

MODEL MS MAGNETOSTRICTIVE LEVEL MEASUREMENT



Features

- High Accuracy: $\pm 1\text{mm}$ or 0.1% F.S. for SS float
 $\pm 2\text{mm}$ or 0.2% F.S. for PVC float
- 4 to 20mA output
- Works in a wide range of liquids
- Patent pending principle

Approval

Intrinsically safe as iaIICT5 by Technical Institute of Industrial Safety (TIIS), Japanese Ministry of Labor.

General Description

The MS series, magnetostriuctive level measurement, is especially designed for precision measurement. With its high accuracy of $\pm 1\text{mm}$ or $\pm 0.1\%$ F.S. for SS float and $\pm 2\text{mm}$ or $\pm 0.2\%$ F.S. for PVC float which is greater, the MS is ideal for continuous level monitoring of storage and shipment for oil, beer and other beverages, pharmaceuticals, etc.

The position of float is converted into electric signals proportional to the liquids level.

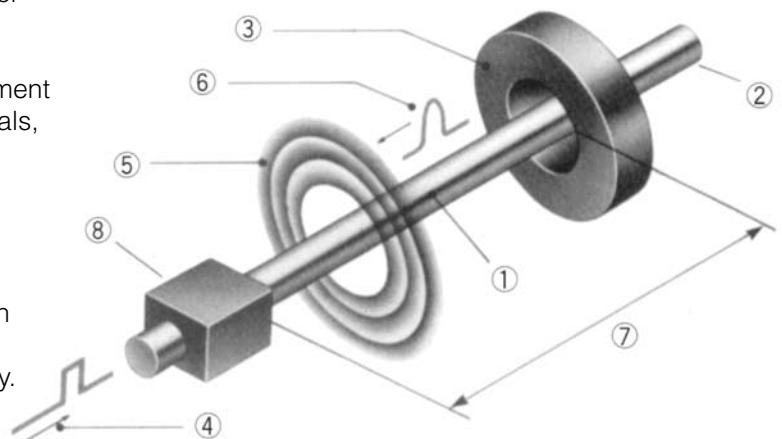
Technical Note

The safety barrier must be connected between sensor and amplifier for Intrinsically Safe.

MTL722+ is recommended, prepared in locally.

Operational Description

The MS series consist of a magnetostrictive wire ① in the stem ② and a permanent magnet inside the float ③. The float is the only moving part which travels vertically on the stem. Once a pulse current ④ is induced from the end of the magnetostrictive wire, a tubular magnetic field emanates ⑤. As the float travels, torsional vibration ⑥ is launched by the interaction between the float magnetic field and the magnetostrictive wire. The float position is determined by measuring the lapse of time ⑦ from the inducing of a pulse current to the return of the torsional vibration to the pick-up (⑧).

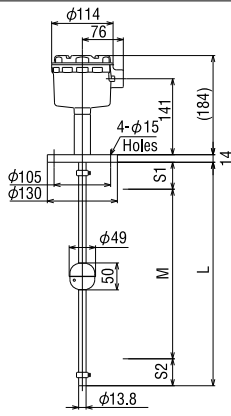
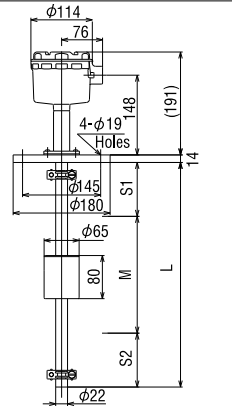
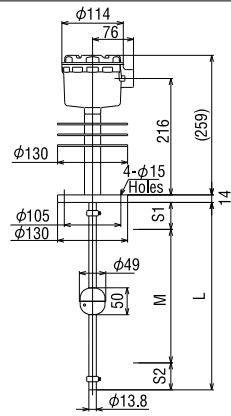


Specifications

Model	MS200S		MS200V	
Description	Integral			
Drawing				
Mounting	JIS5K50A		JIS5K80A	
Supply Power	24V DC $\pm 10\%$ 110mA Max.			
Power Consumption	Approx. 7.5W Max.			
Output Signal	4 to 20mA DC (Resistive)			
Operating Temperature	Housing	0°C to 50°C		0°C to 50°C
	Wetted part	0°C to 80°C		0°C to 50°C
Maximum Pressure	500kPa / 5bar		200kPa / 2bar	
Maximum Humidity	85% RH			
Minimum Specific Gravity	0.8			
Accuracy	$\pm 1\text{mm}$ (Measuring length $\leq 1000\text{mm}$) $\pm 0.1\%$ (Measuring length $> 1000\text{mm}$)		$\pm 2\text{mm}$ (Measuring length $\leq 1000\text{mm}$) $\pm 0.2\%$ (Measuring length $> 1000\text{mm}$)	
Material	Housing	ADC12		
	Flange Stem*	304SS	PVC	
	Float*	316SS	PVC	
Maximum Length of Stem	3000mm			
Minimum Length of S1	50mm		100mm	
Minimum Length of S2	50mm		100mm	
Cable Entry	JIS F 20a (G3/4)			
Protection	IP64			
Recommended Cable	CVVS (3-core, shielded cable)			

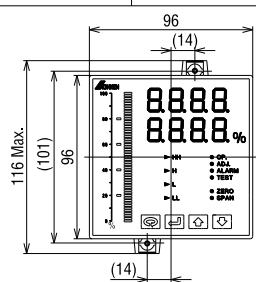
*Other materials are available.

Sensor

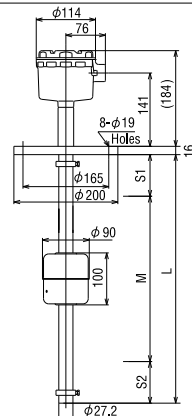
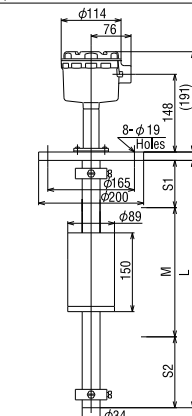
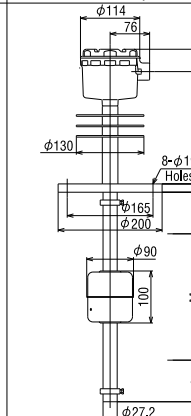
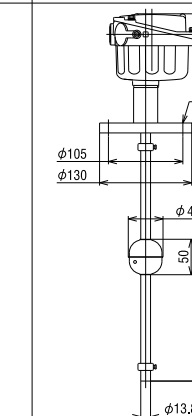
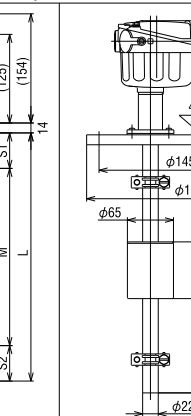
Model	MS350S		MS350V		MS360S		
Description	Compact Separation				Heat-proof		
Drawing							
Mounting	JIS5K50A		JIS5K80A		JIS5K50A		
Operating Temperature	Housing	-10°C to 50°C		-10°C to 50°C		-10°C to 50°C	
	Wetted part	-10°C to 80°C		-5°C to 50°C		-10°C to 150°C	
Maximum Pressure	2MPa / 20bar		200kPa / 2bar		2MPa / 20bar		
Maximum Humidity			5 to 95% RH				
Minimum Specific Gravity	0.55		0.65		0.55		
Material	Housing			ADC12			
	Flange Stem*	304SS		PVC		304SS	
	Float*	316SS		PVC		316SS	
Maximum Length of Stem			3000mm				
Minimum Length of S1	50mm		80mm		50mm		
Minimum Length of S2	50mm		85mm		50mm		
Cable Entry			G3/4				
Protection			IP65				
Recommended Cable			3C2V (Coaxial cable)				
Maximum Separation			500m				
Connected Amplifier			MS2000				

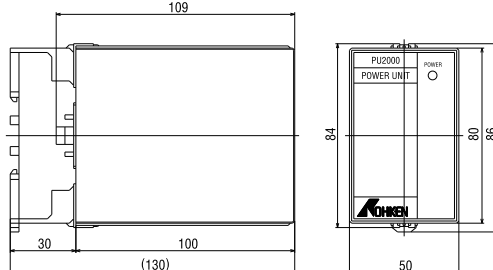
*Other materials are available.

Amplifier

Model	MS2000		MS6100*	
Description	Standard		Intrinsically Safe	
Drawing				
Supply Power	100 to 240V AC 50/60Hz±10%			
Power Consumption	Approx. 20VA Max.			
Output Signal	4 to 20mA DC (Resistive)			
Load Resistance	600ΩMax.			
Alarm Output	4 points (2 points x 2 circuits) 240V 3A AC, 30V 3A DC (Resistive)			
Output Power	15V DC			
Operating Temperature	-10°C to 50°C			
Maximum Humidity	85% RH			
Accuracy	with SS	±1mm (Measuring length≤1000mm), ±0.1% (Measuring length>1000mm)		
	with PVC	±2mm (Measuring length≤1000mm), ±0.2% (Measuring length>1000mm)		
Material	ABS			
Protection	Non Drip-proof			

* The safety barrier must be connected between sensor and amplifier for Intrinsically Safe.

MS370S	MS370V	MS380S	MS650S	MS650V
Standard Separation		Heat-proof	Intrinsically Safe iaIICT5	
				
JIS5K100A	JIS5K100A	JIS5K100A	JIS5K50A	JIS5K80A
-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C
-10°C to 80°C	-10°C to 50°C	-10°C to 150°C	-10°C to 80°C	-5°C to 50°C
500kPa / 5bar	200kPa / 2bar	500kPa / 5bar	2MPa / 20bar	200kPa / 2bar
5 to 95% RH				
0.7	0.8	0.7	0.55	0.75
ADC12				
304SS	PVC	304SS	304SS	PVC
316SS	PVC	316SS	316SS	PVC
3900mm			3000mm	
80mm	90mm	80mm	50mm	100mm
80mm	135mm	80mm	50mm	100mm
G3/4			G1/2	
IP65				
3C2V (Coaxial cable)				
500m				
MS2000			MS6100	

PU2000
Power Unit for MS200

90 to 132V, 180 to 264V AC 50/60Hz
Approx. 10VA Max.
4 to 20mA DC (Resistive)
24V DC
0°C to 50°C
85% RH
ABS
Non Drip-proof

Ordering Information

MS	200	Standard type					
	350	Compact Separation type					
	360	Compact Heat Resistive type					
	370	Separation type					
	380	Heat Resistive type					
	650	Explosion proof type, Intrinsically Safe ia II CT5					
	S	304 stainless steel					
	S6	316 stainless steel					
	V	PVC					
	HV	CPVC					
	0	Flat-face flange					
	1	Raised-face flange					
	3	Sanitary ferrule					
	J	JIS & Sanitary ferrule flange					
	A	ANSI flange					
	D	DIN flange					
	A	316SS ϕ 49×H50 for MS350, MS360 & MS650					
	C	316SS ϕ 52×H46 for MS200					
	D	316SS ϕ 48×H50 for MS200					
	E	316SS ϕ 90×H100 for MS370, MS380					
	M	PVC ϕ 74×H80 for MS200					
	N	PVC ϕ 65×H80 for MS650					
	O	PVC ϕ 89×H150 for MS370					
	P	PVC ϕ 65×H80 for MS350					
	Q	PP ϕ 89×H150 for MS370					
	R	PP ϕ 65×H80 for MS350					
		Specify the length of probe					
MS	200	S	0	J	C	1000	= MS200S-0JC-1000

* The mounting size should be specified when you order.

* The measuring range should be specified when you order.

* MS650 is only available with the material of 304SS and PVC.