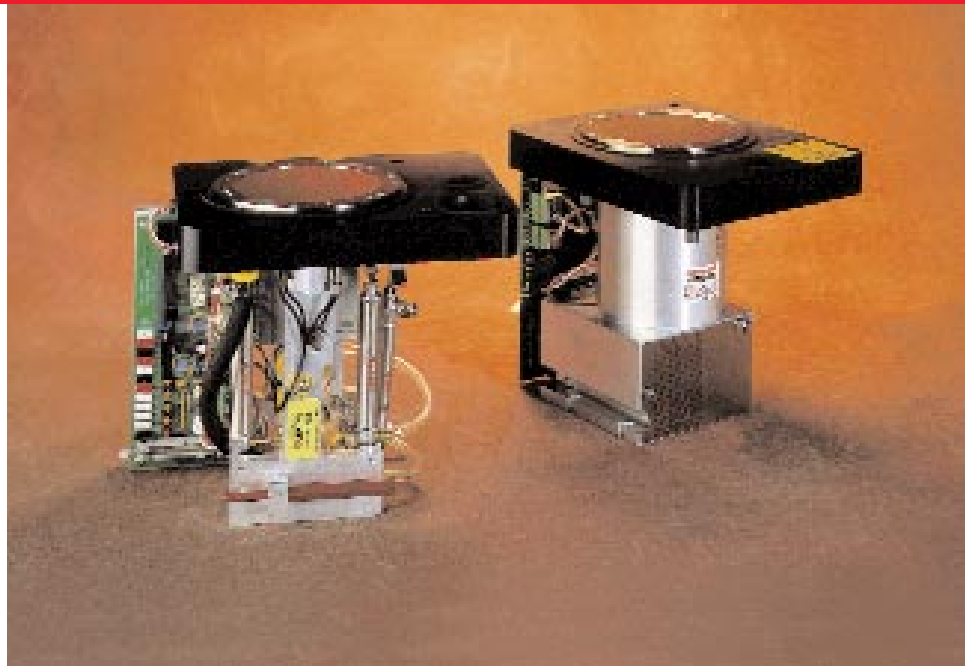


PrecisionPLUS Basis Weight Sensor



Product Brief

The PrecisionPLUS™ Basis Weight Sensor measures the mass per unit area of a product. When used with a scanner, which moves the sensor back and forth across a moving web, it provides a representative measurement of the web as it is produced. Using the principle of beta absorption, this state-of-the-art sensor provides superior measurement response, accuracy, and repeatability.

The sensor design features a shutterless, rotating source body combined with minimized air column receiver positioning. Employing application-matched source isotopes and beam-shaping techniques, high beta flux levels are achieved to provide enhanced repeatability for low noise measurements.

These features, in conjunction with fast response electronics and effective compensation for environmental sources of error, provide excellent accuracy for machine-direction control and for accurate reporting of product quality and productivity.

Features & Benefits

- The sensor geometry uses a High Flux Geometry receiver and a shutterless, rotating source body to minimize the physical air gap between the source body and the receiver. This optimizes the signal strength and reduces the measurement noise.
- Fast measurement response and high resolution give better cross-directional control performance.
- The minimized air column significantly lowers the volume of air in the air gap creating a corresponding reduction in the influence of barometric pressure and humidity variations on the measurement.
- Conditioning the air gap using a proprietary air curtain design ensures consistent measurement performance, even with the common temperature changes across the product found in many processes.
- Patented Full Range Standardization¹ using two internal flags effectively eliminates any long-term influence from dirt buildup in the sensor gap, source decay, and barometric pressure changes on sensor performance.
- The enhanced UniCal™ sensor algorithm extends the calibration range, and improves ease of use, typically allowing measurement of all recipes on a process with a single calibration.
- Air-actuated source body precisely positions the source for repeatable measurements and reliability.
- Easy to replace source and receiver “window” design (particularly important in coating applications).
- Optional patented dynamic Z-axis correction² eliminates error due to on-line changes in the gap between the source and receiver.

¹ U.S. Patent No. 4,692,616

² U.S. Patent No. 4,678,915

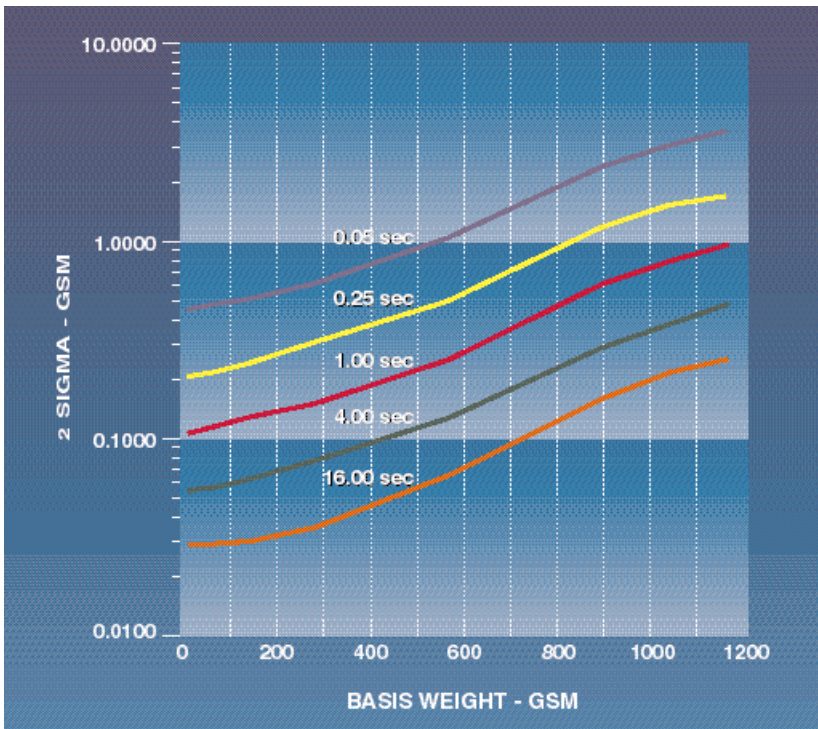
Description

The Model 3-4203-01 PrecisionPLUS Basis Weight Sensor consists of a source containing a Kr85 isotope, an ionization chamber receiver, and signal processing electronics. The source is attached to a rotating body, which rotates the source 135 degrees between an open and closed position. This design provides maximum safety for operators. When the source is open, beta particles are transmitted through the sheet to the receiver ionization chamber. The reduction in the beta particles is measured as the beta absorption of the sheet. This determines the basis weight of the product.

Beta sensors are uniquely advantageous as a basis weight measurement. They provide a weight per area measurement of the desired product and their rate of absorption is not affected by color, texture, or state of matter. The PrecisionPLUS Basis Weight Sensor has been designed to be effectively insensitive to changes in temperature, humidity, and barometric pressure.

The sensor is designed for rugged industrial applications requiring high precision and reliable, continuous usage. From the stainless steel source body to the electronics-safety, reliability, and ease of maintenance have been designed into the sensor.

This sensor is used on a 3-2080-03 series scanning O-Frame.



PrecisionPLUS Basis Weight Repeatability

Specifications

Basis Weight Range: 16-1200 gsm

Source to Receiver Head Gap: 10 mm (0.4 inch)

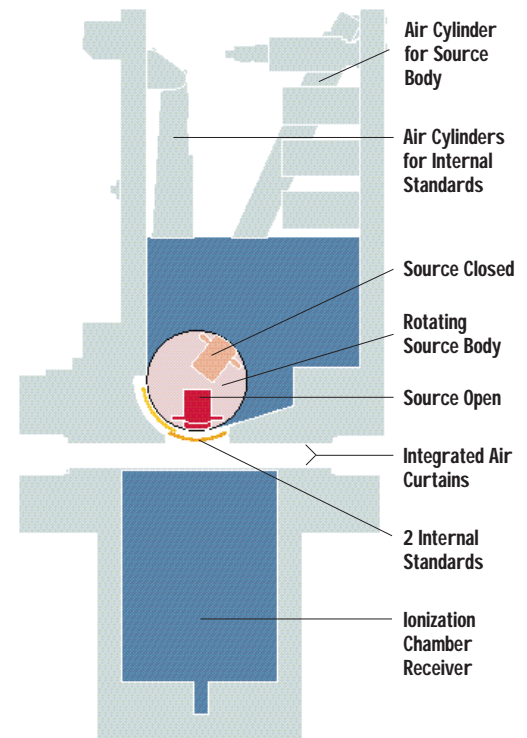
Repeatability (Two Sigma at 16 sec. Integration): Better than 0.03 gsm below 32 gsm. See graph for full range

Measurement Spot Size: 17 mm (0.67 in) full width half maximum

Response Time: 1 milli-second

Standardization: Uses three-point standardization with two-point verification

Environment: See scanner specifications



Shown as source open, one internal standard inserted

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