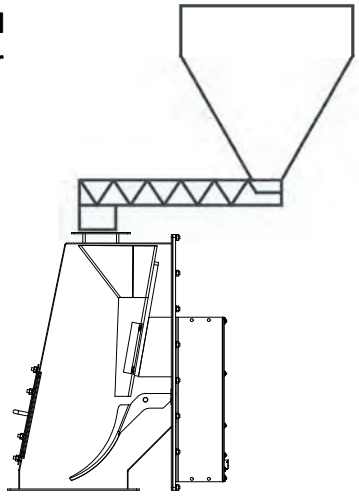
Type II Meter - Vertical Flows

Type II - Vertical Rotary Valve



- Gypsum
- Flour
- Limestone
- Powdered Milk
- Ground Grain

Type II - Vertical Screw Conveyor



- Plastic Pellets
- Animal Feed
- Grains
- Coffee Beans
- Wood Pellets

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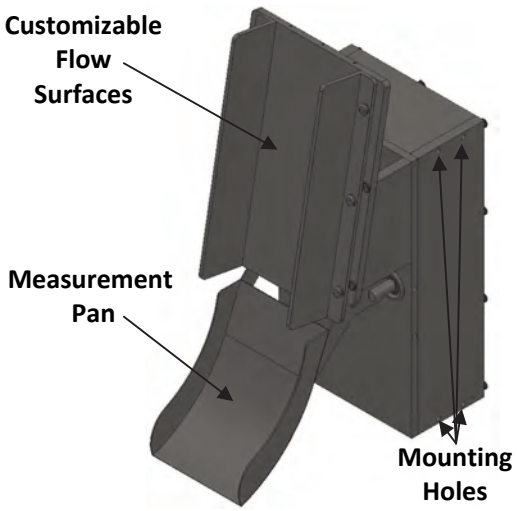
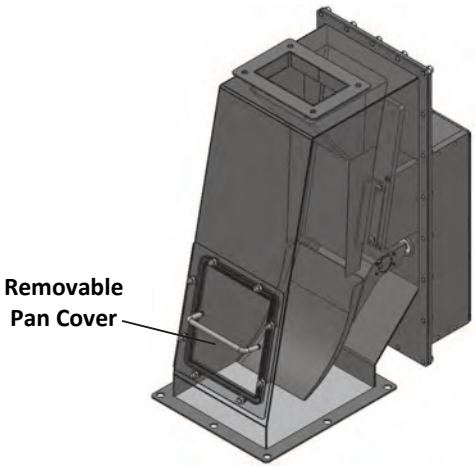
Customization Features

Type I Meter



Type II Meter



Data Functions and Features					
	Local	Remote Communications Protocol			
	Local (HMI)	Ethernet (IP or DF1)	DeviceNet	ProfiBus	Remote (Analog)
Flowrate	✓	✓	✓	✓	✓
Total	✓	✓	✓	✓	✓
Set Point	✓	✓	✓	✓	
Start/Stop	✓	✓	✓	✓	✓
Auto/Manual	✓	✓	✓	✓	
Reset/Total	✓	✓	✓	✓	✓
Valve Position	✓	✓	✓	✓	
Alarm	✓	✓	✓	✓	✓

Low Profile Design for both the Type I and Type II Meters…

Under 20” Profile!!!

CentriFlow® CFL Customizable Features		
Meter Material of Construction	• Aluminum • Engineered to Order	• 304 Stainless Steel
Enclosure Material of Construction	• Painted Carbon Steel • Engineered to Order	• 304 Stainless Steel
Flow Surfaces	• All-Welded 304 SS-Polished • All-Welded SS-Thermal Spray • 301 SS Pan Liner-NP3 Coated • UHMW • All-Welded 304 SS-Ceramic Tile	• All-Welded 304 SS-NP3 Coated • 301 SS Pan Liner-Polished • High Wear Resistant UHMW • Low Friction PTFE

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Additional Mechanical Options

VibraWeigh®, 60 Hz, 110 VAC (220 VAC Also Available)

Integral vibration device to assist with reduction/elimination of build-up on Measurement Pan (typically used with powdery substances)

Integrated Air Entrainment (Aluminum or SS)

Integral air system that entrains continuous stream of clean, dry, instrument air down Measurement Pan to assist with reduction/ elimination of build-up

Pulsed Air System

Air system that pulses a high pressure stream of air to blow off unit – Set via HMI (pulse time/ duration & period/frequency of the pulses)

High Temperature Option (Aluminum and SS Exterior)

Includes SS Backplate (for standard aluminum exterior construction), insulation foam, and Internal Temperature monitor/compensation option

Internal Heater (Local or Remote Electronics Options)

Heat internals of meter up to 60°C (140°F) for use with process temperature changes with a rate of 5°C/hr or greater – requires High Temperature Option

Air Purge

For moisture and dust control and cooling when ambient temperature exceeds 50°C (122°F)

Additional Electronics Options

Weighted Count Output

Included reed relay (AC or DC up to 2 amp) – Provides user selectable pulse based on a unit of weight (for example 1 pulse every 100 lbs)

Remote Communication Protocol-Ethernet

Ethernet (IP or DF1) – HMI to PLC: Flow & Totalization data, Zero Read-back, Internal Temperature, Alarm Target (std) - Additional data available (depending on options) PLC to HMI: Reset Zero , Reset Total/Count, Alarm Target (std) additional data available including Multiple Cal. or Bulk Density

Remote Communication Protocol-DeviceNet

DeviceNet – HMI to PLC: Flow & Totalization data, Zero Read-back, Internal Temperature, Alarm Target (std) - Additional data available (depending on options) PLC to HMI: Reset Zero , Reset Total/Count, Alarm Target (std) additional data available including Multiple Cal.

Remote Communication Protocol-ProfiBus

ProfiBus – HMI to PLC: Flow & Totalization data, Zero Read-back, Internal Temperature, Alarm Target (std) - Additional data available (depending on options) PLC to HMI: Reset Zero , Reset Total/Count, Alarm Target (std) additional data available including Multiple Cal.

Analog Communication (By Wire)

Remotely resets zero via a customer supplied contact closure.

High Speed Frequency Output

Flow Rate Proportional – 0-5000 Hz (Opto-Isolated)

Internal Temperature Monitor/Compensation

Thermistor with 0.1°C resolution & 2°C accuracy

Multiple Calibration Capabilities

Up to 8 distinct calibrations – Selectable via HMI screen or via PLC with PLC Communication option

Flow Linearization

Output linearization via equation fit to field data

Enclosure Heater

40 Watt heater – used when ambient temperature (location of electronics) is below operating range (-10° C or 14°F)

Filtering (4-20 mA and Rate)

Allows smoothing of the otherwise instantaneous output delivered by the CentriFlow Electronics. The 4-20 mA filter functions as a local filter only, while the rate filter filters the output transmitted over Ethernet or other Internet Protocol

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