EASTERN INSTRUMENTS

TYPE II SOLIDS MASS FLOW METERS

Precision Material Handling Equipment
About Eastern Instruments

Eastern Instruments, a Certified Women's Business Enterprise, is an engineered solutions company located adjacent to the North Carolina International State Port in Wilmington, North Carolina. Since 1984, we have been engaged in the design and manufacture of devices that measure and control the flow of industrial bulk solids. These devices have been integrated into a variety of systems for regulating operations and improving efficiency across nearly every industrial sector. Every device within Eastern Instruments' solids flow measurement product line provides a high degree of accuracy, easy installation, a minimal footprint and extremely simple and intuitive operation and maintenance for both continuous and batch operations.

The following catalog is for our Type II Mass Flow Meters. For more information on our other products, please see all of our available catalogs. We offer an entire line of feeders, fillers and other specialty solids flow devices, so if you are in need of equipment other than a mass flow meter, Eastern Instruments can help.

Contact us today.

Mildred R. Brandt
President and CEO

FOR MORE INFORMATION
CALL (910) 392-2490

Eastern Instruments
Material Handling Solutions

Applications

Type II Flow Meters

Options

Electronics

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The Principle of Centripetal Force and the Science Behind our Solids Flow Meters

Why are the solids flow measurement and control devices from Eastern Instruments so accurate? The secret lies in their zero-friction patented design, which is based on the principle of centripetal force.

Centripetal force is the inward force required to keep an object moving in a circular path. It can be shown that an object moving in a circular path has acceleration towards the center of the circle along a radius.

This radial acceleration, called the centripetal acceleration, is such that if an object has a linear or tangential velocity when moving in a circular path of radius \( R \), the centripetal acceleration is \( v^2/R \). If the object undergoing the centripetal acceleration has a mass \( M \), then by Newton's second law of motion, the centripetal force \( F_c \) is in the direction of acceleration. This is expressed by the formula:

\[
F_c = M \frac{v^2}{R}
\]

From Newton's first law of motion, it follows that the natural motion of an object is one with constant speed in a straight line and that a force is necessary if the object is to depart from this type of motion. The force present when an object moves in a curve is called centripetal force.

The CentriFlow® Meter and all of the products in our Solids Flow Measurement Product Line actually measure the centripetal force exerted on the curved surface, in this case, the Measurement Pan, as particles travel over it. The meter does not measure the impact of particles because they never impact the Measurement Pan. Rather, they slide across the Pan for a longer duration, thus resulting in a significantly more accurate signal.

Based on the patented design of these unique devices, they are able to identify and cancel the friction component and, when combined with a velocity that is constant and a radius that is unchanging, the flow equals mass. In this manner, the flow signal from our devices is an actual mass flow, which is linear and accurate, and is not affected by density or slight particle size variations. This is Zero Friction Flow Measurement.

Measures Centripetal Force, not the Impact of Particles

\[
\text{Force} = \frac{\text{Mass} \times \text{Velocity}^2}{\text{Radius}}
\]
Applications

Contact Us Today.

Construction
- Drywall/Plywood
- Concrete Products
- Engineered Materials
- Recycled Materials
- Roofing Products
- Asphalt Products

Petrochemical
- Rubber Products
- Oil Extraction
- Petrochemicals
- Plastics/Additives

Industrial Chemicals
- Industrial Powders
- Consumer Goods
- Glass Ceramics
- Mining

Food
- Baked Goods
- Beans and Grains
- Dried Foods
- Snack Foods/Cereals
- Beverages
- Tobacco Products

Pet Products
- Feed Pellets
- Additives
- Kibble
- Litter/Bedding

Agricultural
- Beans/Grains
- Nuts
- Fertilizers/Additives
- Corn Products

Energy Production
- Bio-Energy Feedstocks
- Ethanol Production
- Renewable Energy
- Coal-Fired Energy

Recycling
- Recycled Plastics
- Renewable Energy
- Construction Materials
- Asphalt Production

CENTRIFLOW: ACCURATE MEASUREMENT FOR MANY APPLICATIONS

[Image of various applications such as industrial powders, fish feed, tortilla chips, coffee beans, grain, sand/silica, etc.]
Why choose the CentriFlow®?

Accuracy

Unlike existing technologies that calculate mass flow by making assumptions based on weight, speed, belt tension, or volume, the CentriFlow® Meter actually measures flowable solids in a process. This unique measurement ability allows the CentriFlow® Meter to have a typical ±0.25% accuracy full scale on virtually all flowable solids, significantly improving the industry standard.

Turndown Ratio

The CentriFlow® Meter can maintain its accuracy over a large turndown ratio and an additional Multiple Calibration option is available for extreme turndowns. Because the meter’s unique design enables it to identify and cancel the friction component, the resulting mass flow signal = mass rate. This linear relationship allows the meter to measure at a typical accuracy of ±0.25% full scale and is unaffected by wide variances in rate.

Solid Construction / Low Maintenance

The CentriFlow® Meter’s sturdy high-grade aluminum construction and stainless steel flow paths create a very low maintenance instrument. With no moving parts, it rarely requires recalibration and its solid-construction, low-maintenance design requires very few spare parts.

Plant Efficient Configurations

Designed to fit into nearly any existing process, the CentriFlow® Meter is available in multiple configurations that minimize the need for costly changes to your process. The Type I Configuration is designed to mount at the end of any existing horizontal feed system, while the Type II Configuration is designed for any in-line vertical feed system. Compared to alternatives, the CentriFlow® Meter’s compact, space efficient design requires a small footprint.

Flexibility

The CentriFlow® Meter is not affected by changes in product elasticity, density, shape or friction and even fluctuations in flow rate don't impact its accuracy. The linearity of the zero friction formula underlying the meter’s design allows the CentriFlow® Meter to measure at various densities and turndown ratios, while maintaining near perfect accuracy.

Continuous Measurement for Continuous Improvement

The CentriFlow® Meter's ability to provide an accurate and real-time, continuous mass flow measurement allows you to optimize your process like never before. The ability to measure gives you the control to manage.
Type II Meter

CentriFlow®: Type II Models

The CentriFlow® Type II Meter is a solids mass flow meter designed to measure bulk solids continuously in a process and is specially designed to be installed directly after feed devices that move material in a vertical direction such as rotary valves, screw conveyors, bucket elevators, etc. Perfect for installation in both new construction, or retrofitted into existing processes, the CentriFlow® Type II Meter has a small, vertical footprint as compared to other metering devices on the market. The vertical footprint of the Standard Type II Meter is only 36' in vertical height. With many options available as well as a variety of customizable features, the Type II meter can be optimized to measure nearly any product from highly abrasive industrial materials to flours and powders.

While the Type II Meter can be used to measure both free-flowing materials as well as powdery materials, the enclosure or housing of the Type II Meter lends itself perfectly to applications where measuring powders or other products can create a great deal of dust. In addition, many options are available to enhance the flow of particularly stubborn materials, or to protect against abrasion. Additional options for explosion hazards are also available for all models of the Type II Meter.

The Type II Meter is available in several specialized models (as shown to the right) which range in scope from the Low Flow model CFL to the High Flow, High Density model HDM.

With a variety of customizable features and models to choose from, there is a CentriFlow® Type II Meter designed with your particular process in mind.

CFM Type II: Standard
- Meter with Enclosure
- Perfect for Most Flow Rates and Materials
- Fed by Rotary Valve, Screw Conveyor, Bucket Elevator, etc.
- For Granular Products as well as Powdery Products

CFL Type II: Low Flow
- Meter with Enclosure
- Perfect for Very Low Flow Rates
- Fed by Rotary Valve, Screw Conveyor, Bucket Elevator, etc.
- For Free-Flowing or Powdery Materials

HDM Type II: Heavy Duty
- Meter with Enclosure
- Perfect for Heavy, High-Density Materials
- Fed by Rotary Valve, Screw Conveyor, Bucket Elevator, etc.
- For Free-Flowing or Powdery Materials

BWS Type II: Budget
- Meter with Enclosure
- Perfect for Grains, or Pellets
- Can be directly coupled to gravity fed pipe or feed device
- Extremely Economical Design

CentriFlow® Type II Meter:
Scan the QR Code for a link to the Type II Meter on our website.
CentriFlow: Type II Installations

The CentriFlow® Meter is typically installed directly after a feed device in order to ensure a consistent flow of product through your meter. Consistent however, does not mean continuous. Due to its rugged construction and unique design, the Type II Meter is perfect for installation after a variety of feed devices, including those that generate highly pulsating flows or surges of product. Some of the more common feed devices that the Type II Meter is installed after are listed below.

**SCREW CONVEYOR:** The pulsations of screw conveyors have little effect on the Type II Meter’s accuracy. The high sample rate and instantaneous measurement of the meter ensures that surges in product will always be measured accurately.

**BUCKET ELEVATOR:** Because bucket elevators typically move product in a vertical direction, they are perfect for Type II Meters which require a vertical feed device. Product typically transitions from the bucket before entering into the CentriFlow®.

**SLIDE GATE:** Slide gates create a very consistent feed of product for the CentriFlow® Type II Meter and allow for very accurate measurement. If you require both flow measurement and control of your product, the CentriFeeder® with ICV combines a CentriFlow® Meter with an Integrated Control Gate for very accurate measurement and control of granular products. See our Feeder catalog for more information.

**ROTARY VALVE:** As with screw conveyors, flow out of rotary valves is often very pulsating and large rotary valves can cause an even greater likelihood of large pulsations. Even these large pulsations, however, have very little effect on the accuracy of the CentriFlow® Type II Meter. In the unlikely event that an extremely large surge floods the meter with product, the meter’s enclosure is designed to allow the product flow to continue through the process without blockage so that production can continue unhindered by the unexpected surge in product.

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**Slide Gate/Orifice Valve**

Product Examples
- Plastic Pellets
- Animal Feed
- Grains
- Coffee Beans
- Fertilizer
- Granules
- Pellets
- Milled Grains
- Chips/Chunks

**Bucket Elevator**

Product Examples
- Plastic Pellets
- Animal Feed
- Grains
- Coffee Beans
- Fertilizer
- Powders
- Gypsum
- Grains
- Milled Grains
- Cement

**Rotary Valve**

Product Examples
- Plastic Pellets
- Animal Feed
- Grains
- Coffee Beans
- Fertilizer
- Powders
- Gypsum
- Milled Grains
- Cement

**Screw Conveyor**

Product Examples
- Plastic Pellets
- Animal Feed
- Grains
- Coffee Beans
- Fertilizer
- Powders
- Gypsum
- Milled Grains
- Cement
The CentriFlow® Type II Meter is a bulk solids mass flow meter specially designed to be installed directly after feed devices that move material in a vertical direction such as slide gates, rotary air locks, or screw conveyors. The Type II Meter features an enclosure that houses the meter and ensures that the flow path is contained. The housing is flanged on both the intake and discharge chute in order to make installation extremely easy. Although larger than the Type I Meter, the standard Type II enclosure requires less than 36” of vertical space. For tighter fits, custom enclosures are also available. The Type II Meter is great for free-flowing products and powders alike and works especially well for applications where flows pulsate, such as after rotary valves or screw conveyors. The standard Type II Meter can be specially configured to measure nearly any solid material.

### Design Specification
- The Tangential can be vertical (for granular materials), or tipped backward at 10 degrees as is the case with the powder version of the meter.
- The Diverter is set at a 45 degree angle of repose (56 degree for Powder version).
- The standard height for all sizes of the CFM meter is under 36” in height. They are typically installed directly after feed devices, minimizing stackup.
- Custom enclosures are available for shrinking the vertical footprint of the meter or for incorporating special transitions within the enclosure design.

### Material Specification
- Standard meter parts (other than product contact surfaces) are constructed of 6061 aluminum. Stainless Steel also available.
- Standard product contact surfaces (parts within product flow path), as well as Type II enclosure, constructed out of 304 Stainless Steel.
- A selection of customizable liners and coatings is available on all flow surfaces for aiding in product flowability or for improving wear resistance against particularly abrasive materials.

### Volumetric Capacity of the CentriFlow® Meter for the Type II STANDARD ft³/min (m³/hr)

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Granular Products</th>
<th>Powdery Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>CFM-03</td>
<td>0.63 (1.06)</td>
<td>5.00 (8.50)</td>
</tr>
<tr>
<td>CFM-06</td>
<td>1.69 (2.87)</td>
<td>13.50 (22.94)</td>
</tr>
<tr>
<td>CFM-12</td>
<td>3.75 (6.37)</td>
<td>30.00 (50.97)</td>
</tr>
<tr>
<td>CFM-24</td>
<td>7.50 (12.74)</td>
<td>60.00 (101.94)</td>
</tr>
<tr>
<td>CFM-36</td>
<td>11.25 (19.11)</td>
<td>90.00 (152.91)</td>
</tr>
<tr>
<td>CFM-48</td>
<td>15.00 (25.49)</td>
<td>120.00 (203.88)</td>
</tr>
</tbody>
</table>
### Type II Standard – Other Specifications

<table>
<thead>
<tr>
<th>Meter</th>
<th>Meter Width</th>
<th>Meter Height</th>
<th>Intake Width</th>
<th>Intake Flange Width</th>
<th>Discharge Width</th>
<th>Discharge Flange Width</th>
<th>Approximate Weight (AL)</th>
<th>Approximate Weight (SS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFM-03</td>
<td>12.00 in</td>
<td>305 mm</td>
<td>5.00 in</td>
<td>8.66 in</td>
<td>6.00 in</td>
<td>9.50 in</td>
<td>102 lb</td>
<td>167 lb</td>
</tr>
<tr>
<td>CFM-06</td>
<td>12.00 in</td>
<td>305 mm</td>
<td>5.00 in</td>
<td>8.66 in</td>
<td>6.00 in</td>
<td>9.50 in</td>
<td>100 lb</td>
<td>165 lb</td>
</tr>
<tr>
<td>CFM-12</td>
<td>18.00 in</td>
<td>457 mm</td>
<td>11.00 in</td>
<td>14.66 in</td>
<td>12.00 in</td>
<td>15.50 in</td>
<td>125 lb</td>
<td>210 lb</td>
</tr>
<tr>
<td>CFM-24</td>
<td>30.00 in</td>
<td>762 mm</td>
<td>23.00 in</td>
<td>26.66 in</td>
<td>24.00 in</td>
<td>27.50 in</td>
<td>175 lb</td>
<td>275 lb</td>
</tr>
<tr>
<td>CFM-36</td>
<td>42.00 in</td>
<td>1067 mm</td>
<td>35.00 in</td>
<td>38.66 in</td>
<td>36.00 in</td>
<td>39.50 in</td>
<td>225 lb</td>
<td>340 lb</td>
</tr>
<tr>
<td>CFM-48</td>
<td>54.00 in</td>
<td>1372 mm</td>
<td>47.00 in</td>
<td>50.66 in</td>
<td>48.00 in</td>
<td>51.50 in</td>
<td>275 lb</td>
<td>405 lb</td>
</tr>
</tbody>
</table>

For Meters Without An Enclosure Please See Our Type I Catalog
The CentriFlow® CFL Meter is a bulk solids mass flow meter specially designed for very low flow rates that can be as low as 100 lb/hr. The CFL is constructed primarily for use after feed devices that move material in a vertical direction such as slide gates, rotary air locks or screw conveyors. It features an enclosure that houses the measurement pan and ensures that the flow path is contained. The housing is flanged on both the intake and discharge in order to make installation extremely easy. The CFL is much smaller than the standard Type II Meter enclosure and measures in at only 24” in height. The CFL is great for both free-flowing products or powders and is often used to measure additives, ensure proper ratios of mixtures being blended together, or for any application in which accurate flow measurement of low flow rates of material is important. The CFL is constructed entirely of Stainless Steel and comes standard with a removable access panel which allows for extremely easy clean up and maintenance.

### Potential Installation Possibilities

#### Rotating Screw or Auger

**Product Types**
- Smaller Granular Products
- Powders
- Low Flow Rates
- Additives

#### Rotary Valve or Slide Gate

**Product Examples**
- Plastic Pellets
- Industrial Powders
- Flour
- Gypsum
- Nutrient Additive

### Design and Material Specification

- All standard meter parts including contact surfaces and enclosure are constructed of 304 Stainless Steel.
- Additional coatings are available that are designed to improve product flow and/or improve the wearability of the flow surfaces.
- The outer assembly is fully welded which helps maintain the meter's accuracy especially during measurement periods of extremely low flow rates.
- The overall footprint is less than 24” in height.
- Both the intake and discharge flanges are completely customizable.

### Volumetric Capacity of the CentriFlow® CFL Type II Meter ft³/min (m³/min)

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Free-Flowing</th>
<th>Powders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>CFL-03</td>
<td>0.13 (0.21)</td>
<td>2.50 (4.25)</td>
</tr>
<tr>
<td>CFL-06</td>
<td>0.34 (0.57)</td>
<td>6.75 (11.47)</td>
</tr>
</tbody>
</table>
TYPE II CFL SPECS

For Meters Without An Enclosure Please See Our Type I Catalog

CFL – Specifications

<table>
<thead>
<tr>
<th></th>
<th>CFL Width</th>
<th>CFL Height</th>
<th>Intake Width</th>
<th>Intake Flange Width</th>
<th>Discharge Flange Width</th>
<th>Approximate Weight (SS)</th>
<th>Installation Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFL-03</td>
<td>10.24 in 260 mm</td>
<td>22.73 in 577 mm</td>
<td>5.10 in 130 mm</td>
<td>5.10 in 130 mm</td>
<td>8.00 in 203 mm</td>
<td>10.24 in 260 mm</td>
<td>91 lb 41 kg</td>
</tr>
<tr>
<td>CFL-06</td>
<td>10.24 in 260 mm</td>
<td>22.73 in 577 mm</td>
<td>8.10 in 130 mm</td>
<td>8.10 in 130 mm</td>
<td>8.00 in 203 mm</td>
<td>10.24 in 260 mm</td>
<td>93 lb 42 kg</td>
</tr>
</tbody>
</table>
The CentriFlow® HDM Meter is a bulk solids mass flow meter specially designed for high density products with very high flow rates. Utilized as a Type II Meter, the HDM is mounted within an enclosure and is configured to be fed by devices that move material in a vertical direction such as slide gates, rotary valves and screw conveyors. The HDM Type II Meter, when compared to the standard CFM Type II meter, is actually twice the height and depth, thus making the HDM Meter much better equipped to accurately measure very large flow rates of product. The HDM is great for applications including the processing of mine tailings, the rapid loading and unloading of trucks, railcars or shipping containers or any installation where flow rates, bulk densities, or both are exceptionally high.

### Design Specification
- The depth of the meter and the height of the meter have been doubled in order to accommodate much larger flow rates.
- The radius of the Pan has been doubled in order to accommodate larger particles and higher flow rates.
- The standard HDM Type II Meter comes with rectangular intake and discharge flanges, however, custom intake and discharge flanges are also available.
- The HDM can be installed as either the Type II enclosed meter or as a Type I open meter with no enclosure. See our Type I catalog for more info.

### Material Specification
- Standard meter parts other than product contact surfaces are constructed of 304 Stainless Steel. 316 Stainless Steel also available.
- Standard product contact surfaces such as parts within the product flow path are constructed of Stainless Steel.
- Additional coatings are available that are designed to improve product flowability and/or improve the wearability of the various flow surfaces.
- The enclosure for the Type II enclosed HDM Meter is constructed of either Painted Carbon Steel or Stainless Steel.

### Volumetric Capacity of the CentriFlow® HDM Type II Meter ft³/min (m³/hr)

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>In Line Flow</th>
<th>Powders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Free-Flowing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>HDM-24</td>
<td>18.75</td>
<td>150.00</td>
</tr>
<tr>
<td></td>
<td>(31.86)</td>
<td>(254.85)</td>
</tr>
<tr>
<td>HDM-48</td>
<td>37.50</td>
<td>300.00</td>
</tr>
<tr>
<td></td>
<td>(63.71)</td>
<td>(509.70)</td>
</tr>
<tr>
<td>HDM-72</td>
<td>56.25</td>
<td>450.00</td>
</tr>
<tr>
<td></td>
<td>(95.57)</td>
<td>(764.55)</td>
</tr>
</tbody>
</table>
**TYPE II HDM SPECS**

**Type II Standard – Other Specifications**

<table>
<thead>
<tr>
<th>Enclosure Width</th>
<th>Meter Height</th>
<th>Intake Inside Width</th>
<th>Intake Flange Width</th>
<th>Discharge Width</th>
<th>Discharge Flange Width</th>
<th>Approximate Weight (SS)</th>
<th>Installation Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDM-24</td>
<td>30.00 in</td>
<td>23.00 in</td>
<td>26.66 in</td>
<td>24.00 in</td>
<td>27.50 in</td>
<td>1300 lb</td>
<td>0° Set by Type II Enclosure</td>
</tr>
<tr>
<td></td>
<td>762 mm</td>
<td>584 mm</td>
<td>678 mm</td>
<td>610 mm</td>
<td>699 mm</td>
<td>590 kg</td>
<td></td>
</tr>
<tr>
<td>HDM-48</td>
<td>54.00 in</td>
<td>47.00 in</td>
<td>50.66 in</td>
<td>48.00 in</td>
<td>51.50 in</td>
<td>2100 lb</td>
<td>0° Set by Type II Enclosure</td>
</tr>
<tr>
<td></td>
<td>1372 mm</td>
<td>1194 mm</td>
<td>1287 mm</td>
<td>1219 mm</td>
<td>1308 mm</td>
<td>953 kg</td>
<td></td>
</tr>
<tr>
<td>HDM-72</td>
<td>78.00 in</td>
<td>71.00 in</td>
<td>74.66 in</td>
<td>72.00 in</td>
<td>75.50 in</td>
<td>3400 lb</td>
<td>0° Set by Type II Enclosure</td>
</tr>
<tr>
<td></td>
<td>1981 mm</td>
<td>1803 mm</td>
<td>1896 mm</td>
<td>1829 mm</td>
<td>1918 mm</td>
<td>1542 kg</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions:**

- Intake Flange Width: 26.66 in (678 mm)
- Discharge Flange Width: 16.784 in (426.31 mm)
- Width: 10.16 in (257.47 mm)
- Height: 30.00 in (762 mm)
- Length: 33.220 in (843.79 mm)

**Notes:**

- All welds to be continuous, full penetration welds.
- Welds to be free of pin holes, voids, porosity, and cracks.
- Welds to blend with parts without excessive undercut or overlap.
- Welds to have a .01 x 45° chamfer.
- Material: 304 Stainless Steel.
- The seal plate should be accessible for installation unless otherwise specified.
- Dimensions are in inches [mm] ± .25º ± 1/32 [0.79] fractional:
  - X.XXXXX ± .0005 [0.01]
  - X.XXX ± .005 [0.13]
  - X.XX ± .01 [0.25]
  - X.X ± .03 [0.76]

For more information, visit [sales@easterninstruments.com](mailto:sales@easterninstruments.com) or [www.easterninstruments.com](http://www.easterninstruments.com).
The CentriFlow® BWS Meter is constructed similarly to the Type II Standard Meter in that the meter is contained within an enclosure. The meter is perfect for measuring a variety of granular products such as grains, beans or pellets. Typically installed after feed devices such as rotary airlocks, screw conveyors or bucket elevators, the BWS can also be directly mounted inline into pipes or chutes that are transporting product via gravity. The BWS is designed with simplicity in mind, thus ensuring that the meter is simple and easy to use. The streamlined design allows for a lower price point than the standard CentriFlow Meter with its wide array of options and features. Featuring several options for flow surfaces, including Stainless Steel and ceramic tile lined flow surfaces for high wear applications, the BWS is perfect for measuring any granular, free-flowing solid.

### Design Specification
- Easy to use lifting locations are located around the perimeter of the top surface of the meter’s enclosure to assist with positioning the meter during installation.
- A Companion Flange is supplied for the inlet of the BWS. This flange mates to the bolt hole pattern located on the top of the BWS for simple and easy installation.
- The companion flange is designed with a standard 150# flange pattern.
- The BWS’ electronics are mounted directly to the rear of the BWS and feature a 4” color touch screen HMI. The electronics allows for push button calibration as well as a variety of other functions.
- The standard outputs for the BWS include:
  - 4-20 mA Output equivalent to flow
  - Totalizing Pulse Output

### Material Specification
- Standard meter parts (other than product contact surfaces) are constructed of 6061 aluminum or Stainless Steel.
- Standard product contact surfaces (parts within the product flow path) are constructed of Stainless Steel.
- Type II enclosure as well as the rear access panel is constructed of painted Carbon Steel.
- Alumina Ceramic Tiled flow surfaces are also available for improving wear resistance against very abrasive materials such as sand or soybeans.

### Volumetric Capacity of the CentriFlow® Meter for the Type II BWS Meter

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWS-06</td>
<td>1.69</td>
<td>10.13</td>
</tr>
<tr>
<td>BWS-12</td>
<td>3.75</td>
<td>22.50</td>
</tr>
<tr>
<td>BWS-24</td>
<td>7.50</td>
<td>45.00</td>
</tr>
<tr>
<td>BWS-36</td>
<td>11.25</td>
<td>67.50</td>
</tr>
<tr>
<td>BWS-48</td>
<td>15.00</td>
<td>90.00</td>
</tr>
</tbody>
</table>
TYPE II BWS SPECS

**For Meters Without An Enclosure Please See Our Type I Catalog**

<table>
<thead>
<tr>
<th>Model</th>
<th>Enclosure Width</th>
<th>Enclosure Height</th>
<th>Intake Inlet</th>
<th>Intake Flange</th>
<th>Discharge Flange Width</th>
<th>Discharge Flange Depth</th>
<th>Approximate Weight (CS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWS-06</td>
<td>23.38 in (594 mm)</td>
<td>24.81 in (630 mm)</td>
<td>4.00 in (102 mm)</td>
<td>7.50 in (191 mm)</td>
<td>21.38 in (543 mm)</td>
<td>19.38 in (492 mm)</td>
<td>209 lb (95 kg)</td>
</tr>
<tr>
<td>BWS-12</td>
<td>23.38 in (594 mm)</td>
<td>24.81 in (630 mm)</td>
<td>6.00 in (152 mm)</td>
<td>9.50 in (241 mm)</td>
<td>21.38 in (543 mm)</td>
<td>19.38 in (492 mm)</td>
<td>209 lb (95 kg)</td>
</tr>
<tr>
<td>BWS-24</td>
<td>35.38 in (899 mm)</td>
<td>29.31 in (745 mm)</td>
<td>10.00 in (254 mm)</td>
<td>14.25 in (362 mm)</td>
<td>33.38 in (848 mm)</td>
<td>23.88 in (606 mm)</td>
<td>379 lb (172 kg)</td>
</tr>
<tr>
<td>BWS-36</td>
<td>47.13 in (1197 mm)</td>
<td>24.56 in (624 mm)</td>
<td>6.00 x 30.00 in (152 x 762 mm)</td>
<td>8.41 x 32.41 in (214 x 823 mm)</td>
<td>47.13 in (1197 mm)</td>
<td>20.94 in (532 mm)</td>
<td>425 lb (193 kg)</td>
</tr>
<tr>
<td>BWS-48</td>
<td>58.375 in (1483 mm)</td>
<td>24.56 in (624 mm)</td>
<td>6.00 x 40.00 in (152 x 1016 mm)</td>
<td>8.41 x 42.41 in (214 x 1077 mm)</td>
<td>57.13 in (1451 mm)</td>
<td>20.94 in (532 mm)</td>
<td>492 lb (223 kg)</td>
</tr>
</tbody>
</table>
MATERIAL OF CONSTRUCTION

Meter Casing and Enclosure

The material of construction for CFL and HDM style meters is Stainless Steel, while the BWS meter’s material of construction is Aluminum. The CFM style meter can be manufactured out of either Aluminum or Stainless Steel. The meter enclosures for most models are Stainless Steel, however the BWS meter’s enclosure is manufactured out of painted Carbon Steel.

Flow Surfaces

The flow surfaces of the meters can either be a welded, one-piece assembly for applications requiring food grade equipment, or they can be composite assemblies which include interchangeable liners for inexpensive replacement of worn flow surfaces.

DUSTY PRODUCTS

Air Purge System

The Air Purge System, typically used for dust and moisture control, fills the back casing of the meter with instrument quality air, to create a positive pressure that keeps condensation, dust, and other matter from interfering with the transducer.

EXPLOSION HAZARD

Explosion Proof System (Class II Div 2)

This Explosion Proof System is used for installing the CentriFlow® Meter and its electronics within a Class II Div 2 rated area and includes a pressurization or purging system that prevents the entrance of combustible dust into the meter or its electronics.

Explosion Proof System (Class I Div 2)

This Explosion Proof System is used for installing the CentriFlow® Meter and its electronics within a Class I Div 2 rated area. This option prevents the entrance of flammable gas or vapor within the meter or its electronics by performing a series of four air exchanges and applying a positive pressure to the system.
SLOW FLOW PRODUCTS

Pulsed Air System

The Pulsed Air System is designed to deliver a pulsed blast of dry, instrument air to the area both above and below the Measurement Pan in a manner that will not adversely affect flow measurement readings. Use of the Pulsed Air System is intended to assist with product flow, as well as to eliminate product buildup on the Pan; which if left unchecked, could result in a less accurate flow measurement.

Integrated Air Entrainment (IAE)

The Integrated Air Entrainment System is designed to deliver an even stream of air to the CentriFlow® Meter’s Measurement Pan. Its continuous, dry air reduces build up and assists in the flow of product on the measurement surface without affecting the measurement readings.

VibraWeigh

The VibraWeigh® option, typically used in powder applications, keeps small particle size materials (down to 10 to 50 microns) from building up on the pan surface. This is important in order to keep the process product flowing through the meter and sliding smoothly on the Pan Liner. Build-up that might divert or impede the flow could result in less accurate flow measurement.

HEATED/COOLED PRODUCTS

High-Temperature Option

The High Temperature Option should be used when products exceed 150°F (66° C). Air is used in order to keep the casing’s internal temperature down, while a Stainless Steel Barrier with High Temperature Foam is used to isolate the heat of the product from the meter’s internal components.

Internal Heater

For meters that measure cold products or that are installed in cold environments (or environments with extreme temperature changes) an internal heater is available that will heat the meter’s internal components to 140° F (60° C).
Remote Electronics Package with NEMA-4 White Painted Steel Enclosure

Each CentriFlow® CFM, CFL and HDM Meter comes with a digital electronics package. The digital electronics includes a color touchscreen HMI housed in either a NEMA-4 white-painted, Carbon Steel, or NEMA-4X Stainless Steel enclosure. The Digital Electronics enclosure can be mounted indoors or outdoors when the necessary precautions are taken and when used in conjunction with NEMA-4-approved conduit.

Features

- 4-20 mA Output (Flow Rate Proportional/Current Sourced/Fully Isolated)
- Frequency Output (Flow Rate Proportional – 0-500 Hz)
- Remote Reset Capabilities
- Flow Rate or Totalization
- Alarm/Preset Capabilities
- Large, convenient, color, touch screen HMI with Flow Rate and Totalization displayed simultaneously on the main screen
- Universal Power Supply (85-264 VAC)
- 2 Gigabyte, Compact, Flash Card that records data every second for up to 1 year
- User-friendly Calibration, including Zero Adjustment, Static Calibration, Dynamic Calibration, Field Calibrations
- HMI On-screen Plotting/Trending
- Supports Ethernet and most industrial protocols
- Filterable rate signal allowing for a smoothing of the instantaneous flow rate output
Integral Electronics Package with White Painted Steel Enclosure

The CentriFlow Integral Electronics is an integral electronics package used with all of the CentriFlow BWS style systems and mounts directly to the rear of these style meters. The integral electronics features a 4” color touchscreen HMI that allows for basic functionality and control of the CentriFlow unit, including calibration and zeroing of the meter. The main run screen shows a live reading of both flow rate and total.

Features

- 4-20 mA Output (Flow Rate Proportional/Current Sourced/Fully Isolated)
- Frequency Output (Flow Rate Proportional – 0-500 Hz)
- Flow Rate or Totalization Alarm/Preset Capabilities
- Convenient, color, touch screen HMI with Flow Rate and Totalization displayed simultaneously on the main screen
- AC Power Supply (115-230 V AC)
- User-friendly Calibration, including Zero Adjustment, Static Calibration, Dynamic Calibration, Field Calibrations
- HMI On-screen Plotting/Trending
- Filterable On-screen Plotting allowing for a smoothing of the instantaneous flow rate output