

Moisture Measurement & Control From Lab To Line

PRODUCT CATALOG

Online & Atline NIR Moisture Sensors
Near Infrared Measurement



ALCOHOL Moisture
Engineered Wood
Polymers
CHEMICAL
BRICK
CONTROL
Adhesives
OILS
Plastics
FATS
Concrete
PROTEINS
Food
Wood
Tobacco
BIOFUELS
Ceramics
Improve
Productivity
CONVERTING
Optimize Drying
Mineral
COATWEIGHT
Thickness
Pellets
GRAINS
Paper
Bulk Conveying
POWDER
Fibers
Sinter

MoistTech's NIR Product Catalog

3000 SERIES WIDE RANGE OF APPLICATIONS INCLUDE:

- ✓ Adhesive
- ✓ Chemical
- ✓ Coating
- ✓ Converting
- ✓ Food
- ✓ Forest Products
- ✓ Hemp/Cannabis
- ✓ Minerals
- ✓ Paper
- ✓ Pharmaceuticals
- ✓ Plastic
- ✓ Renewable Energy
- ✓ Snack Food
- ✓ Textiles
- ✓ Thickness
- ✓ Tobacco
- ✓ Web
- ✓ And More

In addition to measuring moisture the 3000 Series may be used to measure, display and control coating weight, sheet and film thickness, oil, protein and other elements that absorb NIR.

PRODUCT INFORMATION

MoistTech developed the IR-3000 online NIR sensor for instant, non-contact measurement of many products and raw materials in the harshest manufacturing environments. Continually monitoring and controlling moisture levels allows operating personnel to confidently make immediate process adjustments based on real-time measurements.

With experience in over 5,000 applications globally and thousands of equipment installs, MoistTech represents the Diamond standard in robust, reliable and dependable technology for harsh environment process measurement and precise product control.

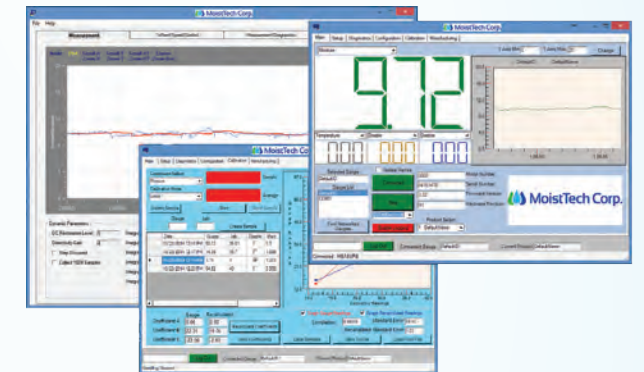
Production efficiency improvements due to accurate real-time measurements provide both energy savings and potential increased productivity with lower material losses.

KEY BENEFITS

- **Insensitive to material variations** - particle size, material height and color do not affect the sensor
- **One-time calibration & Zero Drift over time**
- **Maintenance free**
- **Product Quality Monitoring** – allows immediate production line adjustments to improve product quality and consistency
- **Process Optimization** – allows 100% monitoring of your production process to reduce product that is “out of specification”
- **Fuel Consumption Savings** – reduce your energy usage as the drying/cooking process can be controlled resulting in a reduction in energy consumption
- **Water Savings** – reduce your water usage by continuously monitoring moisture content
- **Dust Prevention** – help reduce the risk of explosions due to dust

MOISTTECH PC SOFTWARE

MoistTech has designed a suite of high-tech Windows™ programs to provide user-friendly interfaces for configuration, data logging and monitoring of diagnostics. Our configuration software supplies the operator with the capability to monitor up to three constituents and the addition of the temperature option. Output trending is displayed to take corrective action prior to reaching determined thresholds. With this you can perform calibrations, define gauge and measurement parameters and set-up and configure up to 50 different product codes. The MoistTech Software package is easy to use and compatible with any PC platform.



NEAR INFRARED (NIR) TECHNOLOGY

All molecular bonds absorb specific wavelengths of light. Hydrogen bonds including O-H (water); C-H (hydrocarbon) and N-H (ammonia) all absorb strongly in the NIR spectral region. The amount of NIR energy reflected at a given wavelength is inversely proportional to the quantity of absorbing molecules in a product.

The NIR technique is a non-destructive, non-contacting measurement. MoistTech's sensor utilizes multiple wavelengths of NIR light, projected onto the product at a very high repetition rate. The reflected light is then measured using a digitally enhanced detection system and thousands of data points are sampled every second.



MoistTech Online Sensors

Additional Sensors & Display Options



3000 SERIES ONLINE MOISTURE SENSOR

3000 Series Online Moisture Sensor is designed for most applications and developed for instant, non-contact analysis in the harshest environments. Many options are available for the 3000 series including installation locations, accessories and displays.



828 TOBACCO MOISTURE SENSOR

828 Tobacco Moisture Sensor for instant, non-contact measurement designed specifically for tobacco processing applications and its harsh environment. The Model 828 is the answer to controlling moisture in primary processing, leaf processing and cut tobacco applications.



CCS3000 MOISTURE SENSOR

CCS3000 Moisture Sensor is designed for Coke, Coal, Sinter, Minerals and many other tough applications considered difficult to measure with traditional non MoistTech technologies.



3000-F FOOD GRADE MOISTURE SENSOR

3000-F Food Grade Brushed Nickel Plated Moisture Sensor is designed for food grade applications. The nickel plated surface protects against corrosion, abrasion and wash down. The Food Grade sensor includes a Kel-F window in place of our standard glass.



3000-IP67 ONLINE SENSOR

3000-IP67 Online Sensor is designed to withstand wash-downs, dusty / dirty environments, and to protect it against the effects of immersion. Its rugged stainless steel enclosure makes it ideal for the harshest environments, aggressive process applications and the industry's extreme temperatures. IP67 include an integrated air vortex or liquid cooling system that is rated from 0°C to 93°C (200°F); additionally, insulation wraps are available.

858 NIR (NEAR INFRARED) MOISTURE SENSOR

The 858 NIR (Near Infrared) Moisture Sensor is MoistTech's at-line moisture sensor for small sealed sample sizes. The sample design also allows for the use of a simple petri dish. The 858 design measures the bottom of the sample using a glass window to eliminate loss of moisture during tests. Precision filters and algorithms have been incorporated into the sensor to optimize performance under the demanding conditions in the manufacturing industry.



868 NIR (NEAR INFRARED) MOISTURE SENSOR

This is MoistTech's at-line moisture sensor with a large rotating sampling dish for the rapid moisture analysis of raw and non-homogenous materials. Precision filters and algorithms have been incorporated into the sensor to optimize performance under demanding conditions in the manufacturing industry. The 868 Sensor incorporates MoistTech's well-proven IR-3000 optics and electronics providing superb accuracy, and resolution of any similar technology gauge. Unsurpassed in performance, stability, reliability, maintainability and cost of ownership, the 868 sensor is the answer to controlling moisture in your product.



DISPLAY OPTIONS

In addition to the MoistTech management software, MoistTech offers several read-out options to display and/or adjust the measurement outputs.

- Digital Panel Meter (DPM) connected by 4-20mA output
- Full Color Touch Operator Panel (OP-14) PLC based connected by RS-232C serial (provides trending graph)
- HMI Human Machine Interface is a 7" color touch display for common sensor configuration and monitoring. Ethernet to Ethernet communication.

(OP-14 & HMI provide operators & engineers the unlimited ability to make changes to gauge parameters, monitor diagnostics and program calibrations all at-line)

OP-14 OPERATOR PANEL

Part Number 1000-044

OP-14 Operator Panel is PLC based separately mounted unit communicates with the MoistTech sensors through RS-232C Cable. Large numerical display and full screen trend display. Online control, calibration and measurement display for all 3000 series sensors. Rated IP-67 dust - water tight.



HMI

Part Number 1000-407

Our industrial touch screen HMI panels offer a user-friendly interface through which customers can easily and conveniently monitor their system and make all common sensor configuration adjustments. The HMI is a 7" full color display with Ethernet communication to the MoistTech Online Sensors. From 1 to 3 Constituents including internal temperature and optional product temperature.



REMOTE DIGITAL PANEL METER DPM2-UDM

Part Number 1000-043

Remote Digital Panel Meter DPM2-UDM uses the 4-20mA output to display a local 3.5" digital display. Sealed for wash-down protection and dust tight. Front-side tactile-touch buttons provide programing input to set up the DPM. LED numerical characters.



Installation Locations

Instant, Non-Contact



TYPICAL INSTALLATIONS

The MoistTech 3000 series sensors can be installed in many configurations using the bracket on the back or top of the sensor enclosure. Most typical installations are mounted 4" - 16" (inches) from the product flow to be measured. Changes in product flow can be compensated for using our filtering, dampening and averaging.

BELT INSTALLATIONS

Belt installations are the most common and standard for the 3000 series sensor. Mounted 4" - 16" (inches) above the product flow our sensors instantly monitor the moisture with hundreds of measurements per second. These sensors can be open air or enclosed.

SCREW CONVEYORS

Screw Conveyors are used in many bulk handling industries. Often used as an efficient way to move semi-solid materials, including food waste, wood chips, aggregates, cereal grains, animal feed, boiler ash, meat and bone meal, municipal solid waste and many others. The 3000 Series sensors are positioned to measure in the flow of material just off the shaft of the auger while the embedded software dismisses the flight of the screw as it passes the optical path.

Many other types of conveying systems are available as suitable locations for installation and measurement. These consist of but not limited to chute, roller, chain, drag and elevator conveyors.



INSTALLATION LOCATIONS

The sensors can be installed using the bracket on the back/top of the sensor 4" - 16" (inches) from the product. The MoistTech sensor has many options for installation including:

- Belt, Screw, Drag & Enclosed Conveyors
- Chutes, Cyclones & Bins
- Dryer In/Out
- Webs
- Pipeline or Pneumatic Conveying using our Flange window or Sampler options.



CHUTES, CYCLONES, AND BINS

Cyclone, Chutes and Bin conveyors are common utilizing the MoistTech Sampler Cup, Snorkel Samper or Flange Window. This option keeps the 3000 Series sensor externally mounted.

Many Applications require instantaneous measurement in mixers and pug mills. These locations can be kept clean as the requirement is 4" (inch) opening for the optical measurement.



Web, Converting and Coating have many locations throughout the manufacturing and processing process. Generally the 3000 Series sensor is located in the most critical stages. However, the location is often determined by the space availability as well as manufactures requirements. The 3000 Series can be implemented as a standalone sensor for single point measurement or positioned on a cross profiling measurement system.

PIPELINE OR PNEUMATIC CONVEYING USING OUR FLANGE WINDOW OR SAMPLER OPTIONS.

MoistTech sensors are not limited to the type of installation and can be mounted in any orientation using many of our measurement accessories.

Many locations thought to be inaccessible now provide MoistTech with a installation option. Large pipeline locations can be measured using the MoistTech Flange Window. Many products gravity fed or Pneumatically conveyed are measured using the Snorkel and Sampler Cup accessories. Product collects in the sampler cup and measured before air purges the sampler back into the process repeating the measurement.



OPTIONS & ACCESSORIES

In addition to the Display Options listed, MoistTech offers many installation options & accessories:

- Flange window with mounting (measure looking into a window)
- Bulk & Powder Sampler Cup (measure of falling material)
- Snorkel Sampler (measure into the conveyor wall)
- Air or Water Cooling Cover for high temperature with optional auto on/off solenoid
- Product Loss Sample Hold Sensor
- Product Temperature Pyrometer

SENSOR SPECIFICATIONS

Measured NIR Constituents:	1, 2 or 3 Moisture Ranges: Min 0.01%, Max 97%
Moisture Ranges:	0–0.1%, 0–100% PPM Ranges Subject to Application
Accuracy (subject to application):	±0.01%
Repeatability:	±0.01%
Optical Measurement Distance:	4–16 in (10–40 cm)
Sampling Size:	Approximately 1.5-in (3.7 cm) diameter on sample
Calibration Codes:	50 Standard
Enclosure:	Cast Aluminum, IP65 (NEMA 4) Stainless & Food Grade
Power:	80–260 VAC (50/60 HZ), Optional 24VDC
Operating Temperature:	0–130°F (0–55°C) Vortex Cooling (High Temp): Max 170°F (85°C) Internal block heater (low operating temps) Stainless Steel IP67: Max 200F (93C)
Calibration:	Factory Pre-Calibrated, PC Calibration software included, Routine re-calibration is not required
Ambient Light Sensitivity:	None
Sensor Input/Outputs:	Three self-powered isolated 4-20mA outputs, RS-232/485, Ethernet TCP/IP
Optional interfaces:	Profibus, Profinet, DeviceNet, Ethernet IP

**Above specifications are subject to application*

INSTRUMENT ENCLOSURE OPTIONS:

- Food Grade Nickel Coated
- IP-67 Enclosure Stainless Steel with cooling
- ATEX Rated
- Explosion Proof Classification Enclosure



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