DRYER MASTER®

Moisture Sensors

dryermaster.com

Real Time Moisture Sensors

Dryer Master capacitance based moisture sensors have been providing industrial processes with reliable and accurate moisture measurement for over 30 years.

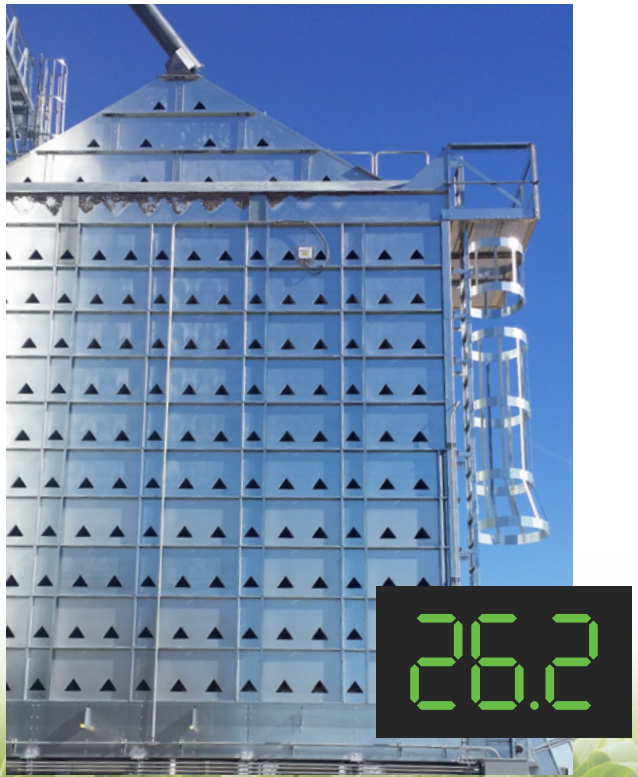
APPLICATIONS

The numerous applications suitable for Dryer Master's moisture measurement technology include:

- Whole grains,
- Paddy and processed rice,
- Coffee beans (raw, roasted, or processed),
- Meals (such as cornmeal, soymeal, distillers' grain and flour), and
- Manufactured pellets (including pet food, animal feeds, fish feed, and wood pellets).

BENEFITS

- Continuous and accurate real time moisture readings for process monitoring and control.
- Complete product moisture measurement, not just a measurement of surface moisture.
- Rugged stainless steel construction that is food grade.
- Low maintenance and straightforward installation.
- Cost effective and affordable, especially when compared to alternatives.
- Can be installed in either an in-process or a bypass type configuration.



IMPLEMENTATION

Dryer Master moisture sensors can be purchased individually and then connected to a PLC for signal conversion. They can also be purchased as part of a complete solution for moisture monitoring (M2/GM2), state logic control (AM3) or model based drying control (DM510)

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TECHNOLOGY

Dryer Master "fin type" moisture sensors are capacitance devices that respond to the total bulk moisture within your product.

The moisture sensor transmits energy from the "fin" to the ground plane, typically the installation chute or containment vessel. As energy is absorbed by "free" water molecules through the product profile, the sensor measures the level of absorption and calculates the relative dielectric behavior of the material.

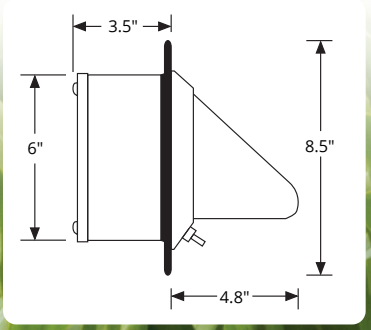
The relative dielectric behavior of the product is one of two 0 to10 vdc signal outputs provided by the sensor, the other being the product temperature. The two signals can be processed using a straightforward calculation to generate product moisture and temperature readings. The initial parameters of the calculation are provided by Dryer Master, but can be easily adjusted by the end user based on their experience.

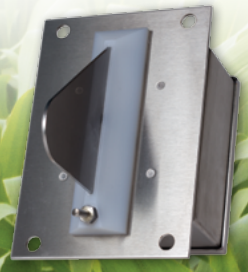
INSTALLATION

Dryer Master moisture sensors can be mounted in-process or in a sample bypass configuration. The sensor installation detail is based on the material being measured, the range and accuracy of the measurement required and the physical limitations of the installation. In general, the sensor is placed in a location where it will remain fully covered and receive a representative sample of the product in a compact flow. This flow should be less than 1 inch (2.5 cm) per second.

A Dryer Master Applications Specialist is available to work with you to determine not only the optimal installation but also the best overall methods for sensor maintenance, calibration, and integration with current process control strategies.

Moisture Sensor Dimensions





CALIBRATION

The successful integration of on-line measurement into a process control strategy depends on two characteristics: accuracy and reproducibility. Both of these characteristics are greatly influenced by sensor calibration.

Operators or QA staff maintain calibration with routine off-line samples which are entered via an operator interface. Software can be used to manage calibration, product recipes, and sensor data- logging to provide reliable, reproducible, and accurate product moisture information.

SPECIFICATIONS

Environmental Conditions:

Operating temperature range	=-18°C—70°C (0°F—160°F)
Product temperature range	=-18°C—100°C (0°F—212°F)

Mounting Dimensions

Fin sensor	8.5"x6"x4.8" (HxWxD)
(See drawing)	(21.6 cm X 15.2 cm X 12.2 cm)
Material in flow	316 stainless and UHMW
Weight	8 lbs. (3.7 kg)

Electrical

D.C. supply voltage	18 to 30V D.C.
D.C. supply current	20mA at 24V D.C.
Signal outputs (2)	0 to 10V D.C.

Note: Signals must be processed to generate a moisture reading.

Moisture Measurement

Typical range	2—45% moisture, wet basis*
Resolution	0.01%M
Accuracy**	±0.2%M

**Moisture range is a function of product density.*
***Accuracy is a function of in-plant variables and is estimated according to past experience. Specifications subject to change without notice.*

115 Ardelt Ave. Building #2,
Kitchener, Ontario,
Canada N2C 2E1

(519) 725-4700
(800) 265-2757
info@dryermaster.com