BigDipper
Chemical Instrument

Liquid Moisture Transucer

Moisture Technology Application in lquids & Oil Industry

Ref：liqMS1204IntE 2001v1

- ■ MS1204 Mircrowave Atenuation mothed
- ■ Auto Temperature Compensation
- ■ Less Influeency of Salinity
- ■ 0.01-100% real time measurement
- ■ Rugged, No maintenance running

- ■ MS1204 Keep best specificaton all over 0.01%-100% application for oil

- ■ Specially used to oil field, petroleum.refinery plant, and other chemical process

- ■ IEEE1451.2 STIM Transducer, 0/4-20mA outputs and RS232/RS485 seriel communication port.

- ■ IEEE1451.1 NCAP analyzer/controller, new design for new century network instruments.

MS1204 series Moisture Sensor：MS1204 is one experienced design of high frequicy complex technology, so it just overcomes the shortcomings of being too dumb as that of microwave and too sensitive as that of capacity technology. Combined with modern instrumental technology,such as temperature compensation etc. MS1204 keep 0.01 stable resolution to moisture in oil, but less sensitive to dissolved salts, for it is very important in application in oil field, and best accuracy among 70-100% moisture content is expected.

Principle for MS1204 Moisture Detect

Because of the high polarity of water molecules, water behaves more sensitive than any other materials in high frequency electronic magnetic field. MS1204 series is simply designed based on this verified physical property. In the chamber of the sensor applied stable HF power, the water and other materials all exhaust the energy of the EMW, but water takes about 70 times of that by oil

alike materials under the same condition. This is the point we can detect moisture selectively from the sample body.

Of course the principle is too easy, not equal the sensor it easy to make. As our lab has being working on this technology for 40 years more, so experienced than most comrades.

BD5 Smart Transducer：Designed with the most new MCU from USA, it's basic scientific algorithm is based on our 40 years research works, and the shell softare is designed complete according to IEEE 1451.2 STIM standard, it was original from the STIM of Honeywell.
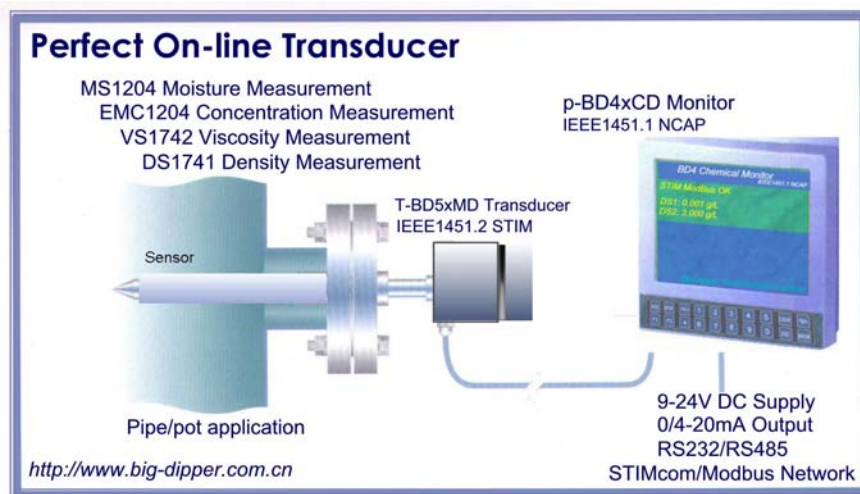
BD4 NCAP Controller：This controller is designed according IEEE1451.1 standard. Although is not concerned to the main moisture techonology, but very powerful in high level net work application. For it is based on data communication, so not only high accuracy message can be transferred to remote office, but also can setup the transducer completely at remote control center.
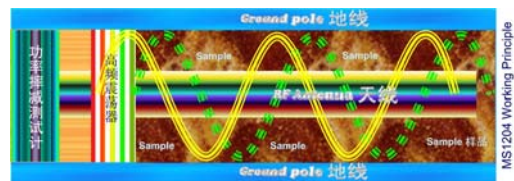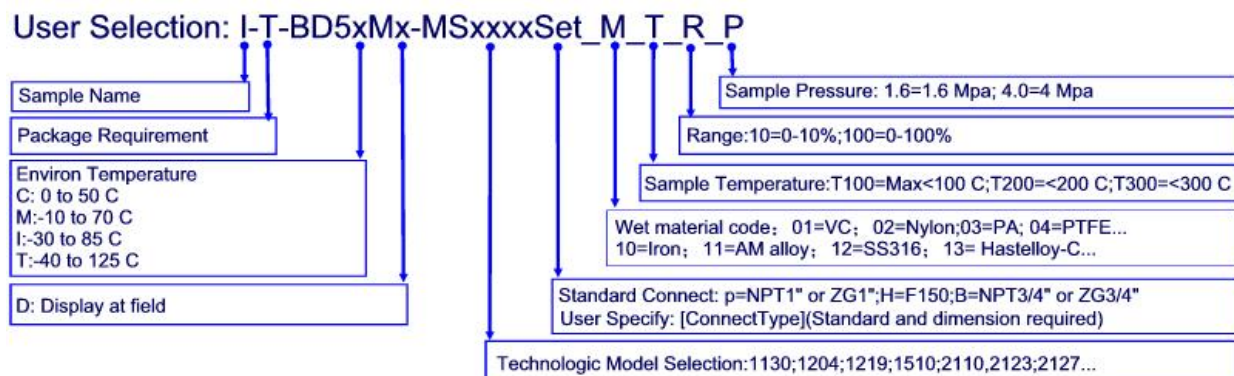
Application

- ● Most organic liquids
- ● All kinds of oil, including crude oil, fuel oil, mechanic lubricants and insulator electronic oil, and food oil
- ● Adhesives, Coatings , Emulsions, Inks and Dyes, Paints, Polymers, Resins,Asphalt, Glass
- ● Chemicals, Solvents, Pharmaceuticals
- ● Confectionery, Fermentation Products, Syrup
- ● Mineral Processing
- ● Oils, Oil and Gas Production, Petroleum Products , Fuel, Lubricants
- ● Paper Industry,Power Industry

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Application System Configuration

Field Units	Quatity	Remote Singnal	Human Interface
Insertion Type Transducer	1	0/4 to 20 mA	Other standard displayer
Byflow Type Transducer			
Same	32/128/255	RS485 /IEEE1451.2	p-BD4xCD Controller
Same	32/128/255	RS485/Modbus	p-BD4xND Network Controller
Same	Popular	RS232/RS485	H-Calibrator_1451.2

MS1204 series Moisture Transducer Selection:

Application Guiding:

Materials Characteristics	Application	Suitable Technology
1ppm-2% moisture of oil	analysis	MS4120 : NIR photometer
0.01-10% moisture of oil	analysis	MSL1204bf: high frequicy electronic attenuation
0.1-100% moisture of oil	analysis	MS1204p: high frequicy electronic attenuation
Oil leakage,level switch	detect	MS1130 :high frequicy conductivity
High desolved saults	analysis	MS4120 : NIR photometer
High Electric Constancy Liquids,>40	analysis	MS4120 : NIR photometer
Oil/water interface	monitoring	MS1204DP : high frequicy electronic attenuation
Level and Interface measurement	monitoring	LM1410: Phase difference technology

Selection Guiding by Range

Range	Transducer	H_Operator	BD4xCD Controller	Lmixer On-line Mixer	BD4CND Network Controller	DSP2000 Remote Operator	ISN2000 Instrument Station
0-1350ppm	TBD5xC_MSL4120	□	◎		◎	◎	◎
0.01-10%	TBD5xC_MSL1204bf	□					
0.01-10%	TBD5xC_MSL1204bf		□				
0.01-10%	TBD5xC_MSL1204bf				□		
0.01-10%	TBD5xC_MSL1204bf					□	
0-60%	TBD5xC_MS1204p	□					
0-60%	TBD5xC_MS1204p		□				
0-60%	TBD5xC_MS1204p				□		
0-60%	TBD5xC_MS1204p					□	
0-100%	TBD5xC_MS1204p	□		◎			
0-100%	TBD5xC_MS1204p		□	◎			
0-100%	TBD5xC_MS1204p			◎	□		
0-100%	TBD5xC_MS1204p			◎		□	
			Key board,LCD Display 0/4 to 20 mA Output RS232/RS485 IEEE1451.2 Smart Sensor Wireless Net, Modem Accessaries. Refer to <BD4/5 Family Controller>	On-line Mixing of liquids mixture	Modbus Network, FFbus, ControlNet, Lonworks, Profibus, CAN field bus might surport by order. Other function is the same as BD4xCD	Deluxe Displayer Other function is the same as BD4CND	BigFoot WebServe included Other function is the same as DSP2000

◆ Details should refer to special materials

MS1204 Transducer Model Selection

Type	Insert	Insert	Insert	Flow throw	By flow
Model	MS1204pp	MS1204pc	MSL1204pp	NS1204H	MSL1204B
Connect	ZG1", 1"NPT Flange by order	ZG1", 1"NPT Flange by order	F185	F150	ZG3/4"3/4"NPT
Direction	Facing flow	Facing flow	Facing flow	Inlet, down Outlet, upper	Inlet, down Outlet, upper
Position	Perpendicular *	Perpendicular	Perpendicular	Perpendicular	Perpendicular
Size of insert	440xϕ24	440 xϕ24	500 xϕ60		
T.Length(mm)	800	800	850	1070/H.D.600	760/H.D400
Dia. Of in/out(mm)				Dg50/ Dg50	3/4", 3/4"
Weight(kg)	4	4	7	30	25
Sample temperature	100 ~350℃	100~350℃	100~350℃	100~350℃	100℃
Sample pressure	1.6~4.0MPa	1.6~4.0MPa	1.6~4.0MPa	1.6~4.0MPa	1.6~4.0MPa
Range	0.1~100%	0.1-100%	0.02-10%	0.1-100%	0.01-10%
Resolution	0.05%	0.05%	0.02%	0.1%	0.01%
Repeatability	+/-0.1% or 0.1%FS	+/-0.1% or 0.1%FS	+/-0.05% or 0.1%FS	+/-0.5~1% or 0.1%FS	+/-0.02% or 0.1%FS
Advantage	Versatile Simple set Well EMC	Versatile,for viscous Small flow resis.	High resolution Well EMC	High moisture Average sampling	Stable low moisture for crisis conditions
Application	Anywhere	Anywhere	Oil Union out Process	Well field Union input	Oil gauge Process

● *Position is described relative to earth. Horizontal is ok too if there is less bubbles inside of flow*

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On-line Support
http://www.fullsense.com/Products/Meters/ .

For quick selection to moisture measuring system, refer to <Selection Guiding>,
     URL: http://www.fullsense.com/Products/Moisture/liqMoisture/LiqMS_SG_E.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/liqMoisture/liqMS_Cfg_E.htm
For more details for selection, Refer to
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To lean information of moisture detecting technology, refer to:
     URL : http://www.fullsense.com/Products/Moisture/liqMoisture/liqMS_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/liqMoisture/IMS_AS_E.htm [.doc]

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