The Moisture Monitor™

MICROWAVE MOISTURE SENSOR, TYPE 9900

NONCONTACT MICROWAVE MOISTURE SENSOR FOR WEBS & BULK MATERIALS WITH ACCU-LOCK+ SENSING

ONE RANGE... BONE DRY TO SOAKING WET!

A momentous breakthrough... the world's first full-span microwave moisture sensor is here!

Perfect linearity for most materials is a great feature. Add instant response, deep penetration, no hysteresis, and no drift.

Then, apply this one piece microwave sensor to textiles, paper, wood, grain, meat, vegetables, tobacco, mortar, soil, sand, wastes, paint, glue, plus lubricants and fuels, chemical solutions, colloidal suspensions... You name it! Noncontact and non-invasive.

The 9900 starts measuring at absolute zero, a place where few moisture sensors have ever been. From there, its standard analog outputs tracks moisture all the way to saturation... a perfect match for process instrumentation. Accu-Lock high speed signal processing eliminates effects of material position variation.

After 57 years of research, development, and the manufacture of tens of thousands of moisture sensors sold the world over, Strandberg has created something basically new.

The 9900 is another technological breakthrough from Strandberg!

STRANDBERG ENGINEERING LABORATORIES, INC.
1302 N. O. HENRY BLVD. (U.S. 29 N.) • GREENSBORO, N.C. 27405 • U.S.A.
TEL: (336) 274-3775 • FAX: (336) 272-4521 • EMAIL: sensors@strandberg.com • http://www.strandberg.com

-GENERAL INFORMATION-

The Strandberg Type 9900 Microwave Moisture Sensor detects moisture in sheet and bulk materials in process from bone dry to full wet saturation. For sheet materials and most bulk materials, its electrical output is directly and linearly proportional to moisture, an exceptional advantage that permits direct numerical scaling plus single and two-point calibration.

Unlike infrared moisture sensors, it is unaffected by color and its penetration into the product is deep.

The non-invasive, reflectance-type sensor even penetrates plastic pipes, tanks, and laboratory beakers to sense the water content of chemical solutions and colloidal suspensions or, conversely, their concentrations. It also senses water in petroleum, including aircraft fuels to turn pumps off before it reaches the fuel tanks!

An electronic oscillator generates safe, low-energy microwaves in the region of extremely high sensitivity to the water molecule. The energy is directed into both solids and liquids from which in-depth reflections are returned to the sensor. It is totally unaffected by product temperature, and it spans the entire moisture spectrum from zero percent water content to saturation in solids and nothing but water in liquids. Linearity on liquids is excellent over wide ranges of concentration.

It works on textiles, paper, boards, veneers, bulk materials, such as powders and grains, wood chips, tobacco, peanuts, processed foods, sand, mortar, soil, sludge, wastes, paint, glue, plus lubricants and fuels, chemical solutions, and colloidial suspensions. The sensor literally looks through plastic windows in chutes and walls to see the moisture inside. It attatches directly to special Teflon pipe sections to monitor liquid concentrations in process.

The Interface Type MSI-140 provides power to the 9900 Microwave Moisture Sensor and controls its internal temperature. The MSI-140 provides linear analog outputs for connection to displays, recorders, PLC's and other instrumentation.

Use the Strandberg Model 7700 Indicating Controller with a Type 9900 sensor to provide moisture scaling and calibration functions along with alarm and control capability. One multiple Type 9900 sensors with the Strandberg mult-channel process controller Model 1610e.

For applications in which signficant variations in material height or position, a second set of analog outputs is provided using the ACCU-LOCK+ high speed signal processing producing signal stability.

-SPECIFICATIONS-

Principle of Operation	Reflectance of low-energy microwaves into a common transmitter-receiver
Ranges	0-full wet saturation in solids 0-100% water content in liquids 0-100% concentration of solids or chemical solutions in water and other solvents
Weights and Dimensions	
Sensor	5.9 kg (13.0 lb), 156 mm (6.125") wide, 156 mm (6.125") long, 159 mm (6.250") high
Interface, Type MSI-140	11.0 lb (5.0 kg); 12.75" (324mm) wide, 8.0" (203mm) high, 5.25" (133mm) deep
Housings	
Sensor	Stainless steel NEMA-4 water-resistant enclosure with chemically-inert sensor window
Interface, Type MSI-140	NEMA-4 water-resistant enclosure with hinged door for use in wet and dusty processing areas
Sensor Temperature Range	-30 to +60 ºC (-22 to 140 ºF)
Relative Humidity Range	0-100%
Power Requirements	85-265 volts, 50/60 Hz
Outputs	0-10 volts and 4-20 mA d-c, 2 pair, one set for real-time measurement, one set for Accu-Lock+ measuremernt
Accu-Lock+ Modes	Automatic, adjustable update interval 2-30 seconds, Manual/Remote update controlled by external start and stop switch closures
Repeatability	within 0.2 percent

Here is something really new in moisture instrumentation!

STRANDBERG ENGINEERING LABORATORIES, INC.

1302 N. O. HENRY BLVD. (U.S. 29 N.) • GREENSBORO, N.C. 27405 • U.S.A.

TEL: (336) 274-3775 • FAX: (336) 272-4521 • EMAIL: sensors@strandberg.com • http://www.strandberg.com