RadarTron 2250 D
DIGITAL MICROWAVE MOISTURE SENSOR

By SCALE-TRON
Perfecting the Art of Concrete Production

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

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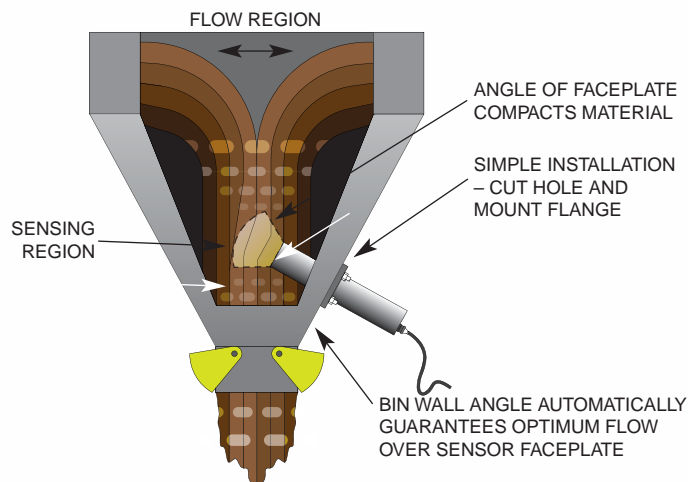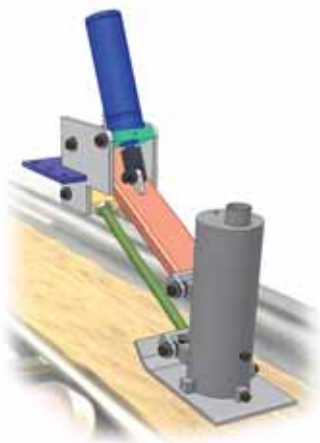
Introducing RadarTron . . . .

The moisture sensor that takes the magic out of measurement

RadarTron 2250D accurately measures the moisture of fine aggregates such as sand and crushed stone. RadarTron's microwave technology eliminates the errors associated with resistance and capacitance methods, guaranteeing an accurate reading every time. RadarTron's 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)

FLOW REGION

ANGLE OF FACEPLATE COMPACTS MATERIAL

SIMPLE INSTALLATION – CUT HOLE AND MOUNT FLANGE

SENSING REGION

BIN WALL ANGLE AUTOMATICALLY GUARANTEES OPTIMUM FLOW OVER SENSOR FACEPLATE

GLIDER MOUNT FOR MOVING MATERIAL

OPTIONAL CYLINDER LIFTS SENSOR TO SAVE WEAR WHEN NOT TAKING READINGS

SENSOR RIDES ON TOP SURFACE OF MATERIAL, COMPACTING IT FOR BEST ACCURACY

PRODUCTION QUALITY IMPROVEMENT

RadarTron 2250D guarantees: consistent yield; consistent color/texture; consistent workability; consistent strength and durability.

There is no mystery in obtaining accurate moisture measurements. The RadarTron 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. RadarTron's 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. RadarTron 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. RadarTron averages these variations to obtain the best reading on every batch.
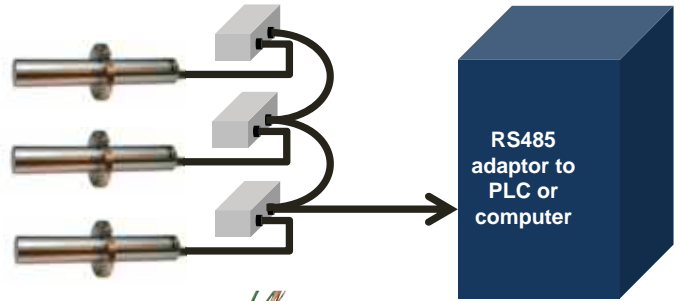
MATERIAL TEMPERATURE

Some sensing methods are very sensitive to the material temperature and must be compensated to obtain even moderately accurate results. RadarTron 2250D's measurement method is not sensitive to temperature.
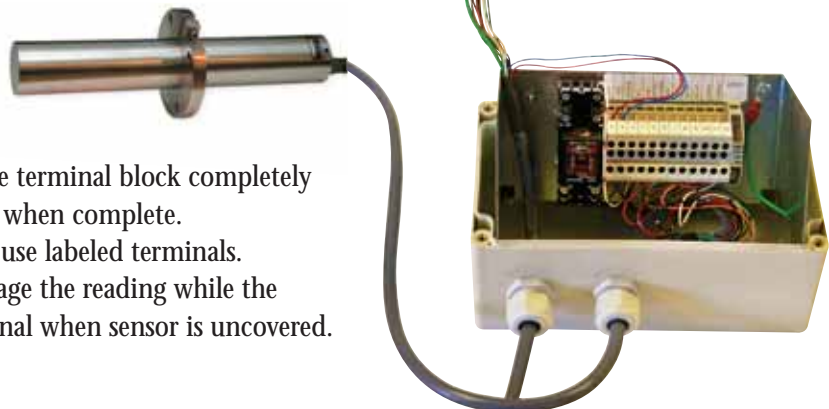
ANALOG CONNECTION METHOD

4-20 mA inputs on PLC or computer
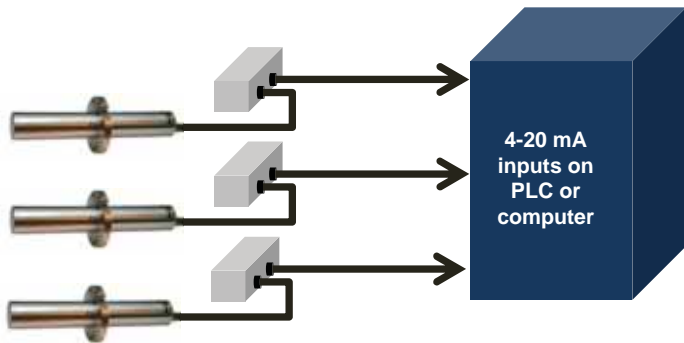
DIGITAL CONNECTION METHOD

RS485 adaptor to PLC or computer

ERGONOMIC JUNCTION BOX MAKES THE JOB EASY

- 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.

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.
- 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.

FEATURES

- 1/10 to ¼ % 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 5 years.
- Waterproof, sealed body and connector.
- Simple one-hole mount. Length of body allows correct installation without extra fixtures or welding.
- 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 other programmable alarms warn of high or low moisture levels 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 ¼" granule size.
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.
Alarm outputs:	4 open collector transistors to drive relays based on Bin Low and 3 other programmable alarms. Optional 140 VAC 6 A solid-state relays 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 ½" (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.
Serial adaptors:	RS232 and RS485 to USB for connection to computer.

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