

### Overview

SMART series intelligent bulk moisture analyzer can be applied to measure the moisture content in most solids, which helps to control product quality and cost (dryer, water, energy, weight, etc.) according to material moisture.

### Principle

The capacitance field sensor generates electromagnetic waves (frequency of about 30 MHz), which can penetrate about 15 cm inside the material. Because the change of the moisture content causes the change of the dielectric constant, which makes the electromagnetic field change, the moisture inside the material can be detected.

### Application

★Food: grains, flour, soybeans, malt, rapeseed, corn, lentils, noodles, bean products, sugar, beet saccharification, beet flakes, candy, grain starch, coffee raw materials, food processing materials, fish meal, dry food, potato products, Potato flour, crumbs, flakes, seasoning powder, milk powder, spices, nuts, etc.

★Building materials: sand/gravel quartz powder, sand, bricks (raw materials), ceramics (raw materials), mortar, etc.

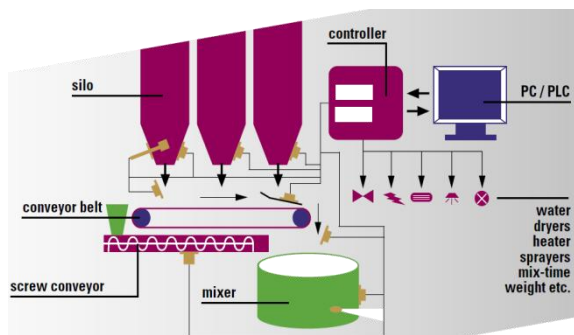
★Chemicals and pharmaceuticals: powder, granule, tablet, pill, flake fertilizer, phosphate, salt, potash, washing powder, polystyrene, foam plastic, synthetic material, PVC, acrylic paint, etc.

★Recycling: biomass, sludge, compost, etc.

★Others: wood shavings, sawdust, wood powder, calcium carbide slag, coal(pieces/powder), tobacco(shag/leaf), cast sand, glass, ceramics, coke, etc.



## Bulk Moisture Analyzer



### Features

★ **Can store 6 calibration curves of different materials.**

★ Detect the average moisture inside the material

★ Insensitive to the color and PH value of the material

★ Very high repeatability.

★ High sensor protection level

★ Maintenance-free sensor

★ Optional high temperature (up to 130°C) sensor or explosion-proof sensor

### Installation

All Smart series smart bulk moisture sensors are dustproof, waterproof, shockproof and knockproof, and optional explosion-proof. The most typical installation positions of the sensor are inside the silo, on the silo wall, on the material conveying ramp, the upper or lower part of the conveyor belt, on the screw conveyor, and mixers and dryers.

### Some application case:

★ Sludge water treatment, drying, wastewater and sludge process

★ Food (cereals, rice, flour, starch)

★ Salt products, mines

★ Potassium Chloride

★ Bulk Cargo Drying Plant

★ Ore processing

★ Energy/Coal

★ Sawdust, wood chips (granule products)

★ Porcelain products (granules and semi-finished products)

★ Clay processing

★ Kaolinit processing

★ REA-Gypsum products

★ Concrete mixing plant



## Bulk Moisture Analyzer

Online bulk material internal moisture measurement

### Features

#### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

#### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

#### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

#### ❖ Expert calibration function

Multi-point calibration function up to 9 point

#### ❖ Powerful self-diagnosis function

**Can store 6 calibration curves of different materials**

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

#### ❖ Powerful control function

High(low) limit control function

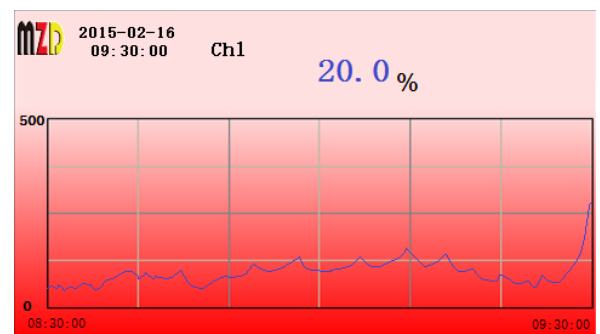
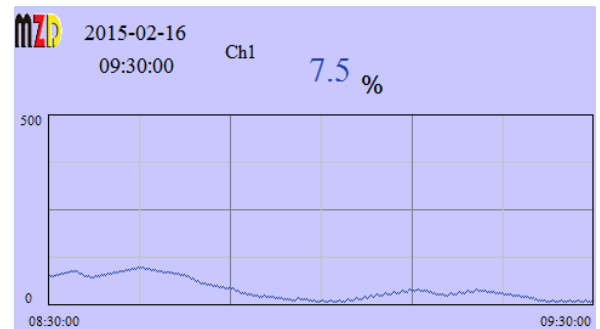
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

#### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.



The screenshot shows the 'System Configure' menu. It includes options for Language (with flags for UK, Germany, China, France, Italy, and Russia), User (Oper, Login, Logout), Trend Period (1hr), Date/Time (2015-02-16 09:30:00), SysInfo, and Quit.

The screenshot shows the 'Controller Status' menu. It includes options for Firmware (1.0), Serial ID (1010, 10.010), RunTime (100d, 10h), HeartBeat (10), and a Quit button. A green smiley face icon is also visible.

## Bulk Moisture Analyzer

### Parameters

Measuring principle	Capacitive field sensor			
Range	0~100%			
Accuracy	0.1%*			
Sensitivity	150mm			
Response Time	<1s			
Action time T90 (up)	<3s			
Working temperature	4~70℃			
Temperature compensation	Automatic internal temperature compensation			
Ambient Temperature	-35~80℃			
Sensor surface material	Wear-resistant plastic/ceramic/Teflon/rubber			
Material of sensor house	stainless steel			
Distance to material	Contact, or non-contact (maximum 1mm)			
Installation	Clamping flange			
Size	Φ76mm*70mm			
Ingress Protection	IP67			
Explosion-proof	Sensor Ex-Zone 20/22,   Ex-Zone 0/1,   ATEX Ex II 1/2,   EExd ia IIC T6			
*Depends on materials and measurement installation conditions				
Display	4.3" or 7" industrial color touch screen			
Language	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
Diagnosis function	Sensor and controller self-diagnosis,Heartbeat monitoring			
Event Logger	Internal Flash,up to 6,000 alarm records			
Analog Output(Galvanic)	4~20mA, maximum load 500Ω			
Relay Output(Galvanic)	Relay(2A, 230V AC freely set alarm), System alarm			
Control function	Optional Timer controller,PID analog controller,PWM controller			
Calibration	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
Communication	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
Power	80~264V AC,1A or 19~28V DC,3A			
Electrical protection	EMI / RFI CEI-EN55011 – 05/99			
Ambient Temperature	-15 ~ 60℃			
Storage and transport temperature	-25 ~ 70℃			
Ambient humidity	0~90%RH			
Wall-mounted(1~2Channels)	4.3" color touchscreen	ABS,Gray	213*185*84mm	IP65,Ex d IIC T4
	7" color touchscreen	RAL7045	323x237x172mm	optional

Note:

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