

FEATURES

- 1/10 to 1/4 % accuracy, depending on type of material; generally better accuracy than oven-dry tests.
- Analog 4-20mA and 0-10V, digital RS232 and RS485 multi-drop outputs.
- Calibration via RS232/RS485 connection to Windows software on external control computer, laptop etc.
- Multiple material calibrations allow different materials to be used in the same bin with same sensor.
- Thick, tough ceramic faceplate and stainless steel body are guaranteed for 10 years, last a lifetime.
- Waterproof, sealed body and connector.
- Simple one-hole mount. Length of body allows correct installation without extra fixtures or welding.
- Pre-calibrated for your chosen material, to allow immediate use with fair results in most cases. Note that calibration is always required for best results, since all natural materials differ from place to place.
- Safe – meets all applicable regulations.
- Software ignores erratic readings from loose material during flow and averages readings during flow period, eliminating errors due to dry or wet spots, for use on either current or following batch with good results.
- For continuous feed, can give running average.
- Gradual update when no batching occurs, to adapt to changing moisture prior to next batch.
- Empty bin detection holds previous reading and gives output signal for alarm etc.
- Three display possibilities: separate digital display or via RS232 or RS485 to computer or PDA.
- Temperature of material available through digital output.

THE IMPORTANCE OF ACCURATE MOISTURE MEASUREMENT

In concrete production, the mix design is based on the aggregates, cement and water being present in the correct proportions. If the sand moisture decreases by 2% without being noticed (which can often happen in practice), the batching system will weigh up 2% more sand than required and will add noticeably less water than is required, resulting in a dry batch. If the operator corrects this by adding more water, the water/cement ratio will increase, reducing the strength of the product. If the moisture had been measured accurately, the proportions would all have been correct and there would be no need to add more water.

SPECIFICATIONS

Measuring range:	0 – 20% moisture, calibrated for sand. Other ranges and materials on request. Can be calibrated for surface or total moisture, “wet” or “dry” calculation basis.
Material limits:	From powder to 1/4” granule size. Readings become more erratic as size increases.
Analog output:	0 – 20 or 4 – 20 mA. 0 – 10 volt etc. by use of external resistor.
Digital RS232 and RS485 connections:	Bidirectional, industry standard protocol and command structure supports up to 16 sensors on the same RS485 line.
RS232/RS485 display and setup:	Windows software displays readings, and allows access to setup and calibration menus.
Material calibration storage:	Up to 10 separate sets of material calibration parameters.
Power:	11 to 30 volts DC, 100 mA max.
Sampling input (enable averaging):	Dry contact input or relay from feed gate signal. Optional replaceable relay in junction box rated 120 VAC input.
Bin low output:	Open collector transistor to drive relay or PLC input. Optional 140 VAC 6 A solid-state relay in junction box.
Temperature range:	Full accuracy 0 – 50 °C, 32 – 120 °F. Reduced accuracy 0 – 80 °C, 32 – 175 °F.
Construction:	304 stainless steel with super hard alumina ceramic faceplate.
Size:	3 1/2” (89mm) diameter, 20” (508mm) long with 6” (152mm) adjustable flange for correct positioning.
Shipping weight:	33 lb (15 kg)

OPTIONS

Cable / connector:	10, 20, 50 ft (3, 6, 15 m) and custom length
Junction box 2257:	Connections for power plus analog and digital outputs.
Junction box 2266:	As above plus Sampling input.
Junction box 2267:	As above plus Sampling input and Bin Low output.
Digital display 1278:	NEMA-12 dustproof, powered by analog signal.
Power supply 2316:	110-250 VAC to 24 VDC 1.25 A, powers up to 12 sensors.

SCALE-TRON

Automation, sensors and weighing systems

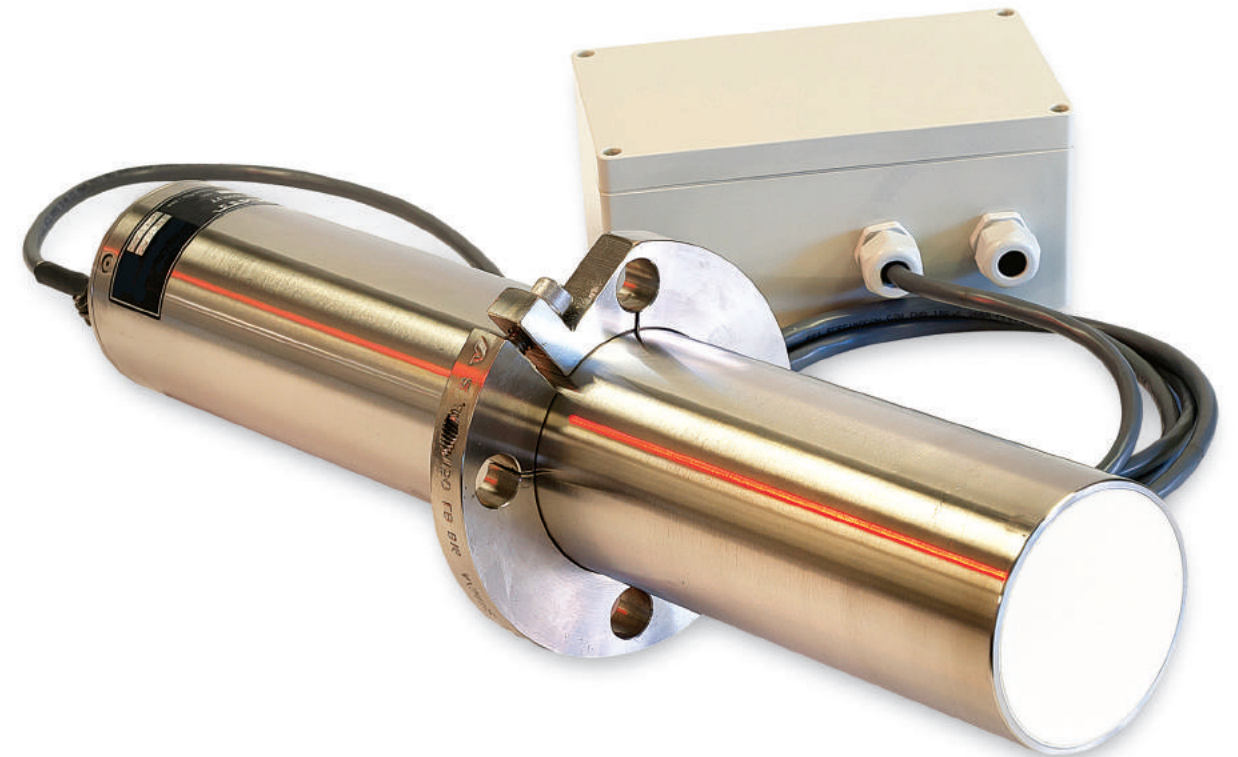
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AquaSense

DIGITAL MICROWAVE MOISTURE SENSOR

By **SCALE-TRON**
Automation, sensors and weighing systems



**Accurate,
rugged and hard wearing.
Easy to install and calibrate.**

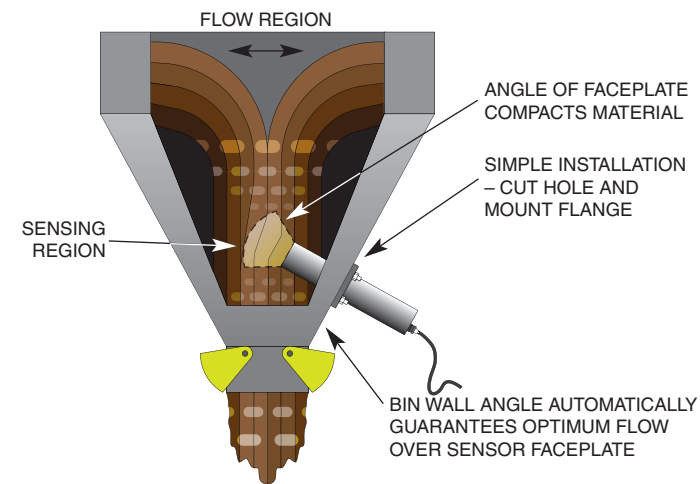
AquaSense measures the moisture content of sand and fine aggregates as well as many other granular and powdered materials

Introducing AquaSense. . . .

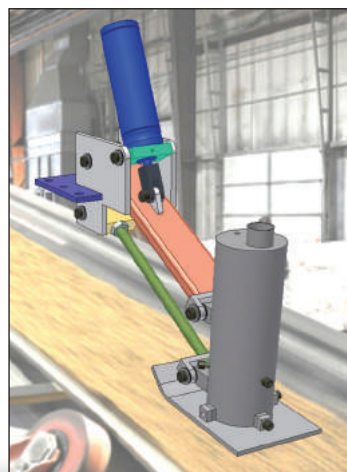
The moisture sensor that takes the magic out of measurement

AquaSense accurately measures the moisture of fine aggregates such as sand and crushed stone. AquaSense microwave technology eliminates the errors associated with resistance and capacitance methods, guaranteeing an accurate reading every time. AquaSense digital technology and Windows software make setup and calibration a simple process. It is easily installed in any bin wall and is suitable for digital display as well as direct connection to almost all batching controllers.

MOUNTING IN BIN (PREFERRED)



GLIDER MOUNT FOR MOVING MATERIAL



SENSOR IS FREE TO RIDE ON TOP SURFACE OF MATERIAL, COMPACTING IT AND ENSURING BEST ACCURACY

PRODUCTION QUALITY IMPROVEMENT

AquaSense guarantees: consistent yield; consistent color/texture; consistent workability; consistent strength and durability. There is no mystery in obtaining accurate moisture measurements. The AquaSense sensor is scientifically designed to ensure control of the following factors:

MATERIAL COMPACTION

No moisture sensor can give accurate readings unless the material is compacted uniformly when the reading is taken. AquaSense sensing head packs the material precisely during the flow period.

MATERIAL FLOW

Unless the whole sensing element is in the material flow region, which extends vertically above the discharge gate, readings will be affected by the static material in the bin sides. AquaSense adjusts to accommodate all bin shapes.

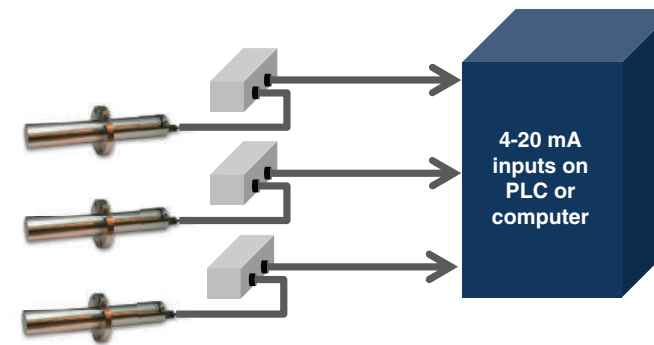
AVERAGING OVER THE FEED PERIOD

Sensors measure only a few cubic inches of material at a time. As the material flows, the sensor will detect wetter and dryer regions. AquaSense averages these variations to obtain the best reading on every batch.

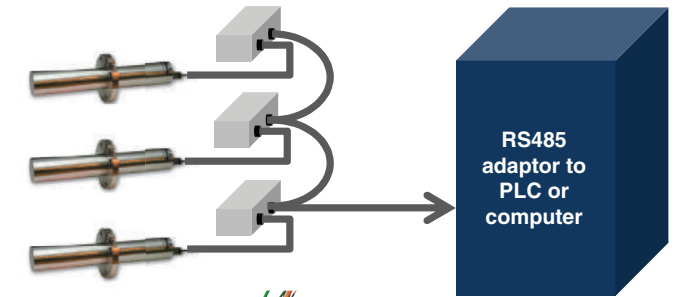
MATERIAL TEMPERATURE

Some sensing methods are very sensitive to the material temperature and must be compensated to obtain even moderately accurate results. AquaSense measurement method is not sensitive to temperature.

ANALOG CONNECTION METHOD

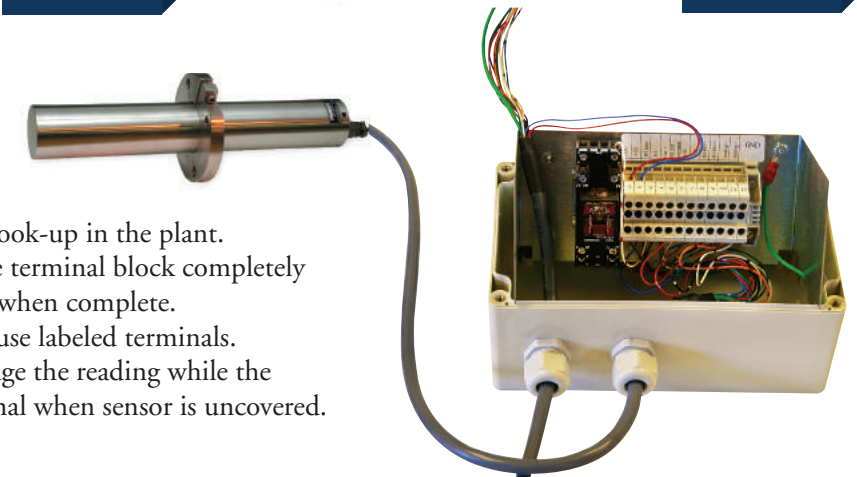


DIGITAL CONNECTION METHOD



ERGONOMIC JUNCTION BOX MAKES THE JOB EASY

We have taken the backache out of your hook-up in the plant. Install the J-box and then lift out the cable terminal block completely to make connections easy. Slide it back in when complete. All connections are through large, easy to use labeled terminals. Three versions include input relay to average the reading while the material is flowing and output relay to signal when sensor is uncovered.



Select	Address	Device Type	Filtered Reading	Unfiltered Reading	Temperature
<input type="radio"/>	# 01	-	-	-	-
<input type="radio"/>	# 02	AquaSense	14.8 %	14.82 %	26.1 °C
<input type="radio"/>	# 03	AquaSense	14.3 %	14.35 %	25.1 °C
<input type="radio"/>	# 04	-	-	-	-
<input type="radio"/>	# 05	-	-	-	-
<input type="radio"/>	# 06	-	-	-	-
<input type="radio"/>	# 07	-	-	-	-
<input type="radio"/>	# 08	-	-	-	-
<input type="radio"/>	# 09	-	-	-	-
<input type="radio"/>	# 10	-	-	-	-
<input type="radio"/>	# 11	-	-	-	-
<input type="radio"/>	# 12	-	-	-	-
<input type="radio"/>	# 13	-	-	-	-
<input type="radio"/>	# 14	-	-	-	-
<input type="radio"/>	# 15	-	-	-	-
<input type="radio"/>	# 16	-	-	-	-

WINDOWS SETUP AND CALIBRATION

Connect to a laptop or PC computer, select the serial port from a list and click "Discover" to find all sensors connected to your serial line. Open the Setup window and follow the menu to set up each sensor for your application. When you are done, start using the sensor to obtain readings. To maximize accuracy, update the calibration by entering your readings and test results in the calibration table. Up to 10 calibrations can be stored and selected, allowing you to change materials during operation if necessary. You can also tailor the sensor's setup to batch mode or continuous mode operation as well as modifying the speed of response to optimize speed and accuracy.