



Solution for Powder Moisture Test Applications

On-line Moisture Analyzer for Powder and Grain

Ref: SMSpowdIntE

Revision:2004-11-27

1. MS1510B Moisture Transducer

The MS1510B *Microwave Moisture Monitor* allows accurate **measurement of moisture** in **real time** using a **microwave moisture** technique. This technique is applicable to a wide range of conducting materials including coal, bauxite, wood flake, sugar, bagasse, mineral sands, food, chemicals and others.

The Microwave Moisture Measurement Technique.

The moisture content of the material is determined by measuring the transmission of a microwave beam through the process material. This beam is emitted from a transmitter located in one side of sample, always at the lower arm of the System Frame located under the conveyor belt. The transmitted microwave signal is detected by the receiver located in another side, always at the upper arm of the System Frame. The effect on the microwave signal by the material it passes through is recorded and used in the determination of the moisture content.



Flow Density Compensation embedded

Fluctuation of flow rate heavily influence the detect results in this technology. It always needs a certain way to monitor the cross density of the sampling flow as well, so that the exact moisture result could be calculated on time.

There are 3 density rectifying technology can be selected by user application situation.

- For sample space and flow stable conveyor, conveyor speed test can be used
- Conveyor bottom is smooth sliding, US distance test can be used
- Unstable conveyor, flow system, **γ-ray density transducer** must be choosed.

Applications

- Conveyor installation
- Measurement of moisture in the sand, concrete, calcareous sandstone or glass industries
- Determination of the moisture of coke and sinter mixtures
- Other solid/powder industries

Advantages

- Rapid realtime results
- Continuous measurement of moisture content on-belt frame construction
Non contact technique, simple installation in or on existing tanks or vessels
- Independent of the temperature, pressure, pH value and color of the material
- Large measuring volume, ensuring a better, more representative measured value
- User set up

Benefits

- No segregation effects and low cost, straightforward installation
- No wear problems, low maintenance
- Allows proactive process control
- No costly sampling program and no operator intervention
- Elementary commissioning and "Two point" calibration

System Description

Measurement Frame

Call: (86)-10-8264.0226; Fax: (86)-10-8264.0221; P.o.Box:603 BDTI Beijing, China 100080
Web: <http://www.fullsense.com/> EMail:sales@fullsense.com

The measurement On-belt frame houses the measurement systems - the microwave transmitter and receiver. The measurement systems are accurately aligned during the manufacturing process which means that there is no need for lengthy setting up on site. The Measurement Frame is normally arranged so that these measurement systems are aligned with the centre of the belt. The Measurement Frame is designed to fit directly to the conveyor stringers.

The lower arm of the Measurement Frame contains the microwave transmitter. The upper arm of the Measurement Frame contains; the microwave receiver, the microwave electronics as well as STIM processor.

Electronic Transducer

- The standard MS1510B is supplied with the Electronics Control Cabinet mounted on the Measurement Frame. This cabinet contains electrical, electronic and microwave hardware which consists of:
- STIM Processor
- Power supplies.
- Electrical terminations.
- Microwave Components
- Display Panel and terminal.

Specifications

Operational

Conveyor width	Up to 1400mm as standard (more than 1400mm requires customised Onbelt frame)
Conveyer Speed	No limit
Material Top Size	Typically up to 500mm (material dependent)
Bed Depth Range	Typically 20mm to 500mm ((material dependent)
Moisture range	0 - 80%
Measurement Update Time	Typically 1 minute (user configurable, dependent on process requirements)
Instrument precision	Typically 0.3% at 1 standard deviation (ultimate precision achievable 0.1%)
Electrical Requirements	
Field Unit (Independent system)	24V DC, Max < 300W supply
Remote Controller (Optional)	220 or 110 V ACt, single phase, <2 amp supply
Environmental Requirements	IP65
Operating temperature range	0 to 45°C with protection from direct sun and rain
Humidity	0 to 95% relative (non-condensing)
Outputs	
Instantaneous moistures	Isolated 4 to 20 mA current loops indicating the rolling average of moisture content over any accumulated time period.
System running	Relay closure indicating that no alarm conditions exist
Shipping mass	150 kg

For more details, go on 

3. MS1204D Series Moisture Transducer

On-line Moisture Meter for Belt Transmitter/ Mixer

Refer to: <http://www.fullsense.com/Products/Moisture/>

T001-BD5-MS1204Dp

Conveyor, mill/mixer moisture detect

Interception sampling installation

Specifications:

Sample speed: <3m/s

Sample thickness: >30mm

Diameter of the contact sensing surface: $\phi 72\text{mm}$

Range: 0- 30% typical, up to 60%

Best resolution: 0.01%

Repeatability: 0.01 or 1% of reading, whichever is great.

Accuracy: <1% FS

Response time: <100ms



T001-BD5-MS1204Dh

Pot, container, slide/chute, tub application

Wall or slide flat contact installation

Specifications:

Diameter of the contact sensing surface: $\phi 85\text{mm}$

The standard flange dia: 150mm

Sample speed: <10m/s

Particle's size: <10mm

Sample thickness: >10mm

Range: 0- 30% typical, up to 60%

Resolution: 0.1% typical, best to 0.01%

Repeatability: 0.01 or 1% of reading, whichever is great.

Accuracy: <1% FS

Response time: <100ms

A013-BD5-MS1204Dh

Pot, container, slide/chute, tub, stove, drier application

Pot, container, slide/chute, tub application

Wall or slide flat contact installation

Specifications: same as T001-BD5-MS1204Dh



For more details, go on 

4. MS1204CC Series Moisture Transducer

- Full surface covered regional sampling
- A measuring clamps head is easily installed over a moving web, coil, or conveyor. The head can measure the average moisture across the web sample while it is moving.

Application in web and conveyor



On-line Moisture Meter for Web and Conveyor Application

Characteristics	Transducer	Typical Applications	Installation
<p>Mean moisture of the cross section</p>	<p>MS1204CATR</p>		<p>Clamp alike 2 Pole system Across the web space set Transmitter is alike board installed beyond the web, receiver is a rail supporting the moving web materials</p>
<p>Mean moisture of the cross section</p>	<p>MS1204CC</p>	<p>http://www.fullsense.com/</p>	<p>Clip alike 2 pole, all fixed</p>
<p>Mean moisture of the cross section</p>	<p>MS1204R</p>		<p>Roll alike, just like MS1204D in roll constructure</p>

You present us with the analytical problem and we give you the solutions. BDTI offers you a choice of different Web/coating analyzer configurations to suit exactly your application for down-web and cross-web coating profiles. This helps you to reduce cost, increase product quality and reduce setup time.

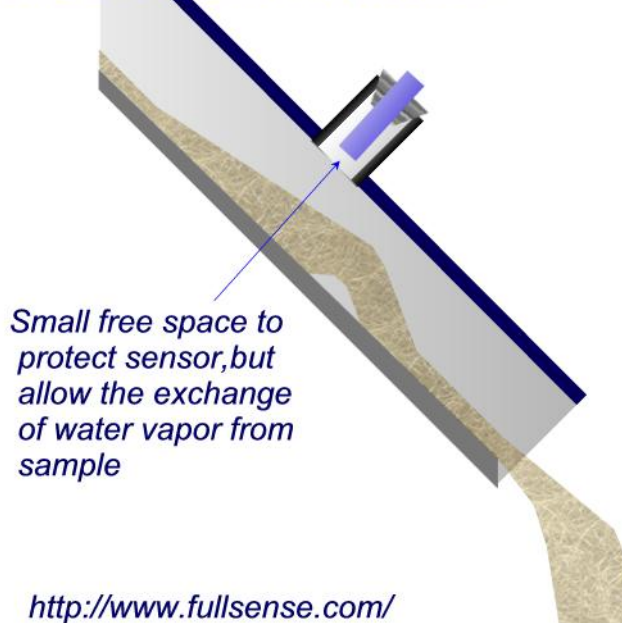
5.sMS2100 Moisture & WaterActivity Transmitter

- Best solution for solids moisture test online based on scientific law. Completely elimination of the influency of sample density.
- Recommended to slow process application, especially to systems like silo and other half sealed container.

sMS2100 Silo Application



sMS2100 Slide Application



Also you can design the same structure in your system, to use this simple instrument replace of expensive IR or Microwave system.

BigDipper TechnoChem Insitute

Call: (86)-10-8264.0226; Fax: (86)-10-8264.0221;

P.o.Box: 603 BDTI Beijing, China 100190

Email: suncns@yahoo.com Web: <http://www.fullsense.com>



For quick selection of moisture measuring system, refer to <Application Guiding>

URL: http://www.fullsense.com/Products/Moisture/sMoisture/sMS_AG_E.htm

Browse the moisture technology products for solids analysis

URL: <http://www.fullsense.com/Products/Moisture/sMoisture/sMSpowdIntE.htm>

Further Information about BD4/5xC electronics, please refer to:

URL: <http://www.fullsense.com/Products/Meters/>

For system design and configuration, Refer to:

URL : http://www.fullsense.com/Products/Moisture/sMoisture/sMS_Cfg_E.htm

To lean information of moisture detecting technology, refer to:

URL : http://www.fullsense.com/Products/Moisture/sMoisture/sMS_TB_E.htm

If you need help from our specialist, please down load the <User application data from>

URL: http://www.fullsense.com/Products/Moisture/sMS_AS_E.htm [.doc]