



**Moisture  
Register Products**  
a division of AQUA Measure Instrument Co.



# SMART II NIR System

## Continuous On-line Moisture Measure and Control System

- ▶ Easily linked to Programmed PLCs, a Host PC or Laptop
- ▶ Easy to read LED display provides direct read-out in percent moisture content
- ▶ Rated NEMA 4 enclosure for environmental protection
- ▶ Optional Security Pass Code prevents unauthorized access to the calibration data
- ▶ Loss of Product detection shows when there is no product under sensor
- ▶ Analog output provides standard 4-20mA output proportional to moisture for interfacing to industrial control systems
- ▶ Programmable Alarm Solid State Relays assures warning alarm when LOP occurs
- ▶ Multiple systems can be used on the same product with a common calibration.
- ▶ Programmable Smoothing Function reduces undesired output fluctuations by averaging readings
- ▶ For Continuous On-Line Analysis on Moving Webs, Flat Belt Conveyors, Screw Conveyors, Hopper-Drop Chutes or in the Lab for Static Testing
- ▶ A System consists of: the SMART II Wall Mounted Console and a NIR Sensor or a RF Sensor with an Oscillator Box
- ▶ The SMART II System is based on a highly reliable microprocessor

The SMART II NIR System uses the principle of comparing energy at two near infrared wavelengths to determine moisture on a continuous basis. A stabilized infrared source is focused on the material to be measured and reflected light is filtered at two different wavelengths, one specific for moisture and the other a reference wavelength. The two signals are electronically ratioed and the moisture content is presented on the digital display. The non-contact NIR technique measures near surface moisture in a wide range of applications.



### Near Infrared Sensor

- Nondestructive moisture sensing in the 0 to 60% range
- Filtration of reflected energy from sample reduces ambient light and color considerations
- Simplified optics, no mirror or lenses to align
- Stable quartz halogen NIR sensor
- Drift-free temperature stability
- Auto ranging is used to adjust the NIR Sensor output to an optimum level for reliable processing

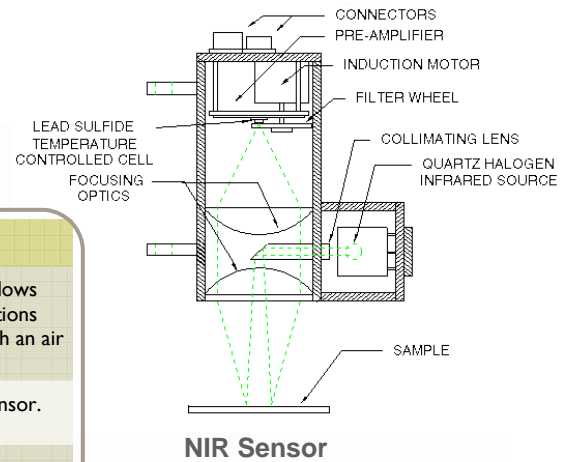
## VERSATILITY

paper · plastic pellets · briquets · snack foods · crumb rubber · fish meal · corn meal · detergent · soy meal · coffee · gypsum board · carpet · powders · ceiling tiles · wallboard · wood fiber · sawdust · foundry sand · pharmaceuticals · ceramic powders · milk powder · tiles · and more



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## Optional Features

<b>Opto-Port Attachment for NIR Sensor</b>	This stainless steel attachment is a Patented Mounting Device that allows the NIR Sensor to adapt to a variety of difficult sample handling situations such as screw conveyors and free fall conveyors. Can be ordered with an air blast system for free falling samples.
<b>Dust Shield</b>	For dusty environments. Prevents the build-up of dust on the NIR Sensor. Requires a constant flow of clean, dry air.
<b>Explosion Proof Housing for NIR Sensor</b>	Call for a quote.
<b>Cooling Jackets and Housings</b>	Keeps sensor temperatures within an acceptable range in high temperature environments.
<b>NIR Test Plate</b>	Used to verify a repeatable calibration signal.
<b>Low Profile NIR Optical Attachment</b>	Allows for the NIR Sensor to be mounted at locations where the clearance is not adequate to mount the normal NIR sensor.
<b>RF Link</b>	Permits a wireless communication from the remote location of the SMART II console to a local display and output console.



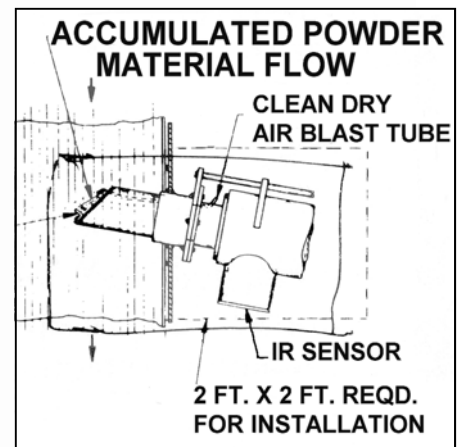
## Console Specifications

<b>Moisture Range</b>	Minimum 0 to 0.1%, Maximum 0 to 60% (wet weight)
<b>Accuracy</b>	± 0.02% to 0.2% depending on product and moisture range being measured
<b>Repeatability</b>	3 parts in 4096
<b>Stability</b>	One calibration per year
<b>Smoothing Constant</b>	0 to 37 seconds. Integration after initial buffer fill.
<b>Calibration</b>	Up to 7 points define calibrated moisture range
<b>Calibration Tables</b>	Download as required from PC
<b>Update Rate</b>	7 moisture calculations per second (28 optional)
<b>Ambient Operating Temperature</b>	0 to 50°C
<b>Relative Humidity</b>	0 to 90 percent non-condensing
<b>Storage Temperature</b>	-18 to 80°C
<b>Dimensions &amp; Weight</b>	10" x 13½" x 5" (254mm x 343mm x 127mm); 20 lbs. (9.1 kg)
<b>Power Requirements</b>	120 VAC 60 HZ or 230 VAC 50/60 HZ, 120 VA
<b>Inputs</b>	NIR or RF Sensor; High Voltage Isolated
<b>Outputs</b>	<ul style="list-style-type: none"> <li>·Isolated 4 to 20 mA</li> <li>·Loss of Product Alarm</li> <li>·Isolated Serial Data Port, RS-232C (RS-485 optional)</li> <li>·Span adjustable</li> <li>·Data is in ASCII format for simple interface</li> </ul>

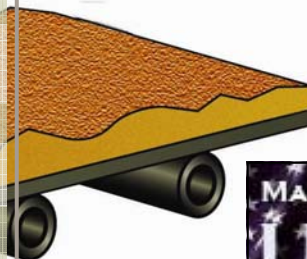


## Sensor Specifications

<b>Operating Temperature</b>	Maximum: 122°F/50°C Minimum: 30°F/0°C
<b>Storage Temperature</b>	Maximum: 176°F/80°C Minimum: 0°F/-18°C
<b>Lens Distance to Product</b>	9" (228mm) ± 1" (25mm)
<b>Sampling Area</b>	0.39" square (10mm square)
<b>Penetration depth</b>	Up to 1mm (dependent on material)
<b>Dimensions &amp; Weight</b>	14½" x 10½" x 5.375" (368mm x 266.7mm x 137mm); 13½ lbs. (6.1 kg)



Opto-Port with Clean Dry Air Blast



# MOISTURE REGISTER PRODUCTS

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