Product Specifications

Thermo Scientific Ramsey™ Granucor

Solids Flow Measurement System

The Thermo Scientific Ramsey Granucor solids flow measurement system provides continuous, real-time flow measurement of free falling materials and dense phase, pneumatically conveyed bulk solids. It gives you the feedback you need to control your process, which allows you to increase the efficiency of your process, run a safer system, produce higher quality products, and improve your bottom line.

Features

- Easy installation into new or existing processes
- Non-intrusive
- No moving parts
- Sensors are available in sizes ranging from DN10 to DN200 (0.5 in to 8.0 in) nominal diameter in ANSI or DIN flange configurations
- Unaffected by pressure, temperature and vibration
- Self-diagnostics with fault indication
- Displays solid mass flow, solids velocity and solids concentration

The System Can Measure and Output:

- Bulk flow rate
- Totalized flow
- Concentration
- Velocity

The in-line measurement of bulk solids flow is important for product quality, process efficiency and system safety. The Thermo Scientific Ramsey Granucor solids flow measurement system provides continuous, real-time flow measurement of free falling materials or dense phase, pneumatically conveyed bulk solids. Its non-intrusive design and patented software can be used to monitor and control the flow in pipes or the flow distribution through pipe networks.

Applications

The Ramsey Granucor solids flow measurement system is ideal for measuring mechanically conveyed plastic pellets and pneumatically conveyed solids in coal-fired blast furnaces.

In blast furnaces, the system can be used to balance feed among the tuyeres, improving blast furnace efficiency, as well as iron quality and consistency. It can also be used to measure the flow of plastic granules in injection molding facilities or pelletizers, and to control the flow of various additives.

Capacitance Flow Measurement

A complete Ramsey Granucor solids flow measurement system is composed of two independent sensors and a correlator/integrator. The Thermo Scientific Ramsey DK13 velocity sensor and Thermo Scientific Ramsey DC13 concentration sensor operate using capacitance technology and are designed for direct installation into process piping.

The Ramsey DC13 concentration sensor measures the change in capacitance with material present versus the capacitance of an empty pipe. This change in capacitance is proportional to material concentration. The Ramsey DK13 velocity sensor uses two measuring points and a technique known as cross-correlation to measure the time it takes for the material to travel between the points.

Both of the sensors' measurements are then output to the Thermo Scientific Ramsey Micro-Tech 2109 or 3109 correlator/integrator, which calculates the mass flow rate. For more information, refer to the separate product specification sheet on the Ramsey Micro-Tech 2000 or 3000 series of electronic integrators.

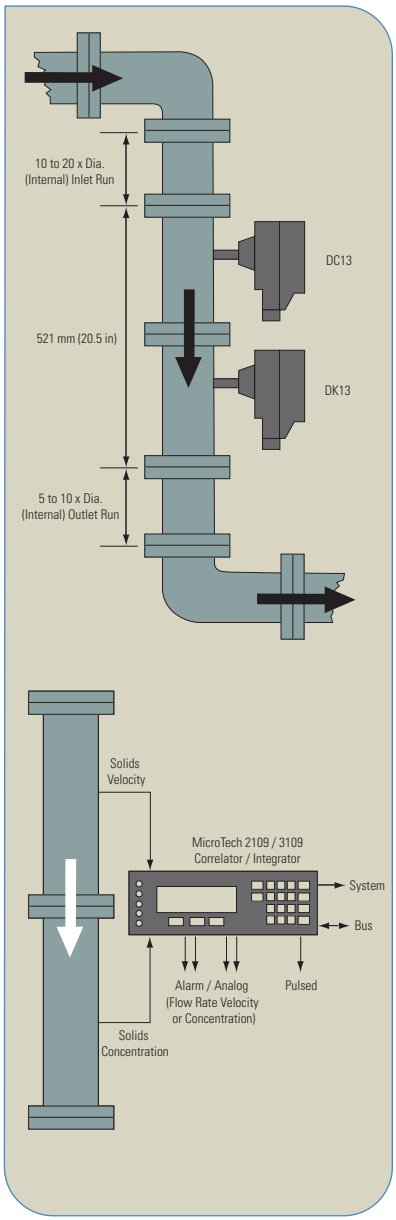
Thermo Scientific Ramsey Granucor DK13

General Specifications	
Sensor Size	DN10 to DN200 (0.5 in to 8.0 in)
Tube Material	Steel, painted (stainless steel optional)
Fittings	Flanges, DIN or ANSI 150 lb, small tongue and groove
Permissible Temperature Range	In Measuring Tube: <149°C (<300°F) Ambient Temperature: -20°C to +60°C (-4° to +140°F) Storage Temperature: -40°C to +74°C (-40°F to +165°F)
Power Supply	Must be specified when ordering system Alternate Current: 110V, 115V, 220V, 230V; +15 to -10%, 50/60 Hz Direct Current: 24 VDC Power Consumption: Maximum 4.5 VA
Empty Pipe Capacitance	Approximately 40 pF
Capacitance in Full Pipe	Depends on solids
Bandwidth of Output Signal	Up to 5 kHZ
Solids Loading μ:	Minimum 5 to 1 (mass ratio solids/gas)
Signal Transmission Cable	3-wire unshielded, 25 Ω per wire maximum resistance, 1000 foot maximum
Installation Position	Vertical, with material flow downward, if possible
Upstream Length	20 diameters of straight pipe is required
Downstream Length	10 diameters of straight pipe is required
Approvals	CSA Approved for Class I Groups B,C,D; Class II Groups E,F,G; Class III on AC versions

Thermo Scientific Ramsey Granucor DC13

General Specifications	
Sensor Size	DN10 to DN200 (0.5 in to 8.0 in)
Tube Material	Steel, painted (stainless steel optional)
Fittings	Flanges, DIN or ANSI 150 lb, small tongue and groove
Permissible Temperature Range	In Measuring Tube: <149°C (<300°F) Ambient Temperature: -20°C to +60°C (-4°F to +140°F) Storage Temperature: -40°C to +74°C (-40°F to +165°F)
Power Supply	Must be specified when ordering system Alternate Current: 110V, 115V, 220V, 230V; +15 to -10%, 50/60 Hz Direct Current: 24 VDC Power Consumption: Maximum 4.5 VA
Frequency	56 to 2600 Hz
Solids Loading μ	Minimum 5 to 1 (mass ratio solids/gas)
Empty Pipe Capacitance	Approximately 0.75 pF
Response Time	<1 second
Signal Transmission Cable	2-wire unshielded, 25 Ω per wire maximum resistance, 1000 foot maximum
Installation Position	Vertical, with material flow downward, if possible
Upstream Length	20 diameters of straight pipe is required
Downstream Length	10 diameters of straight pipe is required
Approvals	CSA Approved for Class I Groups B,C,D; Class II Groups E,F,G; Class III on AC versions

DC13 and DK13 Application



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