

# The Moisture Monitor™

FIFTY-FIVE YEARS... WORLDWIDE

INDICATING CONTROLLER  
MODEL 1601e



## FOR CONTINUOUS PROCESS CARPET DRYERS

On carpet dryers, the MOISTURE MONITOR keeps a close watch on the moisture in the carpet at delivery. Monitor a single point or 2 or 3 points across the width simultaneously.

Use special spiked detector rollers on the backing or on the face. The spikes ensure that moisture inside the carpet is detected.

Simply call up set points and tolerances by job or style number that you've already entered. Then, the MOISTURE MONITOR continuously compares measured values to target values. High and low alarm outputs alert operators to out-of-tolerance conditions.

Display moisture at left, center, and right simultaneously. Add additional sensors to monitor both the face and the backing.

Use one or more Noncontact Moisture Sensors Type 9900. The 9900 uses microwave sensing technology that penetrates into the carpet for reliable and accurate measurement.

The 1601e has a lot of capacity. So, add sensors for carpet surface temperatures, machine speed and length, exhaust humidity, coating pickup, and more.

Add a printer and generate a report for each delivered roll.



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## -GENERAL INFORMATION-

It is surprising how much energy is wasted by overdrying. There is also a loss of quality and a big loss in production. Dry is dry. Nothing more can be gained at lower speeds and increased heat.

Running wet can be just as dangerous. Too much dampness affects quality and may cause other adverse developments such as mildew.

Thousands of MOISTURE MONITORS all over the world turn these losses into profits while also achieving better product quality.

Sensing rolls with special spikes for penetration, conduct minute amounts of electrical energy to accurately monitor the moisture in carpet backing and face in both the wet and the dry states. Noncontact microwave moisture sensors can be used at one or more locations across the width providing accurate measurements with noncontact penetration into the carpet.

Moisture controls on continuous dryers must step surface speeds up and down in increments rather than continuously. This is because of the long length of these dryers and the fact that a change in moisture can only be expected some time after a speed correction has been made.

The 1601e makes these corrections, not at fixed time intervals, but at intervals that are based on length. A proprietary length-based speed control algorithm optimizes moisture control independent of speed and product density. Its high sensitivity to small changes in moisture permits it to make these step changes rapidly.

In much the same way, the MOISTURE MONITOR changes the heat energy applied to the dryer. It can regulate gas valves and burner controls in final drying zones to guard against unnecessary energy losses.

The 1601e offers up to 24 channels of measurement and control capacity. Safe, low-energy beta gauges are available for on-line density and pickup monitoring. Web width, speed, stretch and shrinkage sensors are all low in cost and easy to install. Still others include carpet surface temperature, exhaust air humidity and drying zone temperature.

The 1601e can be connected to a serial printer for standard report generation by roll and set. Summary and interval statistics for each monitored parameter can be included in the report.

The 1601e can also be connected to a PC via RS-485 network connection for remote display of process values, data acquisition and historical data maintenance, and additional report generation.

## -SPECIFICATIONS-

Power Requirements .....	115/230 volts a-c
Weights and Dimensions .....	12.0 lb (5.5 kg), 12.5" (318mm) high, 10.9" (277mm) wide, and 6.25" (159mm) deep
Sensors .....	Short spiked to full-span rolls and bars for dry and wet webs
Housing .....	Fiber-glass NEMA-4X with hinged cover for use in wet processing areas
Principle of Operation .....	Electrical conductivity through materials using special spiked sensing rolls and/or noncontact microwave penetrating reflectance
Moisture Ranges .....	Dry to full wet saturation in hygroscopic materials and liquids
Control .....	Set points and tolerances in tenth percent steps by style or job number, for use with motorized speed control potentiometers and valves, including programmable step corrections and PID control
Display .....	Liquid Crystal, 4.8 x 3.5" (120 x 90mm)
Outputs .....	0-10 volts and 4-20 mA d-c for recorders, etc., RS-232 for printers and other serial devices, and RS-485 for networking
Capacity .....	Up to 24 channels, measurement and control, other sensors include three-channel moisture interface, carpet surface temperature, drying zone temperature, density and coating pickup, exhaust humidity, stretch/shrinkage, speed and accumulated lengths
Accuracy .....	Repeatable within 5% of reading ( $\pm 0.3\%$ at 6% moisture content or regain)



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